INFLATION REPORT

March 2017*

* Presented by the technical staff to the Board of Directors for its meeting on April 28, 2017.

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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. 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 The Inflation-Targeting Strategy in Colombia 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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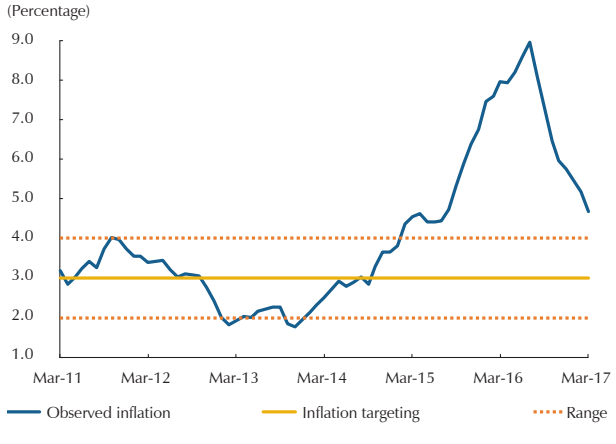
In March 2017, annual consumer inflation fell for the eighth consecutive month, standing at 4.7% (Graph A). The slower pace of the increase in food continued explaining the overall slowdown in consumer prices. Non-food CPI (5.1%) and the average of the four core inflation indicators (5.5%), which exclude the prices that respond to supply shocks, or which are highly volatile, returned to a slow descent in their annual variations, although at rates exceeding the 3.0% target and similar to those observed last December.

Several factors could explain the slow decline in core inflation. One of them, transitory in its nature, was the increase of VAT and other indirect taxes, whose impact on the level of prices would have taken place, for the most part, in the first months of 2017. The group of tradable goods excluding food and regulated items would have been the most impacted by this fact, which would explain its acceleration, to a great extent. The price of gasoline, also affected by the tax reform, registered high increases, and prevented further declines in the annual variation of regulated items.

Graph A
Total Consumer Inflation



Sources: DANE and *Banco de la República*.

Indexation of wages and prices has increased the persistence of inflation, a factor that has also contributed to slow down the reduction of the annual variation in consumer prices. This effect has been reflected with greater intensity on the group of non-tradable goods, whose annual variation accelerated in the first three months of the year. In fact, labor-intensive sectors such as education and health services, which were not included in the tax reform, have registered significant increases in prices, similar to those in the minimum wage and the general level of wages. Indexation is also affecting the price variation in leases, which have exhibited a slow but steady increase so far this year.

The lower annual variation of the CPI and monetary policy actions have contributed to reduce inflation expectations, some of which are already within the Central Bank´s range (3.0% ± 1 pp). Particularly, inflation expectations embedded in public debt bonds suggest that average inflation in 2018 would post at 3.18%, and close to 3.0% for longer maturities.

Regarding economic growth, the Colombian economy is culminating the adjustment process of domestic demand, as a response to the deterioration of national income since mid 2014. Facing this deterioration, mainly reflected on a fall in public revenue, the tax reform was necessary in order to achieve an orderly adjustment of the economy, ensure fiscal and external sustainability of the country, and, in general, to strive for investment and sustainable economic growth. However, in the short term, the increase of the VAT and other indirect taxes has affected the spending capacity of households, and therefore consumption. The lower purchasing power of households due to the increase in inflation and the monetary policy actions necessary to return inflation to its 3.0% target have also contributed to a lower economic growth. Additionally, although external demand has recovered slightly, its expansion is still low and has been insufficient to promote robust exports by the country.

Within this macroeconomic context, the figures of economic activity for the first quarter of 2017 suggest that the dynamics of domestic demand would have been weaker than expected three months ago. In fact, the consumer confidence index and retail sales suggest that consumption is growing at historically low rates. Investment could register a modest recovery, mainly due to civil works. Net exports would have subtracted from growth. With these figures, the technical staff at *Banco de la República* estimates an economic growth figure of 1.5% for the first quarter of 2017, within a range between 0.8% and 1.8%.

For the remainder of 2017, a low increase in output is expected, exhibiting a modest recovery in the second half of the year. The behavior of domestic demand would continue to be weak, led by investment in civil works. External demand and the country's terms of trade are likely to continue recovering within a more dynamic environment —although highly uncertain— for world trade. With all this in mind, the technical staff revised its forecast of the most likely growth figure for 2017 from 2.0% to 1.8%, within a range between 0.8% and 2.6%.

In all, the Colombian economy continues to adjust to the strong shocks recorded since 2014, and it is likely that the current account deficit will continue adjusting. The dynamics of output has been weaker than forecast; also, there is a higher risk of a slowdown that is stronger than what is compatible with the adjustment to the deterioration in national income. Inflation continues to decline, but this is due, above all, to the prices of food. The reversal of core inflation has been slower than that of headline inflation, as the for-

mer has been affected by the increases in taxes, indexation mechanisms, and by the increase of the persistence of inflation.

Facing this macroeconomic situation, the Board of Directors of the Central Bank considered the following issues in its most recent decisions:

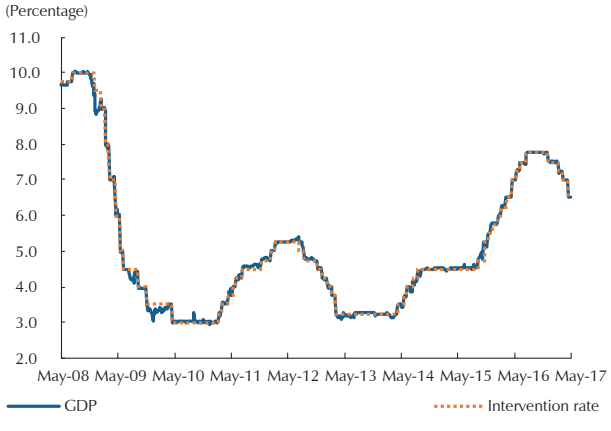
- The increasing weakness of economic activity and the risk of a greater-than-anticipated slowdown.

- Uncertainty about the speed of convergence of inflation to its 3.0% target: the reduction of inflation is explained mainly by food prices. Indexation mechanisms and the increase in the persistence of inflation may delay convergence of inflation to the target.

- The current level of the real policy interest rate continues to be contractionary.

- This rate is measured taking into account inflation expectations, which have been reducing.

Graph B
Banco de la República's Intervention Rate and Overnight Rate (OR)
(2009-2017)[a/]



a/ The figures correspond to data from working days; the last figure corresponds to 19 May 2017.
Sources: *Superintendencia Financiera de Colombia* and *Banco de la República*.

Analyzing the above, in each one of its meetings of February and March this year the Board decided to reduce the benchmark interest rate by 25 bp, and by 50 bp in April. In this last meeting, the Board considered that 6.5% was a level consistent with the risk balance as well as with the purpose of reaching the 3.0% inflation target in 2018 (Graph B). Additional reductions would consider the risk balance between a slow convergence of inflation to 3.0%, and a greater slowdown of economic activity versus the forecast.

Juan José Echavarría
Governor

Inflation Report

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I. The external context and balance of payments

The 2017 economic growth forecast for Colombia's trading partners was revised upward slightly in this report. This implies a recovery in growth that would continue towards 2018, although at lower rates than those witnessed in past years.

The increases observed in international prices for coal and oil, coupled with what is forecast in this report, allow us to anticipate that terms of trade will continue to recover during the remainder of 2017 and in 2018.

The country's current deficit, as a share of GDP, was 4.4% during 2016, down from 6.4% a year ago, largely due to a contraction in both current expenditure and income, the latter being smaller than the former.

The external imbalance, both in dollars and as a percentage of GDP, will continue to adjust during 2017, mainly because of the lower trade deficit for goods, thanks to the expected improvement in terms of trade.

A. THE INTERNATIONAL CONTEXT

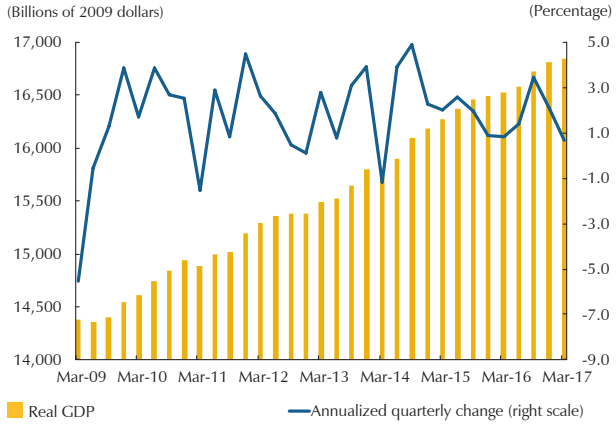
1. Real Activity, Inflation, and Monetary Policy

The figures at hand for the first quarter of 2017 show economic growth on the part of Colombia's main trading partners has recovered somewhat, compared to the weak activity reported during the previous year. If this trend continues, coupled with better raw material prices, it could mean improved growth in Colombian exports. The recovery has been mainly in the advanced economies, where the momentum has been more than expected. Although a recovery in Latin America is anticipated as well, it would be weaker and, in several cases, would be affected by high uncertainty and supply shocks.

Export recovery based on higher prices is forecast for 2017 and 2018.

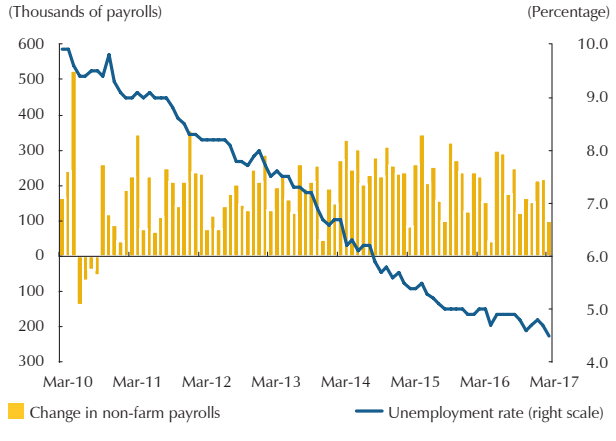
In the case of the United States, the initial estimate for gross domestic product (GDP) in the first quarter of 2017 shows less growth, at an annualized quarterly (a.q.) rate of 0.7%, *vis-à-vis* 2.1% a.q. three months ago (Graph 1). This slowdown seems to be due to less momentum in consumption and an unresolved sta-

Graph 1
Real GDP of the United States



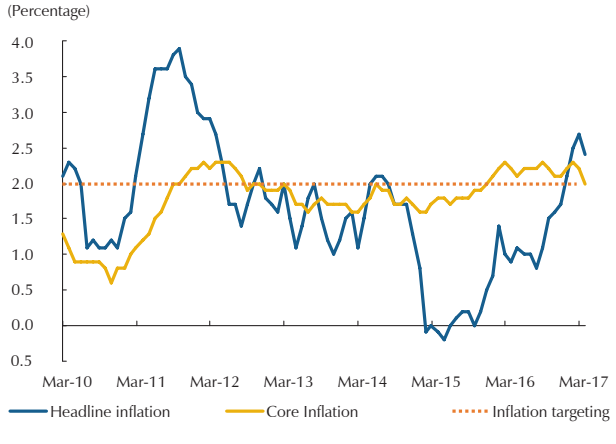
Source: Bureau of Economic Analysis.

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.

tistical effect, which tends to produce lower growth in the first quarter, even discounting the seasonal effect.

Despite the weakness observed in first-quarter growth in the United States, job performance and confidence point to better performance in the following quarters. This suggests a higher rate of economic growth during the remainder of 2017.

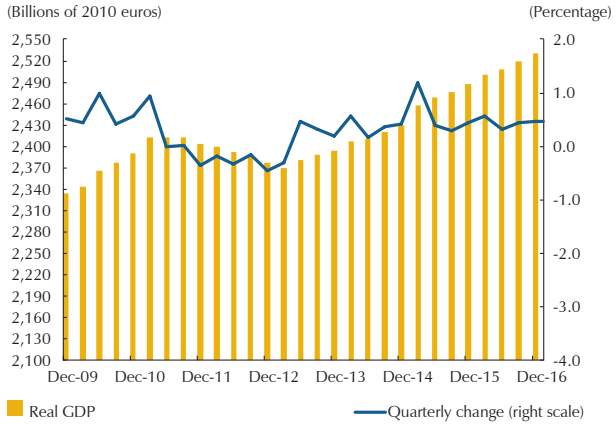
As for the labor market, job creation remained dynamic, with non-agricultural payrolls increasing at an average monthly rate of approximately 180,000 jobs during the first quarter (Graph 2). As a result, the unemployment rate fell to 4.5% in March, once again nearing its non-inflationary level. This is according to analysts and the Federal Reserve. On the other hand, business and consumer confidence indicators remain high with respect to the levels observed in recent years.

As for the annual change in consumer prices, the headline inflation indicator rose during the first quarter, largely because of higher fuel prices. This being the case, inflation in March was 2.4%. On the other hand, the core inflation indicator excluding food and energy was 2% during the same period (Graph 3).

In this context, the Fed Open Market Operations Committee (FOMC) decided at its meeting in March to raise the ceiling of the range for its policy rate by 25 basis points (bp) to 1.0%. Once again, the FOMC announced that it would continue with gradual increases, depending on developments in the job market and inflation.

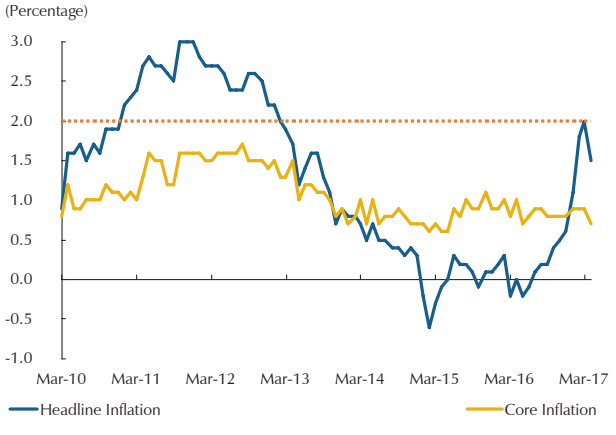
The figures available on the euro zone for the last quarter of 2016 with respect to real activity and confidence suggest the economy would have continued to grow at a pace similar to that observed in previous quarters. Net exports would have begun to contribute positively to growth, thanks to cumulative depreciation of the euro. According to the information at hand with respect to confidence, industrial surveys, and retail sales, economic growth would have continued to recover during the first quarter (Graph 4).

Graph 4
Real GDP in the Euro Zone



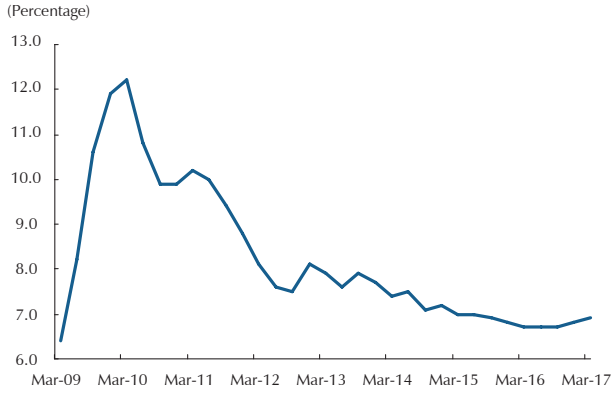
Source: Eurostat.

Graph 5
Annual Headline and Core Inflation indicators in Europe



Source: Bloomberg.

Graph 6
Real Annual GDP Growth in China



Source: Bloomberg.

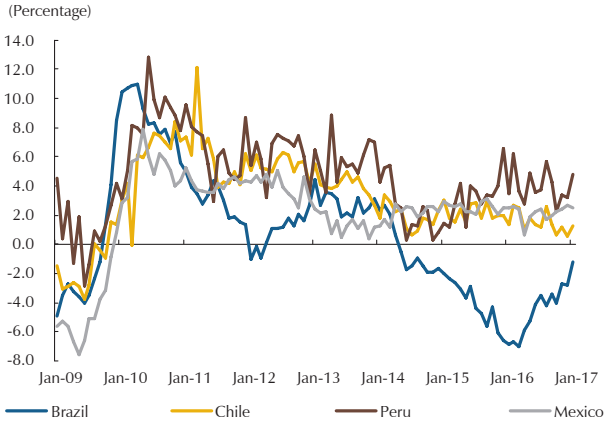
Inflation in the euro zone up to March, both the headline (1.5%) and core (0.7%) (Chart 5), are still a long way from the target set by the European Central Bank (ECB) (slightly below 2%), despite having surged somewhat.

Meanwhile, economic performance in most of the emerging countries remains poor compared to what it was in past years. In the case of China, annual GDP growth was 6.9% in the first quarter, which is slightly better than what it was during 2016, but worse than the recent past (Graph 6). In principle, this performance is compatible with the transition towards a sustainable development model in the medium term, one that depends less on external demand and investment, and more on private consumption. It is worth noting that this transition implies less growth in the demand for commodities imported by China.

As for Latin America, although growth during the third and fourth quarters was mediocre, it does point to some recovery in certain cases and stability in others. This performance would not have changed during the first quarter, as shown by the latest indicators of activity (Graph 7). Household and employer confidence also behaved similarly as well.

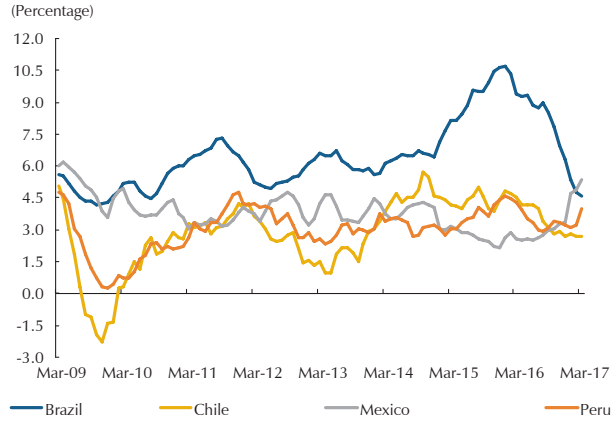
Although the decline in raw material prices affected the income of several Latin American countries in recent years, their rebound would be favoring a recov-

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

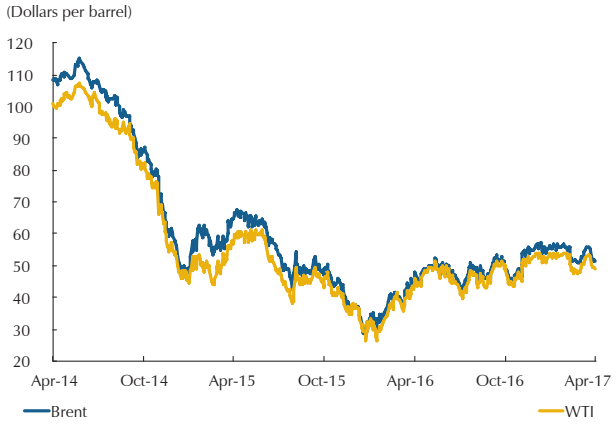


Source: Datastream.

Graph 9
Terms of Trade Index
(Commerce Method & PPI)

Source: Banco de la República.

Graph 10
International Oil Prices (Brent and WTI)



Source: Datastream.

ery. Accordingly, it is estimated that growth during 2017 will be negative only in Venezuela. All other countries in the region would post rates that are positive, but below their historical averages.

The figures recorded for annual inflation in Latin America in the 4th quarter are near their respective targets. It should be noted that important increases have been observed in Mexico and Peru (Graph 8).

2. Commodity Prices

The country's terms of trade continued to recover during the first quarter, after having reached minimum levels in January 2016. These increases are expected to continue during the rest of the year, leading to higher terms of trade in 2017 and in 2018. However, they would be lower than the average for the last decade (Graph 9).

The price of oil (Brent benchmark) increased by 1.4%, on average, between the fourth quarter of 2016 and the first quarter of 2017, going from USD 51.1 per barrel to USD 51.8 per barrel (Chart 10). The average price in April 2017 was USD 53.9 per barrel. Therefore, the levels observed in the last few months would have approached the forecasts noted in the December report for the year as a whole (USD 54).

Most of the price increase is due to the agreement reached at the end of last year by the Organization of Petroleum Exporting Countries (OPEC) and other oil producing countries to restrict the world supply and to reduce crude inventories.

In the case of coal, its performance has slowed from the relatively high levels reached during the second half of 2016. This is due mainly to regulatory changes in China, where the supply was initially restricted. Some reduction attributed to the relaxation of these restrictions has been observed so far during 2017.

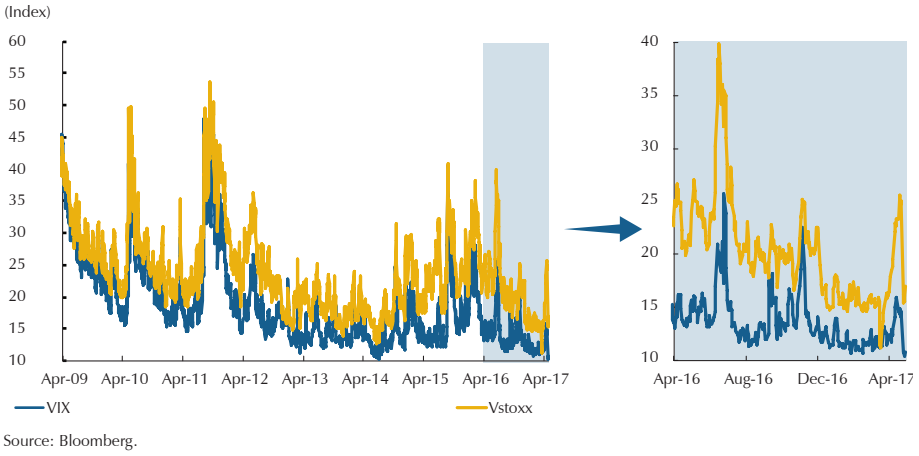
The international price of coffee has declined during the course of 2017, compared to what was observed in 2016, given the fact that the world supply has returned to normal, after several negative shocks. This has allowed for increased production in some countries.

With respect to international prices for agricultural raw materials, continuous declines were observed during the first quarter. This is reflected in an annual contraction in the food price index compiled by the United Nations Food and Agriculture Organization (FAO). Given that Colombia is an importer of several of these raw materials, this reduction would have favored, to some extent, the increase in terms of trade.

3. Financial Markets

International financial markets remained relatively stable during the first quarter, showing low levels of volatility, but with some specific increases associated with the added electoral uncertainty in Europe (Graph 11).

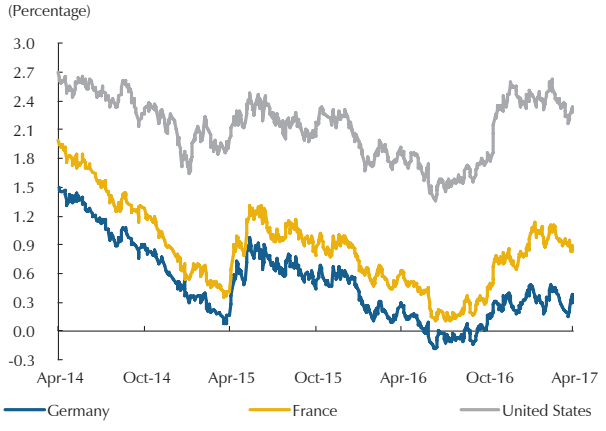
Graph 11
Financial Volatility Indexes



Source: Bloomberg.

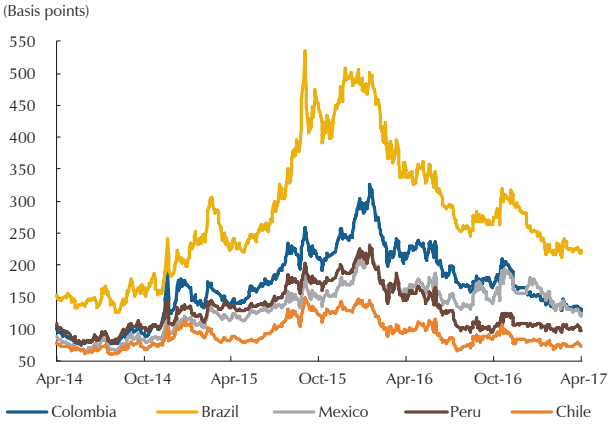
Long-term interest rates in the advanced economies during the first three months of 2017 remained at the levels reached during the 4th quarter of 2016, which surpassed those observed in previous years (Graph 12). The higher rates are accompanied by expectations of higher inflation in the medium term, despite prospects of a monetary contraction in the United States and in the euro zone. However, it would be slower than was expected a few months ago. For the time being, global stock indexes are still trending upward. The US dollar continued to appreciate between January and March against the currencies of the United States' main trading partners, reaching levels close to those witnessed during the last quarter of 2016.

Graph 12
Interest Rates on Certain 10-year Sovereign Bonds



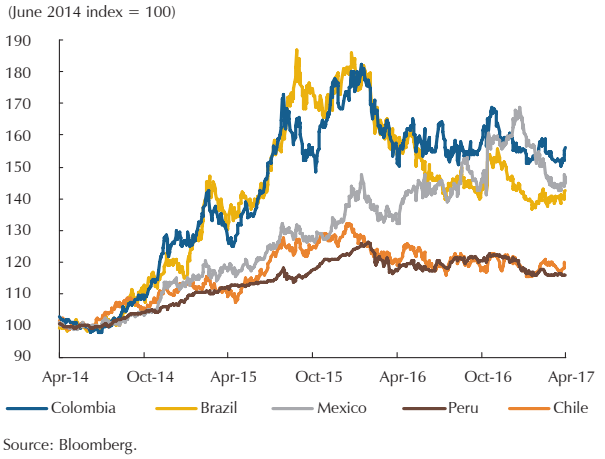
Source: Bloomberg.

Graph 13
Five-year Credit default swaps (CDS) for several Latin American Countries.



Source: Bloomberg.

Graph 14
Exchange Rate Indexes for several Latin American Countries



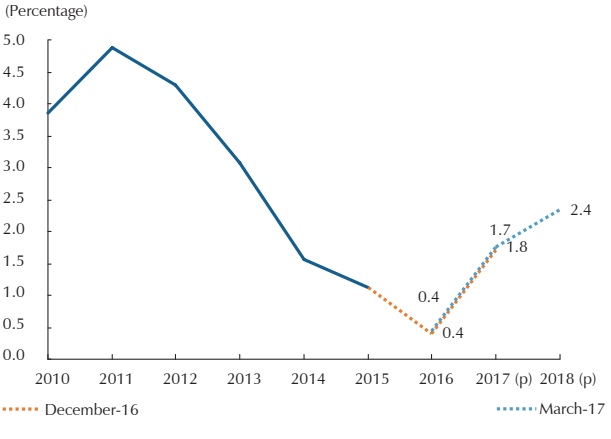
Source: Bloomberg.

In the case of Latin America, there has been a reduction in risk premiums so far during 2017, following the increases registered in the 4th quarter last year (Graph 13). This has been accompanied by a tendency towards appreciation in the region's currencies against the dollar (Graph 14), which also would be associated with expectations of a slower monetary contraction in the United States. In the Colombian case, five-year credit default swaps (CDS) were down in March, posting an average of 137 bp during the month. Meanwhile, during the first quarter, the Colombian peso appreciated against the dollar by 3.2%, on average, compared to the 4th quarter of 2016.

4. Forecasts by the Technical Staff at *Banco de la República*

On the whole, the 2017 growth forecasts for Colombia's trading partners were revised upwards slightly in this report with respect to what was outlined in the previous edition (Graph 15). This is due, in particular, to the added momentum anticipated for the advanced economies and for China. Economic growth on the part of the country's main trading partners (non-traditional trade weighted) is expected to be 1.8% by 2017 and 2.4% by 2018 (Table 1).

Graph 15
Average growth of the country's trading partners (weighted by non-traditional trade



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

Table 1
Growth Forecasts for Colombia's Trading Partners

Growth forecasts for Colombia's trading partners	2016	Forecasts for 2017 Scenario			Forecasts for 2018 Scenario		
		Minimum forecast	Central forecast	Maximum forecast	Minimum forecast	Central forecast	Maximum forecast
Main partners							
United States	1.6	1.5	2.3	3.0	1.0	2.3	3.0
Euro zone	1.7	1.2	1.7	2.2	0.5	1.7	2.2
Venezuela b/	(8.0)	(9.0)	(6.0)	(1.0)	(3.0)	0.0	1.0
Ecuador	(1.5)	(1.5)	0.2	1.0	(1.5)	0.5	1.5
China	6.7	6.0	6.5	6.8	5.2	6.2	6.8
Other partners							
Brazil	(3.6)	(0.5)	0.5	1.5	1.0	2.5	4.0
Peru	3.9	2.3	3.5	4.3	3.0	4.0	5.0
Mexico	2.1	0.5	1.6	2.5	1.0	2.2	3.0
Chile	1.5	0.8	1.8	2.8	1.0	2.6	3.5
Total trading partners (non-traditional trade-weighted)	1.1	0.8	1.8	2.6	1.1	2.4	3.1
Developed countries[a/]	1.9		2.0			2.0	
Emerging and developing countries[a/]	4.1		4.6			4.8	
Total worldwide[a/]	3.2		3.5			3.6	

a/ IMF forecasts - January 2017.
b/ The figure for Venezuela is an estimate developed by the IMF in April 2017.
Source: International Monetary Fund (IMF); Calculations and forecasts by *Banco de la República*

Despite less growth during the first quarter, there was no change in the forecast for economic expansion in the United States during 2017. Accordingly, the economy still is expected to grow more than in 2016. Consumption would continue to be the driving force behind growth and good job market performance. The plans announced by the new administration in terms of cutting taxes and investing in infrastructure would have an impact in 2018, provided they materialize.

In general, there is a great deal of uncertainty about the policies of the new administration and the impact they could have. The central forecast scenario does not consider the implementation of protectionist trade policies that would adversely affect global economic growth.

In terms of monetary policy, this report contemplates two additional increases in the Fed's benchmark interest rate during the remainder of 2017. This would imply larger wage hikes than in the recent past, considering there are several reasons why inflation in the United States should remain above the target (2%) set by authorities, such as stronger domestic demand and a tight job market.

In this report, the forecast for the euro zone was raised from 1.6% to 1.7% for 2017. By 2018, growth is expected to be at 1.7%. The impact of Brexit is expected to be low during 2017, but would prevent any acceleration in 2018.

Economic growth in the United States and the euro zone this year and in 2018 would be explained by domestic demand and, particularly, by consumption.

As in the United States, economic growth in the euro zone this year and in 2018 would continue to be based on domestic demand and, particularly, on consumption. Some impulse coming from net exports is anticipated as well; these have been favored by cumulative depreciation of the euro. The central forecast scenario assumes financial and political risks will not materialize and Brexit will have more moderate and longer-term effects. Inflation will remain below the ECB's target for 2017 and 2018, 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, its process of gradual restructuring towards an economy supported by private consumption is expected to carry on during 2017 and 2018, with a continued slowdown in investment. The policies adopted by the Chinese government to reduce corporate over-indebtedness are presumed to be effective. In addition, state stimulus measures intended to soften the economic slowdown would remain in place.

As for Latin America, the recovery in growth is expected to continue throughout 2017 and in 2018, although at lower rates than those observed in the last decade. The economies of Brazil and Ecuador would cease to contract, while those of Chile and Peru would accelerate slightly, but at lower rates than those predicted a quarter ago. Mexico would be particularly affected by the uncertainty surrounding the effect the implementation of protectionist policies in the United States could have. This also has prompted a downward revision of its growth forecast for 2017, with a slowdown expected in this case compared to 2016. Chile and Peru would be shaken by supply shocks that would limit their production in 2017. The mining strikes in Chile would have had a major impact on first- quarter growth. The revision for Peru is explained by the recent floods and the standstill in public works that accompanied the latest corruption scandals.

The central forecast scenario contemplates downward risks, which would be less in 2017 than those assessed in the previous edition of this report. Although the application of protectionist policies that can have an impact on global growth is still possible, this is now perceived as being less likely to happen. In addition, if such measures are put in place, it is more they will hit growth in particular, especially in 2018. On the other hand, there are still political and financial risks in the euro zone, and those associated with stability in China. As in the previous report, negative news derived from the implementation of Brexit still represents a considerable downside risk, particularly for 2018.

In the central forecast scenario, it is assumed that protectionist trade policies that negatively impact growth will not be implemented.

In addition, the improved situation in the United States and a possible rise in interest rates that is faster than anticipated in the central forecast scenario would pose a downside risk to many emerging economies. If this were to happen, the United States would become more attractive to investors, in relative terms. This scenario does not rule out capital outflows from emerging market economies that could end up punishing growth.

Raw material prices are still expected to be higher in 2017 and 2018, compared to what was observed during 2016 (Table 2). Basically, these increases would respond to a reduction in the supply of such products. In the case of oil, the price is expected to be around USD 54 per barrel. This forecast assumes partial compliance with the OPEC agreement, a slight increase in production in the United States, and a rise in the global demand for oil.

Table 2
Benchmark Price Forecasts for Colombia's Commodity Exports

Major products	2016	Forecasts for 2017 Scenario			Forecasts for 2018 Scenario		
		Minimum forecast	Central forecast	Maximum forecast	Minimum forecast	Central forecast	Maximum forecast
Colombian coffee (ex *dock*; US dollars per pound)	1.55	1.20	1.50	1.80	1.35	1.65	1.95
Brent crude (US dollars per barrel)	45.1	43	54	60	40	55	60
Coal (US dollars per ton)	54.8	60	75	90	50	65	80
Nickel on the London exchange (US dollars per ton)	9,638	9,000	11,000	12,500	9,000	11,500	14,000
Gold[a/] (US dollars per troy ounce)	1,249	1,550	1,250	1,100	1,500	1,250	1,100

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

B. BALANCE OF PAYMENTS

1. Outcome for 2016

During 2016, the current account in the country's balance of payments registered a deficit of USD 12,541 m, which is USD 6,239 m less than a year ago. As a proportion of GDP, it was 4.4%, which implies a reduction of 2.0 percentage points (pp) compared to the 6.4% deficit witnessed in 2015.

This is explained by the decline in the trade deficit for goods and services, the reduction in net outflows for factor income, and the increase in income from current transfers. Current expenditure contracted (-13.6%) more than income (-7.1%), which is consistent with the economy's adjustment to the new direction in which national revenue is headed. It is important to point out that the developments in the current deficit observed in December 2016 were in line with the trend that was anticipated and explained in the previous edition of this report, which estimated a current account deficit of around USD 12,624 m.

The reduction in the current account deficit during 2016 was due mainly to the decline in the commercial deficit for goods (USD 3,709 m). This, in turn, was largely the result of the significant contraction in imports (-USD 8,824 m, -17%), which more than offset the reduction in exports (-USD 5,115 m, -13.4%). The decline in external purchases was consistent with the slowdown in economic activity and domestic demand, as well as depreciation of the exchange rate. The decline in Colombian exports occurred in an environment of lower prices for the

The current account deficit in the balance of payments was USD 6,239 m less in 2016 than in 2015. As a proportion of GDP, it was 4.4%, compared to 6.4% in 2015.

country's main export commodities and contractions in the volumes of oil being produced. In addition, sales of products other than commodities were affected by low economic growth on the part of our main trading partners.

As for the balance of services, there was an annual reduction in net disbursements (- USD 1,516 m) during 2016 as the result of a significant drop in current expenditures, while revenue registered growth. With regard to expenses, the decline in payments for shipping was due to several factors; namely, a drop in imported volume, fewer technical services contracted for the petroleum industry, as well as a reduction in what Colombian travelers spent abroad. The growth in revenue was due mainly to travel, an item that accounts for approximately 60% of the country's service exports.

In addition, on the one hand, 2016 saw an annual drop in factor income (-USD 616 m), largely because of losses and fewer profits posted by firms with foreign investment in the country, especially those operating in the oil and mining sector. On the other hand, the rise in interest payments associated with debt instruments and loans was an important aspect, due primarily to the hike in foreign interest rates.

Another factor that contributed to the reduction in the current imbalance was the growth in current transfers (by USD 398 m), mainly because of the rise in worker remittances (4.8% annually). The most important increases in this respect were in remittances from the United States and from several Latin American countries.

As for external financing, net capital inflows came to USD 12,764 m in 2016, which is less than the year before, when they reached USD 18,293 m. It is important to note that this reduction, in annual terms, is explained more by the increase in assets constituted abroad, than by a significant decline in inflows of foreign capital.

Net direct investment (USD 9,076 m) was up by USD 1,562 m in 2016, owing to more inflows of foreign direct investment (FDI), which were partially offset by added direct investment on the part of Colombians abroad. The growth in the flow of resources of this type was concentrated in the electricity, gas, and water sector, and is due primarily to the sale of Isagén. The financial sector and the transport and communications sectors also contributed to FDI growth, while the other sectors, as a whole, contracted 26.4% annually.

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

In terms of foreign portfolio investment, the country received USD 3,693 m in 2016, which is less than the year before, when it came to USD 10,283 m. The funds received last year originated largely with TES purchases on the local market by foreign investors and, to a lesser extent, with the sale of long-term debt instruments in international markets, mainly securities issued by the Colombian government and entities in the public sector.

As for other capital flows, mainly loans, the country constituted USD 481 m in net assets abroad, primarily in the form of deposits by private entities. This amount contrasts with the net disbursements (USD 2,952 m) received in 2015. During the period being analyzed, international reserves from balance of payments transactions were up by USD 165 m, especially because of the net return on the portfolio.

2. Forecasts for 2017

Using the growth forecasts for the country's main trading partners and the terms of trade outlined in the first part of this chapter, the forecast exercises carried out for this report indicate the current account deficit will continue to adjust during 2017, both in US dollars and in terms of GDP. In the most likely scenario, the current deficit would be around USD 11,052 m, which amounts to 3.6% of GDP (Table 3).

The trade balance for goods in all of 2017 is expected to continue to show a large deficit, but less so than in 2016, since terms of trade are expected to improve. As with the projection outlined last quarter, a significant increase

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

	2013	2014 (pr.)	2015 (pr.)	2016 (pr.)	2017 (proj.)
Current account (A+B+C)	(12,347)	(19,435)	(18,780)	(12,541)	(11,052)
Percentage of GDP	(3,2)	(5,1)	(6,4)	(4,4)	(3,6)
A. Goods and services	(2,856)	(11,543)	(18,506)	(13,281)	(10,086)
B. Primary income (factor income)	(14,220)	(12,367)	(5,526)	(4,910)	(6,935)
C. Secondary income (current transfers)	4,729	4,475	5,251	5,650	5,968
Financial account (A+B+C+D+E)	(11,854)	(19,412)	(18,293)	(12,764)	(11,052)
Percentage of GDP	(3,1)	(5,1)	(6,3)	(4,5)	(3,6)
A. Direct investment (ii-i)	(8,557)	(12,264)	(7,514)	(9,076)	(7,138)
i. Foreign investment in Colombia (FDI)	16,209	16,163	11,732	13,593	11,154
ii. Colombian investment abroad	7,652	3,899	4,218	4,516	4,015
B. Portfolio investment	(7,438)	(11,565)	(10,283)	(3,693)	(3,380)
C. Other investment (loans and other types of credit)	(2,808)	(547)	(2,952)	481	(1,094)
D. Derivatives	2	527	2,041	(640)	0
Reserve assets	6,946	4,437	415	165	560
Errors and omissions (E & O)	493	23	487	(223)	0

(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*

The external imbalance will continue to be corrected during 2017, a year when the deficit would be close to 3.6% as a proportion of GDP. This is due in large part to the reduced trade deficit for goods.

in major mining and agricultural exports is anticipated, driven more by the expected increase in their prices than by respective export volumes. In addition, the forecast for growth in other exports was reduced, given the low growth rates posted by some of our trading partners, as well as the extent to which the exchange rate has appreciated during the year to date.

As for imports of goods, annual growth in all of 2017 is estimated at 3.3%. This would be fueled by the expected momentum in investment and, to a lesser extent, by consumption, according to the sources of growth in domestic demand forecast for this year. Compared to the projection in the previous edition of this report, the import growth scenario was revised upwards, chiefly due to the performance demonstrated in the early months of the year, as will be mentioned later.

In terms of factor income, added net outflows are expected in 2017, due to the increase in the profits of foreign companies operating in the mining sector. This is in line with higher export prices and larger interest payments on the external debt.

The deficit in non-factor services in 2017 is expected to be larger than in 2016, as a result of higher freight costs, given the growth in imported volume and the price of oil. In addition, this item includes increases in imports of services linked to the oil sector and, to a lesser extent, insurance payments, given the effect of the so-called fourth generation concession projects. This would be offset partly by an increase in exports, favored by investment that has remained important in sectors such as tourism, and by the exchange rate. Also, the number of foreign travelers in the country is expected to continue to increase.

Finally, net transfers are expected to increase, due mainly to higher growth forecast for the United States and Europe (see section A in this chapter).

In terms of external financing, the expectation for 2017 is that resources from direct investment would be less than those on record for 2016, but will continue to be the main source of financing, followed by portfolio investment and other foreign loans and credits. An annual drop of 17.9% in FDI flows is anticipated. This would be due to the high base of comparison in 2016, owing to the sale of Isagén. Discounting this effect, FDI would grow by 8.4%, fueled largely by more investment in the mining and energy sector.

The country is expected to continue to receive large amounts of foreign capital in 2017, both direct and portfolio investment, as well as loans and other external credit.

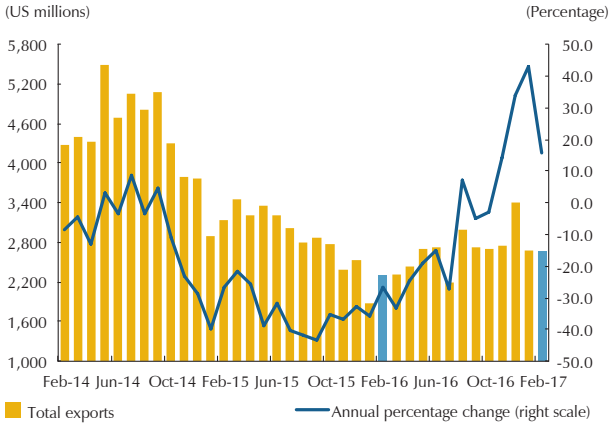
Added to this would be the capital inflows related to net purchases of TES and stocks in the local market by foreign investors, as well as the sale of bonds floated on international markets by the Colombian government and other public entities. Capital inflows related to loans and other types of external borrowing are also anticipated, mostly from multilateral agencies.

As in the previous edition of this report, different balance-of-payments forecast scenarios associated with the terms and the availability of external financing for the local economy were taken into account, along with the projections on commodity prices and economic growth by Colombia's trading partners, as discussed 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. This being the case, a deficit range between -3.0% and -4.1% of GDP is estimated for all of 2017.

With regard to the current account deficit during the first quarter of 2017, the data at hand suggest a reduction compared to the same period in 2016. The trade deficit for goods is expected to be less, since exports in dollars are forecast to increase significantly compared to imports. This is because most reference prices for export commodities have recovered, as mentioned in the first part of this chapter.

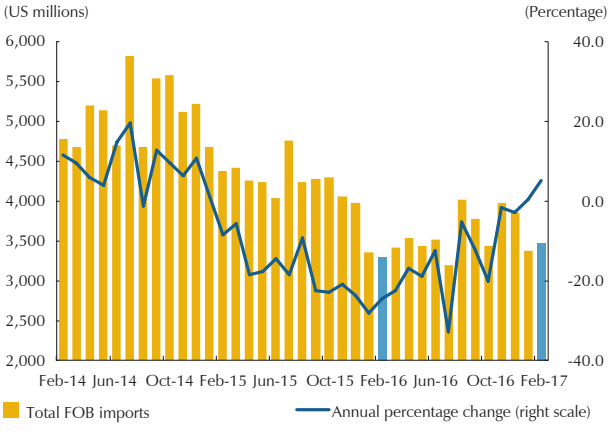
The figures on foreign trade in goods by February confirm this projection. Total exports in US dollars during the January-February period were up by US $ 1,161 m (27.9%) over the previous year (Graph 16), particularly due to higher export value in the case of crude oil and its by-products, coal, gold and coffee. FOB imports (free on board)[1] rose by USD 184 m (2.8% year-on-year), owing largely, to increased acquisition of input for industry and consumer durables (Graph 17) (see the shading section on page 26).

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*

1 Unlike the balance-of-payments measurement, which takes into account FOB imports (free on board) , GDP calculated according to the national accounts considers CIF imports (cost, insurance and freight), which include the value of shipping and insurance. The average total value of the latter, in dollars, came to US $ 7,177 million in January-February 2017. This amounts to an annual increase of 2.8%.

EXPORTS AND IMPORTS IN DOLLARS DURING THE FOURTH QUARTER OF 2016, ACCUMULATED IN 2016 AND DURING 2017 TO DATE

The Fourth Quarter of 2016

Total exports in US dollars rose 14.4% during the fourth quarter of 2016 compared to the same period the year before. This was due to added exports of mining and agricultural goods, fueled by the recovery in International prices. In the case of mining products, the 40.1% annual increase in coal exports is a high point, while coffee posted the largest annual increase (44.7%) in the case of agricultural products (Table A).

Non-traditional exports of goods (mostly industrial) fell by 0.8% year on year. The most affected in terms of destination were those to Venezuela and the European Union, which were down by 61.5% and 14.6%, respectively. In turn, sales of these goods to the United States declined by 1.3%, while those to Mexico rose by 24.6% annually (a destination that has gained importance) (Graph A).

FOB imports in US dollars posted an annual 8.4% decline in the fourth quarter due to fewer external purchases of capital goods (-20.9%) and intermediate goods (-5.8%) (Graph B).

Accumulated Exports and imports in 2016

As for all of 2016, exports in dollars ended the year with an annual reduction of 12.9%, given the plunge in external sales of mining products (-18.1%) and non-traditional goods (-8.7%). On the other hand, agricultural exports posted an annual variation of 0.4%. The decline overall can be attributed mainly to the effect of an average price reduction during the year, which was concentrated in mining products.

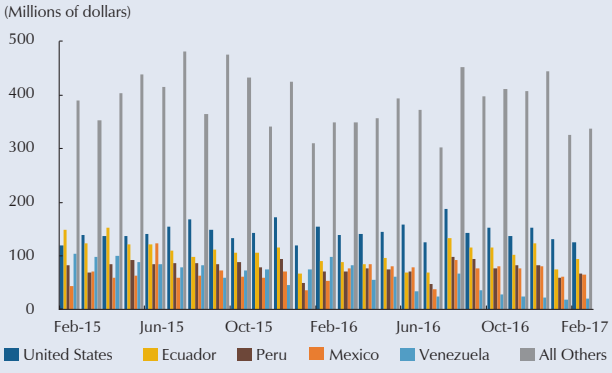
FOB imports in US dollars registered an annual decline of 17.0% during this period, responding to fewer

Table A
FOB Exports and Imports in Dollars during the Fourth Quarter of 2016
(Percentage)

Group	Annual change (Percentage)	Important contributions to the annual change	
		Item	Annual change in the item
Total exports	**14.4**		
Mining products	20.5	Coal	40.1
		Gold[b/]	135.0
All other exports[a/] (Non-traditional)	(0.8)	Chemical products	(4.1)
		Machinery and electrical devices	(20.5)
		To Venezuela	(61.5)
		To the European Union	(14.6)
		To Peru	(8.1)
Agricultural goods	29.2	Coffee	44.7
		Bananas	
		Flowers	6.0
Total imports	**(8.4)**		
Capital goods	(20.9)	Capital goods for industry	(18.6)
		Transport equipment	(27.2)
Intermediate goods	(5.8)	Fuel and lubricants	(21.2)
		Raw materials for industry	(1.1)
Consumer goods	6.8	Durable goods	6.8
		Non-durable goods	6.8

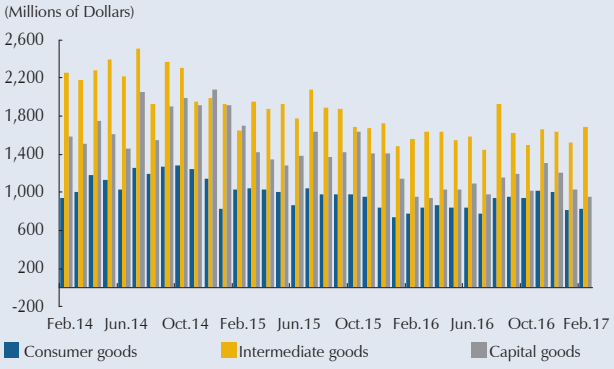
a/ This group does not include petroleum or derivatives thereof, coal, nickel, gold, coffee, bananas or flowers. It does include other mining and agricultural goods. The majority are manufacturing exports.
b/ Pursuant to DIAN Resolution 58 of July 28, 2016, non-monetary gold exports from duty-free zones were formalized as of August 26, 2016 and must be declared. Accordingly, reports of significant positive changes in this line are expected up until July 2017.
Source: DANE; Calculations by *Banco de la República*

Graph A
Non-traditional FOB Exports by Destination: United States, Ecuador, Peru, Mexico, Venezuela and All Others[a/]
(Monthly)



a/ Does not include petroleum or derivatives thereof, coal, nickel, gold, coffee, bananas or flowers. It does include other mining and agricultural goods. The majority are manufacturing exports.
Source: DANE; Calculations by *Banco de la República*

Graph B
Imports by Type of Goods (FOB)
(Millions of Dollars)



Source: DANE; *Banco de la República´s* calculations

external purchases with respect to all groups of goods, but especially capital goods (-27.4%). As mentioned in other sections of the chapter, this is a reflection of weakening domestic demand and economic activity in the country as a whole. It is also a response to exchange rate depreciation and reductions in the prices of these goods (Table B).

Exports during the first two months of 2017 continued to perform as they did in the last quarter of 2016, having risen 27.9% year-on-year. This surge was driven mainly by rising prices for mining and agricultural goods, which bolstered the growth of these exports to 57.6% and 14.4%, respectively (Table C).

Non-traditional exports (mostly manufactured goods) fell 6.4% year on year during the two months in question (Graph C), influenced by the sharp drop in external sales of these products to Venezuela (-78, 2%), the United States (-5.9%) and the European Union (-9.3%). Non-traditional exports to Mexico and the rest of Aladi[1] rose at respective annual rates of 42.4% and 23.8%.

The annual variation in FOB imports recovered slightly, thanks to 2.8% growth associated with increases in the import value of consumer goods (8.6%) and intermediate goods (5.1 %). However, imports of capital goods posted an annual declined of 4.8%.

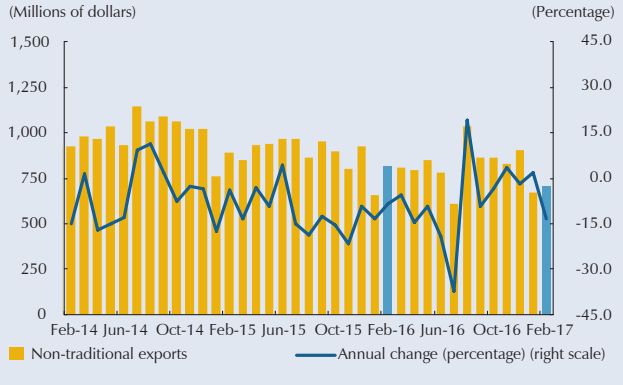
1 The Latin American Integration Association (Aladi) without Venezuela, Ecuador, Peru, and Mexico.

Table B
FOB Exports and Imports in Dollars during 2016
(Percentage)

Group	Annual change (Percentage)	Important contributions to the annual change	
		Item	Percentage annual change in the item
Total Exports	**(12.9)**		
Mining products	(18.1)	Crude oil	(37.0)
		Nickel	(23.7)
All other exports[a/] (Non-traditional)	(8.7)	Chemical products	(11.5)
		Food, beverages, and tobacco (excluding coffee)	(5.6)
		To Venezuela	(36.4)
		To Ecuador	(18.7)
		To the rest of ALADI[b/]	(12.1)
Agricultural products	0.4	Bananas	14.0
		Coffee	1.3
		Flowers	(4.3)
Total imports	**(17.0)**		
Capital goods	(27.4)	Capital goods for industry	(22.8)
		Rolling equipment for transportation	(38.5)
Intermediate goods	(12.7)	Raw materials for industry	(8.9)
		Fuel and lubricants	(25.8)
Consumer goods	(9.0)	Durable goods	
		Non-durable goods	(3.5)

a/ Does not include petroleum or derivatives thereof, coal, nickel, gold, coffee, bananas or flowers. It includes other mining and agricultural products. Most are manufacturing exports
b/ ALADI without Venezuela, Ecuador, Peru and México
Source: DANE; Calculations by *Banco de la República*

Graph C
FOB Industrial Exportsa/
(Monthly)



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

Table C
FOB Exports and Imports in Dollars during the First Quarter of 2017 to Date
(Percentage)

Group	January-February		
	Annual change (Percentage)	Important contributions to the annual change	
		Item	Percentage annual change in the item
Total exports	**27.9**		
Mining products	57.6	Crude oil	58.1
		Coal (lignite and peat)	62.5
All other exports[a/] (Non-traditional)	(6.4)	Food, beverages, and tobacco, excluding coffee	(19.8)
		Textile products	(21.9)
		To Venezuela	(78.2)
		To the United States	(5.9)
		To the European Union	(9.3)
Agricultural goods	14.4	Coffee	29.8
		Bananas	8.1
		Flowers	(5.1)
Total imports	**2.8**		
Capital goods	(4.8)	Transport equipment	(13.5)
		Capital goods for industry	(2.2)
Intermediate goods	5.1	Raw materials for industry	5.5
		Raw materials for agriculture	16.7
Consumer goods	8.6	Durables	15.1
		Non-durables	3.3

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

On the other hand, the deficit in non-factor services during the first quarter is expected to be similar to what it was in the same period last year, and new outlays for factor income are forecast to increase. The latter is due largely to the impact on profits associated with the recovery in oil and coal prices. By the same token, interest payments on loans and debt instruments are expected to continue to be an important source of pressure on the current deficit, as was the case in 2016.

As for capital flows, FDI resources are expected to decline during the first quarter of 2017 compared to the same period a year ago. However, the figures at hand on capital flows from the foreign exchange balance show a considerable annual increase in foreign investment resources from the pri-

vate sector portfolio[2] during the first three months of the year. Added to this are the resources from external loans contracted with multilateral banks, especially those obtained by the government and other entities in the public sector, and, to a lesser extent, from bonds floated by companies in the private sector.

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

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

The Colombian economy expanded by 1.6% in the fourth quarter, which implies 2.0% growth during the year as a whole. This occurred in a context where domestic demand slowed significantly, mainly because of the cutbacks observed in private investment.

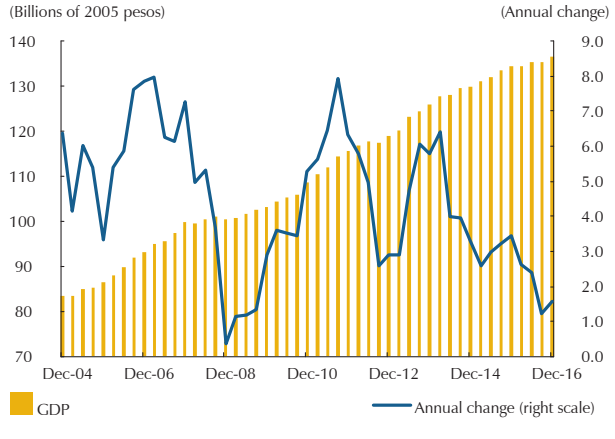
As for the different sectors, the momentum in financial services and construction was a highlight. In contrast, mining activity and transport experienced setbacks.

The information at hand for the first quarter of 2017 suggests there would have been an additional slowdown in economic activity. Accordingly, the pace of growth in the first three months of the year would be lower than what it was at the end of 2016.

A. GDP PERFORMANCE DURING THE FOURTH QUARTER OF 2016 AND ALL OF 2016

According to the latest published figures on gross domestic product (GDP) compiled by the National Bureau of Statistics (DANE), the Colombian economy grew by 1.6% during the final quarter of 2016 (Graph 18). This rate was near the midpoint of the forecast range outlined in the previous edition of this report (between 1.0% and 2.0%, with 1.5% being the most likely figure). Growth during the entire year was 2.0% compared to 2015. This is 20 bp more than was anticipated by the technical staff a quarter ago (between 1.6% and 2.0%, with 1.8% as the central figure). It should be noted that GDP growth figures for the first half of 2016 were revised upwards (from 2.2% to 2.5%).

Graph 18
Gross domestic product
(Seasonally adjusted)



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

GDP growth in the fourth quarter was somewhat higher than the figure on record for the third quarter (1.2%). This acceleration was due largely to

the fact that the supply shocks witnessed in the third quarter (particularly unemployment in the transport sector) were dispelled. In addition, the XV Bogota International Auto Show, which was held in November 2016, boosted consumer durables. This was reflected in the rate of growth between quarters, which was 1.0% (annualized, it comes to 4.0%).

The annual increase in domestic demand during the fourth quarter of 2016 was mediocre (Table 4), mainly because of the decline observed in gross capital formation. Total consumption grew more than during the third quarter, but was still below the average for the first half of the year and the average calculated since 2001 (4.0%). On the other hand, the balance of the foreign trade accounts contributed to GDP growth, once again, although both exports and imports declined.

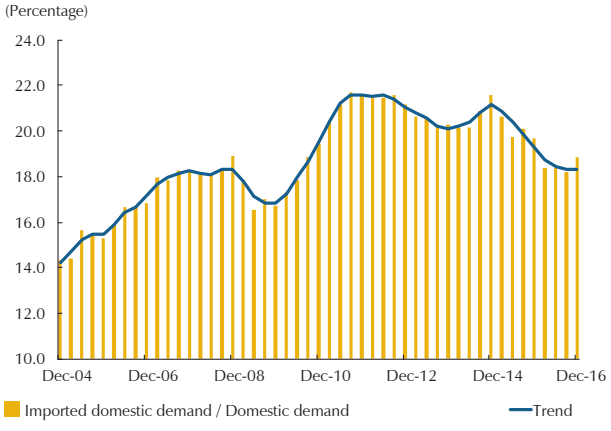
Generally speaking, the process of an orderly adjustment in the Colombian economy, as a result of the decline in terms of trade since mid-2014, was more evident during the past year. Added to this were the supply shocks (*El Niño* weather and the trucker strike, among others) that affected the performance of different productive sectors throughout the year, adding to the slowdown in GDP growth. In 2016, the response of the Colombian

Table 4
Real Annual GDP Growth, by Type of Expenditure

	2015	2016				2016
	Full year	I Qtr.	II Qtr.	III Qtr.	IV Qtr.	Full year
Total consumption	**3.6**	**3.1**	**2.3**	**1.1**	**1.6**	**2.0**
Household consumption	3.5	2.9	2.0	1.2	1.9	2.0
Non-durable goods	3.7	3.4	2.4	1.3	1.0	2.1
Semi-durable goods	2.0	0.6	0.9	(1.2)	(0.2)	0.0
Durable goods	5.1	(4.8)	(5.6)	(3.5)	11.0	(0.8)
Services	3.5	3.6	3.0	2.1	2.1	2.7
Total government consumption	5.0	3.9	3.1	0.2	0.2	1.8
Gross capital formation	**1.2**	**(3.5)**	**(5.0)**	**(6.2)**	**(3.3)**	**(4.5)**
Gross fixed capital formation	1.8	(3.7)	(4.3)	(3.5)	(2.9)	(3.6)
Agriculture, forestry, hunting and fishing	(0.7)	6.1	7.4	4.2	(0.7)	4.2
Machinery and equipment	(4.1)	(15.1)	(12.3)	(18.7)	(14.0)	(15.1)
Transport equipment	0.1	(20.6)	(7.6)	(14.5)	(4.5)	(11.9)
Construction and buildings	2.6	11.3	1.0	10.3	0.6	5.6
Civil works	5.3	(0.4)	0.3	4.0	5.7	2.4
Services	2.8	3.8	(2.1)	4.6	1.2	1.8
Domestic demand	**3.0**	**1.5**	**0.4**	**(1.0)**	**0.3**	**0.3**
Total exports	**1.2**	**0.5**	**1.9**	**(2.8)**	**(3.2)**	**(0.9)**
Total imports	**1.4**	**(5.7)**	**(3.5)**	**(11.1)**	**(4.2)**	**(6.2)**
GDP	**3.1**	**2.6**	**2.4**	**1.2**	**1.6**	**2.0**

Source: DANE; *Banco de la República´s* calculations

Graph 19
Imported Domestic Demand[a/] as a Share of Total Domestic Demand
(Based on Seasonally Adjusted Series)



a/ Imported domestic demand is the sum of consumer semi-durables and durables, gross capital formation in the agricultural sector, machinery and equipment, and transport equipment.
Source: DANE; Calculations by *Banco de la República*

economy to the change in relative prices would have come via a process of redirecting domestic demand in favor of local goods and services, to the detriment of imported goods (Graph 19).

It is important to note that the real effects of the terms-of-trade shock to the Colombian economy could have been even more profound had it not been for the macroeconomic environment. In principle, the flexible exchange-rate regime continued to operate as an automatic stabilizer against external shocks.

When GDP performance in all of 2016 is analyzed separately for each item, one sees a drop in investment (which has accumulated six consecutive quarters with negative growth rates). The contraction in gross capital formation was concentrated primarily in expenditure on the purchase of machinery and equipment for industry and transportation equipment. This was largely due to the fact that low international prices for oil and coal throughout the year, which made mining exploration and development activities less profitable, discouraged the purchase of capital goods by firms in the mining sector. Moreover, cumulative depreciation of the exchange rate weakened the demand for imported capital goods. In addition, the transmission of monetary policy rate hikes to market rates during the period between September 2015 and mid-2016 meant tighter liquidity conditions in the local credit market, despite the onset of a new bearish cycle of rates towards the end of 2016.

Investments in building construction and civil works contributed positively to GDP growth in 2016, especially the former. In principle, the boost from building construction originated with the government's programs to construct low-income housing, as well as the subsidized mortgage rates offered to low- and middle-income home buyers. The contribution from civil works was less, partly because 2016 was the first year of regional and local government administrations, a period when budget spending is usually slower. However, some payments were recorded in different tertiary and road projects that are part of the so-called fourth generation (4G) highway program, allowing for growth in this investment item with respect to the figure for 2015.

Consumption throughout 2016 was less dynamic as well. Growth in both household and government consumption was lower in the second half of the year than in the first six months. In the case of private consumption, the only line to post better performance towards the end of last year was durable consumption, thanks to the XV Bogota International Auto Show in November

In the fourth quarter, households would have begun to consume durables and semi-durables in advance, given the expectation of future hikes in the VAT.

2016. This is a biennial event that represents a significant increase in sales of motor vehicles and motorcycles. Moreover, according to an analysis of retail sales by type of product, households would have begun to consume durables and semi-durables in advance during that quarter, in anticipation of higher prices for these goods due to the value-added-tax (VAT) hike that was approved as part of the tax reform bill. The new VAT was fully effective as of February 2017. The other consumption lines exhibited low annual growth in the fourth quarter, consolidating the slowdown in this aggregate during the second half of the year compared to the first six months and all of 2015.

On the other hand, the fact that the momentum in government consumption was less than during the first half of the year was due to the central government's continued efforts to adjust spending in response to the drop in oil revenue, and to less budget spending on the part of regional and local administrations, which is normal during the first year of their term in office.

Finally, as was virtually the case in the fourth quarter, a partial correction in the trade deficit in constant pesos was observed for 2016 as a whole. Imports fell sharply, particularly those of capital goods for industry, transport equipment, and durable goods from the rest of the world, reflecting an adjustment in the country's intensive domestic demand for imported goods. Exports also registered a setback, although less so. This was a result of poor figures, mainly for crude oil production and exports. Although coal and coffee prices rebounded towards the end of the year, they also contributed negatively to real export performance during all of 2016. Manufactured goods did not perform well either, partly because of the poor momentum in external demand observed throughout 2016.

On the supply side, the sectors posting the highest annual growth during the fourth quarter of 2016 were financial services (5.0%) and construction (3.5%) (Table 5). In contrast, activities related to mining (-8.2%), the supply of electricity, gas and water (-0.5%) and transport (-0.1%) contracted.

For the entire year, given its share of GDP (19.6%), the financial and corporate services sector continued to be among those that contributed the most to economic growth, as has been the case for several years. One of the highlights within this branch was the momentum in financial brokerage services (11.1%) and in real estate and home rental services (3.2%).

Financial services and construction continued to make an important contribution to growth during the fourth quarter of the year.

Another driving force of economic growth in all of 2016 was the increase in the construction sector (4.1%), thanks to good performance in terms of building construction (6.0%) and civil works (2.1 %). The expansion in building construction was due mainly to non-residential buildings, which increased at double-digit rates during the first and third quarters of the year. As for civil works, it is important to note that the momentum in the sector

Table 5
Real Annual GDP Growth, by Branch of Economic Activity

	2015	2016				2016
	Full Year	I Qtr.	II Qtr.	III Qtr.	IV Qtr.	Full Year
Agriculture, forestry, hunting, and fishing	3.3	0.0	0.4	(0.5)	2.0	0.5
Mining and quarrying	0.6	(4.7)	(6.9)	(6.5)	(8.2)	(6.5)
Manufacturing industry	1.2	4.3	5.1	1.5	1.0	3.0
Electricity, gas and water	2.9	2.9	(0.7)	(1.3)	(0.5)	0.1
Construction	3.9	5.3	0.8	6.8	3.5	4.1
Buildings	2.1	10.9	2.8	11.0	0.9	6.0
Civil works	5.4	0.4	(0.4)	1.9	5.1	2.4
Commerce, repairs, restaurants, and hotels	4.1	2.8	1.9	0.8	1.6	1.8
Transport, storage, and communication	1.4	0.9	0.2	(1.5)	(0.1)	(0.1)
Financial, real estate and corporate services	4.3	5.0	5.4	4.4	5.0	5.0
Social, community and personal services	2.9	3.5	3.2	1.3	0.9	2.2
Subtotal –value added	**3.0**	**2.7**	**2.2**	**1.3**	**1.5**	**1.9**
Taxes minus subsidies	4.0	1.3	4.1	0.4	2.8	2.2
GDP	**3.1**	**2.6**	**2.4**	**1.2**	**1.6**	**2.0**

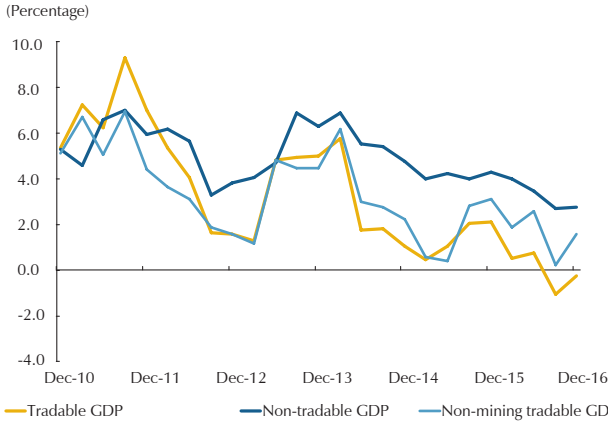
Sources: DANE; Calculations by *Banco de la República*

was propelled by road construction and other engineering works. Payments made by local governments explain much of this subsector's contribution to Colombia's economic growth, especially in the second half of the year. There also was a sharp decline in civil works for mining, as a result of the oil-price shock. This, in turn, offset the momentum in the sector.

Industry posted 3.0% growth by the end of the year, which is higher than the average for the last five years (1.3%). This good performance was explained largely by the effect opening of the Cartagena Refinery (Reficar) had on growth in the sector, since the annual increase in this item was 23.2% in 2016. For the rest of industry, the slowdown experienced by some of our trading partners, particularly in countries where there is a demand for our industrial exports, coupled with weaker domestic demand during the second half of 2016, occasioned only a limited increase. Accordingly, industrial production, excluding oil refining, rose by 0.6%.

The mining and transportation sectors faced several negative supply shocks during the year. In mining, problems with law and order that impacted oil infrastructure had an impact on the sector's performance. The output of crude oil fell by 11.1% during the year, and the effect of this contraction dominated the decline in the sector overall, since the figures on coal production (5.7%), metallic minerals (4.3%) and non-metallic minerals (1.6%)

Graph 20
GDP in the Tradable, Non-mining Tradable and Non-tradable Sectors
(Annual change)



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

were positive. Transport, for its part, declined 0.1% throughout 2016, due to the supply shock associated with the trucker strike during the second and third quarters of 2016.

Both tradable and non-tradable GDP slowed in this environment (Chart 20). The former went from 1.4% growth in 2015 to 0.0% in 2016, while the latter went from 4.1% to 3.2% between 2015 and last year, respectively. In particular, tradable GDP experienced a slight decline of 0.3% during the fourth quarter. However, when mining is excluded, GDP in all the other tradable sectors grew at an annual rate of 1.6% during the last three months of the year. Finally, in the fourth quarter of 2016, non-tradable GDP maintained its growth rate at 2.7%, which is similar to the quarter before.

B. GDP IN THE FIRST QUARTER OF 2017

According to latest data on real activity, the Colombian economy would have experienced low growth between January and March 2017, somewhat below what was observed in the fourth quarter of 2016 (1.6%) and less than the rate that was forecast by the technical staff at *Banco de la República* and implicit in the medium-term growth forecasts presented in previous editions of this report.

Economic growth during this period was influenced by calendar effects, which would have had mixed repercussions on performance in different branches of the economy. In particular, the impact of one less business day in February 2017, compared to the same month in 2016 (leap year), coupled with the presence of Easter in April (not in March, as was the case a year ago), was evident in the results for the short-term indicators, as illustrated below. In addition, the entry into force of the tax reform would be having a real impact on the performance of different items that make up GDP. Likewise, there were supply shocks that would have restricted growth in certain sectors of the economy, particularly the energy-mining sector.

However, despite slow economic growth at the beginning of the year, several of its determining factors have performed well. Terms of trade are a case in point, having increased with respect to what was observed during the same period in 2016. The foregoing, coupled with an improvement in Colombia's country risk perception on international markets, has caused appreciation in the peso-dollar exchange rate compared to the levels witnessed at the end of last year. This would have meant less pressure on the momentum in national revenue, and an

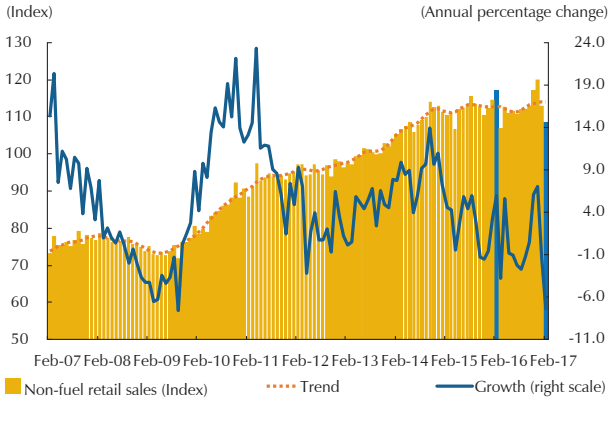
Consumer confidence was at historically low levels, partly because of the tax reform, which is now in force.

upturn in relative prices in favor of imported goods. Domestically speaking, inflation and inflation expectations have eased, affording more purchasing power to household income in the short term. Nevertheless, consumer confidence was at historically low levels, partly because the of the tax reform, which is now in force and would have an impact agents' consumption and investment plans in the short- and medium term.

Some important assumptions that are implicit in the growth forecasts presented in this report are related to the recent performance of government consumption and investment in civil works. Acceleration with respect to the fourth quarter of 2016 is anticipated in both cases, mainly as a result of the higher level of budget performance on the part of regional and local administrations, which is typical at the beginning of the second year of legislation. This being the case, domestic demand is expected to recover in the first quarter of the year compared to the figures registered at end of 2016, although it would expand at a much lower rate than the average calculated since 2001 (4.8%).

In addition to good performance on the part of government consumption and civil works, as mentioned above, this improved momentum would have been due to the fact that investment would have ceased to decline, after having remained in negative territory for several quarters. Although most of this performance would be associated with the momentum anticipated for investment in civil works, all other investment, with the exception of that in transport equipment, would have continued to perform poorly, although better than aggregate investment in 2016. Total consumption would have increased at a somewhat higher rate than at the end of last year, owing to a minor slowdown in the private component and the improvement in government consumption already mentioned. Net exports would have contributed negatively to GDP as a result of a contraction in exports in constant pesos (particularly exports of traditional goods) and an increase in real imports. It is important to point out that the improvement in domestic demand would be attributed mainly to the boost from the public sector, and not to household consumption.

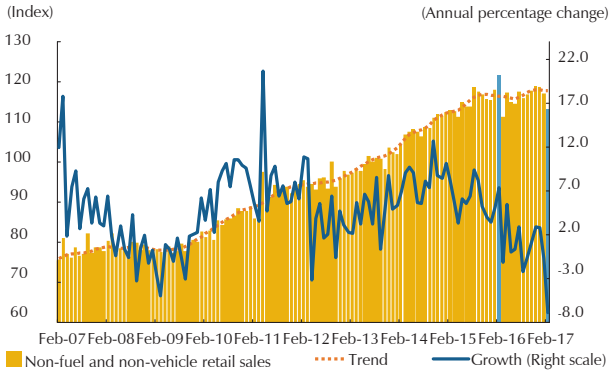
Graph 21
Monthly Retail Trade Survey (Total Non-fuel Retail Sales, Seasonally Adjusted)



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

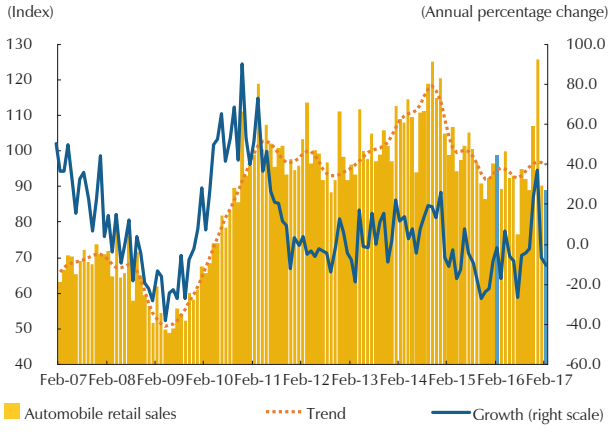
The short-term indicators confirm this forecast. The Monthly Retail Trade Survey (EMCM), with data for February, showed a 7.3% drop in retail sales compared to the same month in 2016 (Graph 21). The aggregate for the first two months of the year fell by -4.4%, which meant a slowdown with respect to the end of 2016 (4.9% year on year). Sales other than those of vehicles and fuel posted an annual decline of 6.9% (Graph 22). The aggregate for the two months was down by 3.7% as opposed to 2.3% growth in the fourth quarter of last year. These results were worse

Graph 22
Monthly Retail Trade Survey (Total non-fuel and non-vehicle retail sales, seasonally adjusted)



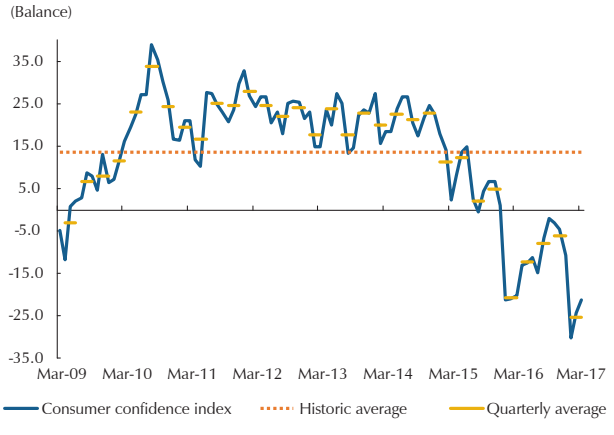
Source: DANE; Calculations by *Banco de la República*

Graph 23
Monthly Retail Trade Survey
(Automobile retail sales, seasonally adjusted)



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

Graph 24
Consumer Confidence Index and Quarterly Average



Source: Fedesarrollo.

than those forecast by the technical staff in earlier editions of this report.

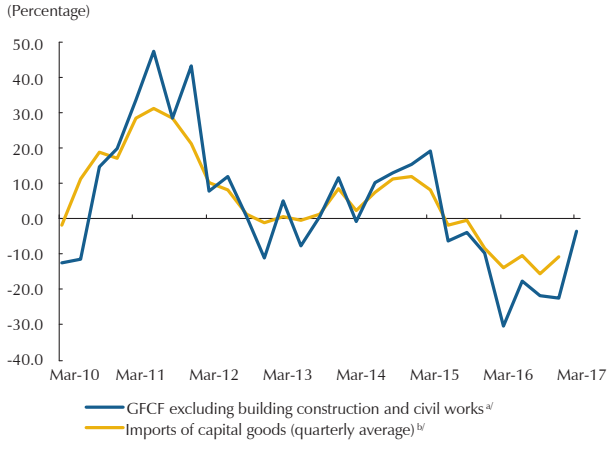
Vehicle sales were down by 10.4% compared to the same month in 2016 (Graph 23). The two-month aggregate fell by 8.5%, which meant a much lower growth rate than in the fourth quarter of last year, when it was 20.6% year on year in the context of the automotive event mentioned earlier. It is important to point out that part of the poor performance in retail sales can be attributed to the real short-term effect the VAT rate hike had on household consumption. Moreover, household spending in advance, as explained in the previous section, would have ceased during February.

Other indicators of private consumption suggest this item performed poorly during the first quarter of 2017. For example, the Consumer Confidence Index (CCI) was up slightly in March with respect to January and February, but remained at levels well below the average calculated since November 2001 (Graph 24). The low CCI levels are due to its expectation component and to current household economic conditions. Something similar was evident in the case of the February sales balance, according to *Banco de la República*'s Monthly Economic Expectations Survey (EMEE, by its acronym in Spanish). With the figures for February, the results of this series point to an additional slowdown in this component of GDP during the first three months of the year.

With regard to gross capital formation, imports of capital goods (in constant pesos) suggest the aggregate investment in machinery and equipment and in transportation equipment would have declined during the first quarter of 2017, although at a slower pace than in previous quarters (Graph 25). The results of the February EMEE in terms of the balance of short-term investment expectations are consistent with this projection.

The momentum in investment in construction (both buildings and civil works) is expected to reflect higher levels of spending than those registered towards

Graph 25
Real Imports of Capital Goods and GFCF Excluding Building Construction and Civil Works
(Annual change)



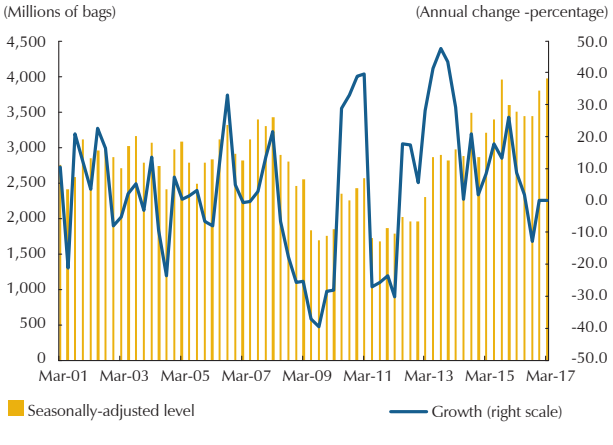
Note: The figure for March 2017 is a projection based on preliminary data obtained from DIAN.
a/ Figures in real terms.
Sources: DANE (national and foreign trade accounts) and DIAN; Calculations by *Banco de la República*

the end of last year. The growth anticipated in civil works, in particular, would be more than the increase forecast for the rest of the items that make up the GDP. A low base of comparison in the same period last year would be a contributing factor in this respect, as would a greater degree of budget performance by regional and local administrations, which is typical of the second year of legislation. The annual increase in building construction is expected to be negative, due to a high base of comparison in the first quarter of 2016.

As for foreign trade, the figures released by DANE on exports in US dollars during February and the bulletins published by the National Tax and Customs Office (DIAN) that include data for March point to a real reduction in this item of GDP. This would be consistent with the poor performance reported essentially with respect to export quantities of mining products and manufactured goods. In contrast, although the growth in imports is expected to be moderate, it would be more than the figure posted for the second half of 2016 (-7.7%). This would be consistent with the projections outlined earlier in terms of the intensive domestic demand for foreign goods.

With respect to the different branches of economic activity, the indicators at hand suggest performance in the first quarter of 2017 would be mixed. This hints at a slowdown in growth compared to the fourth quarter of 2016. The best news comes from the agricultural sector. In contrast, mining, commerce and industry are behaving poorly, and the figures related to construction show mixed performance.

Graph 26
Coffee Production
(Quarterly and annual growth)



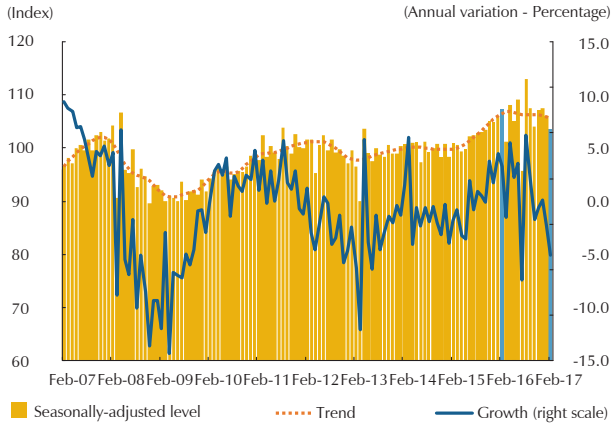
Sources: *Federación Nacional de Cafeteros;* Calculations by *Banco de la República*

According to the National Federation of Coffee Growers, coffee production was up by rose 12.8% during the first three months of 2017. This sector continued to demonstrate important momentum, above what was forecast three months ago and beyond growth of the economy as a whole (Graph 26). On the other hand, livestock slaughter continues to decline. It was down by 12.8% in February, which is similar to the reduction witnessed in the fourth quarter of 2016 (-13%).

The manufacturing industry in the first quarter, which performed favorably at the end of 2016, would face the delayed consequences of less mo-

mentum in domestic demand and slower growth on the part of our trading partners who demand the industrial goods we export. Moreover, the presence of calendar effects would make it difficult to analyze the trend, due to the impact the number of business days has on production. It is important to note that 2016 was a leap year (with an extra day in February), which subtracts from production this year. Also, Easter was in March, as opposed to April in 2017, which is why growth would be observed in the first quarter.

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



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

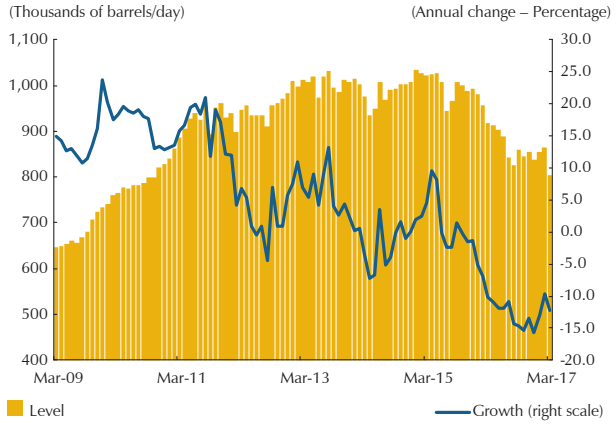
The DANE Monthly Manufacturing Survey (EMM) indicates the total for the manufacturing sector declined by 3.2% in February. If oil refining is excluded, the contraction in the rest of manufacturing was 5.7%. However, when the leap year phenomenon[3] is corrected through the use of statistical methods, total and non-refining production would have been less unfavorable: -1.8% and -4.0%, respectively. During the course of the year to date, industry overall has contracted 1.8%; without oil refining, the decline comes to 3.3%. The trend component of both series shows weaknesses in the sector, since the opening of Reficar is having less and less impact on growth in the sector (Graph 27).

On the other hand, despite the adverse results shown in the DANE figures, the Fedesarrollo Business Opinion Survey for the industrial sector, with information for March, revealed additional improvements in the indicator of orders and the indicator of expectations for production in three months. On the contrary, the inventory indicator deteriorated slightly compared to the quarter before. In all, industrial confidence during the first three months was better compared to the previous quarter. Moreover, according to the Business Opinion Survey conducted by the National Association of Entrepreneurs in Colombia (ANDI), use of installed capacity is at levels near its historical average, and the business climate shows improvements. In the ANDI survey, industrialists reported their main problems are the exchange rate, the costs of raw materials, and less demand.

Therefore, given the recovery forecast for March (mainly due to the number of business days), the technical staff at *Banco de la República* expects the current quarter to end with positive but moderate growth. However, it should be noted that, discounting the calendar effects mentioned earlier, industry would

3 Abril, D. S., Melo, L. F., & Parra, D. (2016). "Impacto de la semana santa sobre los índices de producción sectoriales de la industria colombiana," *Revista de Economía del Rosario*, 19 (1), 59-84.
Melo, L.F. & Parra, D. (2014). "Efectos calendario sobre la producción industrial en Colombia," *Borradores de Economía*, 820, *Banco de la República*, Colombia.

Graph 28
Oil Production
(Monthly and annual growth)



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

have slowed significantly in the first three months of the year.

As for mining, oil production continued to decline at the beginning of the year, although not as sharply as before.

During the first quarter of 2017, 841 thousand barrels of crude were produced daily (tbd), compared to 846 tbd during the previous quarter (Graph 28). The annual decline in this sector during the first three months of the year came to 11.6% (-14.8% a quarter before).

The indicators for the construction sector show mixed performance. Cement production and shipments in March were up by 9.4% and 7.5%, respectively. However, growth for the quarter was 0.3% and 0.4%, in that order. On the other hand, building permits increased by 0.3% in February. This brings the decline so far this year to 5.9%. Nevertheless, it does signal an improvement compared to the final quarter of 2016 (-8.6%). The statistics for concrete show a similar situation.

All of the above points to annual GDP growth in the first quarter of 2017 that would be less than what was observed the final quarter of 2016. The technical staff at *Banco de la República* estimates GDP growth would have been between 0.8% and 1.8 %, with 1.3% being the most likely figure. The breadth of the forecast range is consistent with the uncertainty regarding the performance of government consumption and civil works and the different balance of payments scenarios.

Some job market indicators deteriorated during the first quarter of 2017, while others remained stable. In this period, with seasonally-adjusted figures, the unemployment rates (UR) nationwide and for the thirteen major metropolitan areas continued to show an upward trend, one that was more pronounced for the thirteen major metropolitan areas (Graph A). The latter is explained by a decline in the occupation rate (OR) that has not been offset by the reduction in the overall participation rate (OPR) (Graph B).

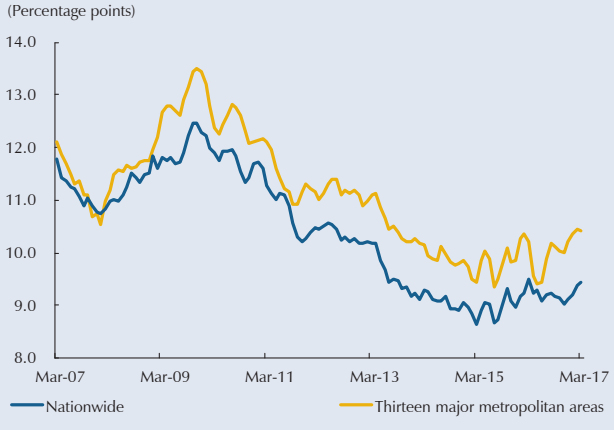
During the moving quarter ended at March, the unemployment rate nationwide and in the municipal seats declined slightly compared to the same period the year before, reaching respective rates of 10.6% and 11.7% in these domains. On the other hand, the UR rose in the thirteen major metropolitan areas, as it did in the rural areas (significantly, in the case of the latter) (Graph C).

The decline in the occupation rate is due to less growth in the number of persons who are employed, especially in the thirteen major metropolitan areas, where this sluggishness has been evident since early 2015. In March, the number of employed persons increased at an annual rate of 0.9% nationwide and by only 0.1% in the thirteen major metropolitan areas (Graph D, panels 1 and 2).

With regard to job quality indicators, there was an annual decline in the number of non-salaried workers during the moving quarter from January to March, while salaried employment grew, although at a slower pace than in previous months. During this period, the annual rate of growth in salaried employment was 0.6%, while non-salaried employment fell by 0.5%. It is important to point out that salaried employment has deteriorated for about five months now, in terms of both its marginal variation and its annual growth (Chart E).

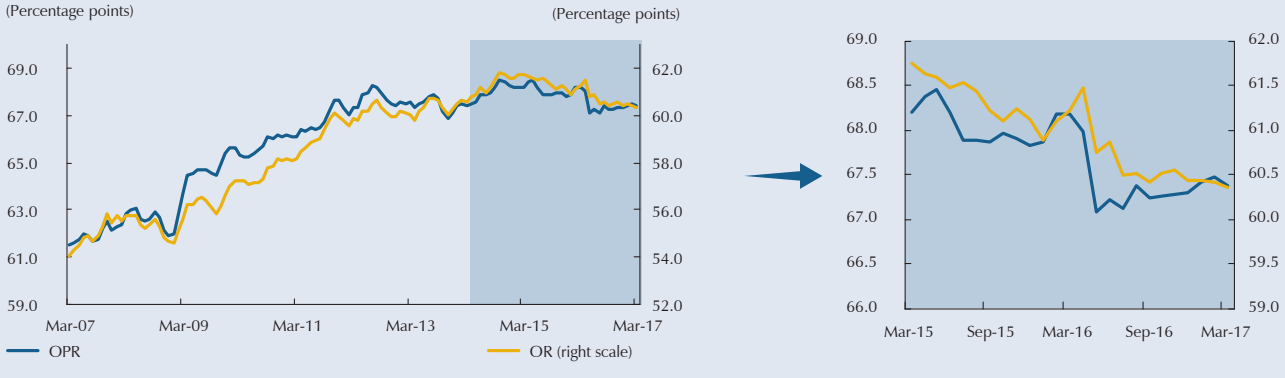
The sluggishness in employment has been consistent with the slowdown observed in economic activity, although the deterioration has been less than expected. If economic activity continues to weaken, the poor momentum in the job market could become more pronounced.

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



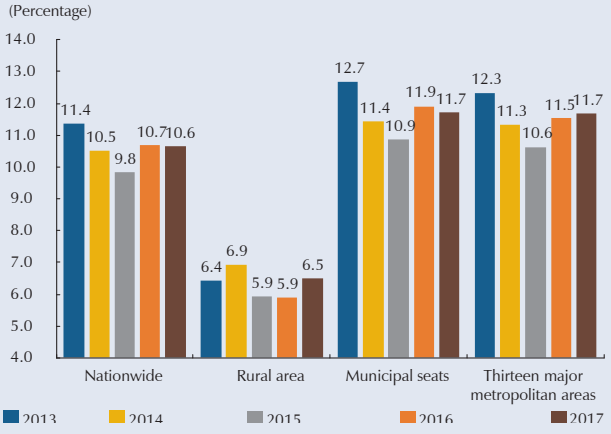
Source: DANE (GEIH).

Graph B
Overall Participation Rate (OPR) and the Occupation Rate (OR)
(Seasonally adjusted, thirteen major metropolitan areas)



Source: DANE (GEIH).

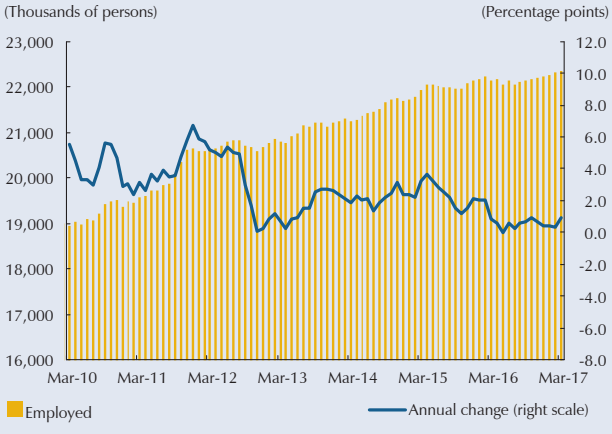
Graph C
Unemployment Rate
(January-February-March moving quarter)



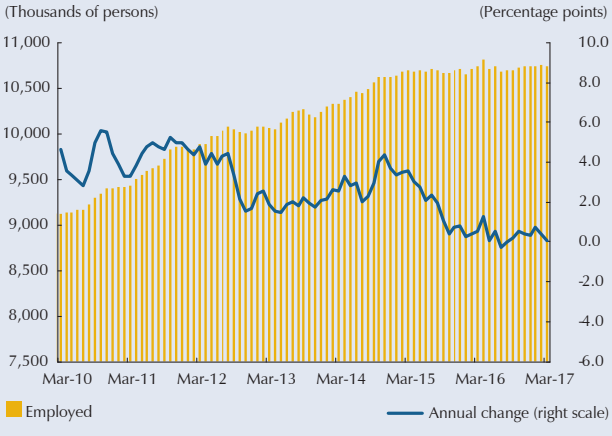
Source: DANE (GEIH).

Graph D
Number of Employed Persons and Annual Change

1. Nationwide Total

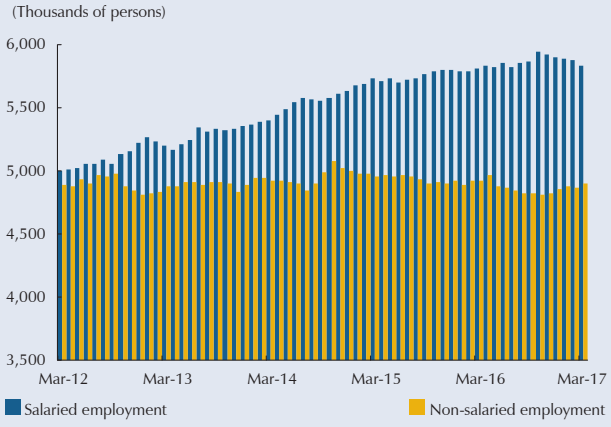


2. Thirteen Major Metropolitan Areas



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*

Box 1
A NEW ESTIMATE OF THE NON-INFLATIONARY RATE OF UNEMPLOYMENT

Juan Sebastián Amador*

The job market is one of the channels through which macroeconomic dynamics influence the welfare of the population. Therefore, it must be considered in any analysis of the effects of monetary policy. Within this dimension, a useful measure is the labor market gap, which is understood as the difference between the observed rate of unemployment and its noninflationary level. This section describes a new neo-Keynesian model that is adapted for the Colombian economy and designed to estimate this gap and its relationship to other variables.

It is important to determine if the job market is "loose" or "tight." In the first case, the demand for labor exceeds the supply. This situation tends to pressure wage hikes and these, in turn, add to inflation. In the second case, the demand for labor is less than the supply of labor. This results in downward pressure or in lower wage hikes and less inflation. An estimate of the job market gap allows us to assess which of the two cases applies to the economy and to what degree. This information helps to identify potential inflationary pressures in the job market.

The model (described in detail in Amador, 2017) essentially consists of five equations that characterize the behavior of inflation, output, the short-term interest rate, the real exchange rate, and unemployment. These provide a structure whereby it is possible to adequately identify the job market gap, among other variables. Models of this type are often used as tools in forecasting and policy analysis (Coats et al., 2003) and to help understand past economic events (Carabenciov et al., 2008). Similar approaches are commonly employed to estimate the noninflationary levels of different macroeconomic variables that are relevant to informing monetary policy decisions (see, for example, Laubach and Williams, 2003, and González et al., 2013).

The variable of greatest interest to the new model is the unemployment rate, inasmuch as, unlike previous work, it includes a formula for Okun's law. This law pertains to the negative relationship, observed in the data, between the unemployment rate and the output of an economy (Okun, 1962). The version used here implies that, if unemployment is above (below) its noninflationary level, output will tend to be below (above) its respective noninflationary level. Hence, the job market would be expected to contribute to lower (higher) inflation, if the unemployment rate were above (below) its noninflationary level.

It is important to point out that the model does not estimate this relationship in an isolated way, since it takes into account the past and future behavior of all other variables, in addition to how they are related to one another. Accordingly, the results respond to the joint dynamics of the different macroeconomic variables, maintaining their consistency as a whole.

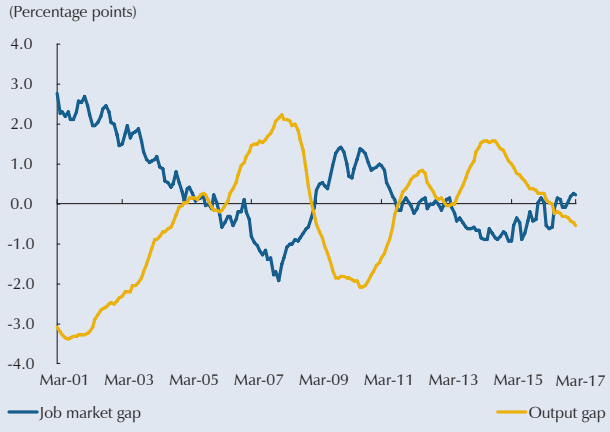
One innovative aspect of the model is that it uses monthly data. Although the job market data from the so-called Large Integrated Household Survey (GEIH in Spanish) conducted by the National Bureau Statistics (DANE in Spanish) are monthly, it was not until recently that the only data available were the quarterly output figures from the national accounts. This model uses the Economic Monitoring Index (ISE in Spanish), which is an indicator of monthly economic activity that conforms to the methodology of the quarterly national accounts. This allows for more frequent forecasts and policy simulations than previous contributions.

Graph B1.1
Unemployment Rate and its Non-inflationary Level in the Thirteen Major Metropolitan Areas
(Seasonally adjusted moving quarter)

Source: DANE and *Banco de la República*'s calculations based on Amador (2017).

* The author is a specialized professional of the Programming and Inflation Department. His opinions imply no commitment on the part of *Banco de la República* or its Board of Directors.

Graph B1.2
The Job Market Gap and the Output Gap



Source: *Banco de la República*'s calculations based on Amador (2017)

Graph B1.1 shows the seasonally adjusted unemployment rate for the country's thirteen major metropolitan areas and its respective estimated non-inflationary level estimated for the 2001-2017 period. Graph B2.2 demonstrates the relationship between the job market gap and the output gap. In other words, it shows the percentage difference between output (measured by the ISE) and its noninflationary level. As Okun's law indicates, there is a negative relationship between these two variables.

The results indicate the behavior of the job market gap coincides with the history of Colombia´s business cycles. At the beginning of the period in question, this gap was quite positive, in keeping with the large increase in unemployment that was observed after the crisis in 1998-1999. Then, it slowly closed during the course of time, exhibiting a high degree of persistence. A negative gap was observed between 2006 and 2008, coinciding with several increases in inflation. Between 2008 and 2011, the gap was positive once again, reflecting the increase in unemployment due to the international crisis in 2008-2009. During the period of economic growth from 2012 to 2015, the gap was negative. By the end of 2016, this indicator would have been very close to zero, mirroring the economic slowdown that followed the drop in oil prices.

However, it is important to be especially careful when analyzing the latest results. Even though the job market gap was in positive territory during the first three months of 2017, one must take into account that wage adjustments involve a significant degree of indexing to past inflation. Although the indicator suggests the job market's contribution to inflation would be negative, indexing prompts wages to be adjusted currently at high rates relative to the inflation target and causes them to converge more slowly towards that target.

Despite its usefulness, what is presented here has important limitations. Accordingly, the high degree of uncertainty involved must be taken into account, not only the uncertainty inherent in the statistical estimators, but also the uncertainty that comes with the specification and choice of the models.

Consequently, estimates of the noninflationary unemployment rate, as well as its variability in time and uncertainty, are incorporated into the wide range of information *Banco de la República* uses in its diverse efforts to analyze the state of the job market and the economy in general.

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III. Recent Developments in Inflation

Annual consumer inflation continued on a steep downward trend during the first quarter of 2017. However, core inflation remained practically unchanged, surpassing the range set by the Board of Directors of *Banco de la República*.

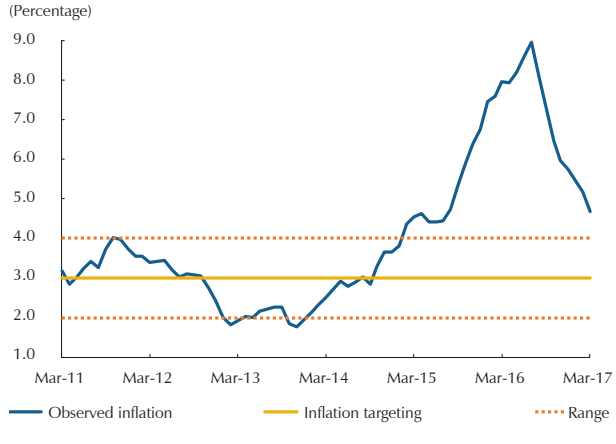
The drop in annual inflation is due to downward pressure brought to bear by the food CPI excluding meals outside the home and, to a lesser extent, by the regulated component of the CPI.

In contrast and as expected, the CPI excluding food and regulated items was bolstered by the increase in VAT and by the liquor law, which hit tradable items the hardest.

Despite weak demand, the non-tradable segment of the CPI was pushed up by indexing to past inflation and to wages, suggesting an increase in inflationary inertia.

Annual consumer inflation declined dramatically during the first quarter of 2017 and was 4.69% in March, versus 5.75% in December 2016. Accordingly, as anticipated in previous editions of this report, inflation stayed on the sharp downward trend that began in August of last year. However, the level reached in March was somewhat higher than the rate forecast in the December report. On the other hand, despite the significant drop in annual inflation during the last two quarters, it is still above the range set by the BDBR (between 2.0% and 4.0%) (Graph 29 and Table 6).

Graph 29
Headline Consumer Inflation



Sources: DANE and *Banco de la República*

As expected, the decline in inflation during the early months of the year continued to be due, in large part, to the gradual disappearance of the effects of the supply shocks (peso depreciation, *El Niño* weather and the trucker strike, among others) that battered consumer prices in Colombia from mid-2014 up to the middle of last year. Coupled with the monetary-policy action taken in the past two years, this situation has allowed for a decline in inflation expectations during the last two quarters, as outlined in Chapter IV of this report, which probably helped to ease price adjustments at the start of the year.

Despite the good results for inflation in general, the activation of various indexing mechanisms at the

Table 6
Consumer Inflation Indicators
(at March 2017)

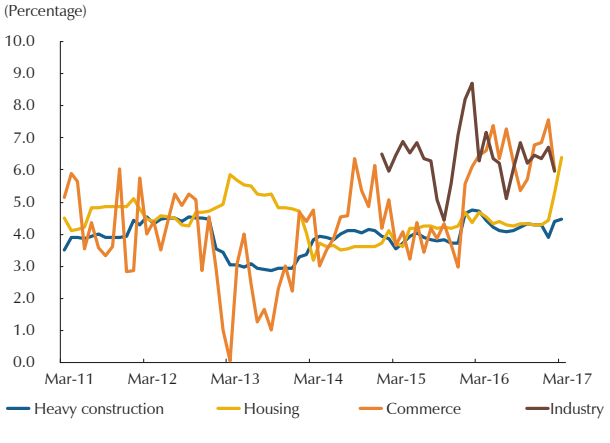
Description	Weight	Dec-15	Mar-16	Jun-16	Sep-16	Dec-16	Jan-17	Feb-17	Mar-17
Total	**100.00**	**6.77**	**7.98**	**8.60**	**7.27**	**5.75**	**5.47**	**5.18**	**4.69**
Non-food	71.79	5.17	6.20	6.31	5.92	5.14	5.26	5.17	5.13
Tradables	26.00	7.09	7.38	7.90	7.20	5.31	5.37	5.75	5.59
Non-tradables	30.52	4.21	4.83	4.97	4.85	4.85	4.83	5.06	5.33
Regulated items	15.26	4.28	7.24	6.71	6.19	5.44	5.93	4.55	4.05
Food	28.21	10.85	12.35	14.28	10.61	7.22	5.97	5.21	3.65
Perishables	3.88	26.03	27.09	34.94	6.66	(6.63)	(10.15)	(9.60)	(13.09)
Processed foods	16.26	9.62	10.83	12.09	12.56	10.74	9.38	7.69	6.28
Meals outside the home	8.07	5.95	7.53	8.11	9.18	8.54	9.26	9.31	8.94
Core inflation indicators									
Non-food		5.17	6.20	6.31	5.92	5.14	5.26	5.17	5.13
Core 20		5.22	6.48	6.82	6.73	6.18	6.18	6.03	6.01
CPI excluding perishable foods, fuel, and public utilities		5.93	6.57	6.77	6.65	6.03	5.95	5.74	5.61
Inflation excluding food and regulated items		5.42	5.91	6.20	5.84	5.05	5.06	5.35	5.44
Average of all the indicators		**5.43**	**6.29**	**6.52**	**6.29**	**5.60**	**5.61**	**5.58**	**5.55**

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

start of the year continued to affect the adjustments in prices for several items in the consumer basket at relatively high rates in relation to the 3% target. This also suggests some increase in inflationary inertia.

Another factor that would have brought upward pressure to bear on several segments of the CPI at the beginning of the year, or at least prevented a quicker decline in their rates of adjustment, was the 7.0% increase in the minimum wage. This hike is well above the figure for consumer inflation at the end of the year and would be prompting a revision in wages in various sectors at rates higher than those observed in 2016. Wages in the home building sector are case in point, having gone from an increase of 4.3% in December to 6.4% in March. Commerce and manufacturing wages, on the other hand, continued to post annual adjustments slightly above the 6.0% observed at the beginning of the year. Only in the case of the wage increases for heavy construction (4.5%) are the adjustments more compatible with the 3.0% target (Graph 30).

Graph 30
Nominal Wages
(Annual change - percentage)

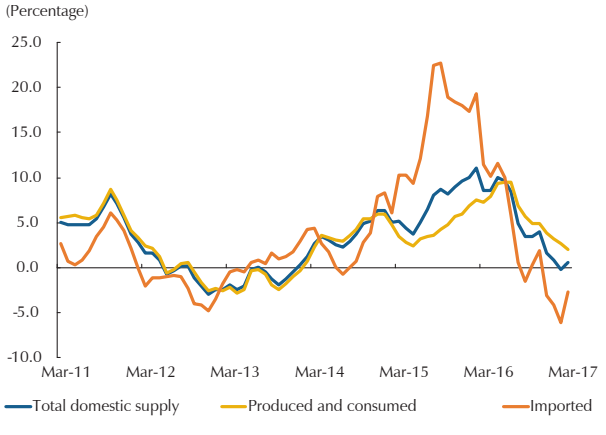


Source: DANE; Calculations by *Banco de la República*

The effects of the VAT rate hike and the introduction of a green fuel tax, ordered in the latest tax reform bill, were evident in the price hikes at the beginning of the year, as was the higher tax on alcoholic beverages imposed by the new liquor law. The upward impact of these measures was felt mainly in the non-food CPI and in other core inflation indicators, as shown below. It should be noted that shocks stemming from indirect tax hikes have a one-time effect on price levels and tend to disappear in annual inflation after one year, provided they do not have indirect repercussions by prompting a rise in inflation expectations.

Pressure from non-labor costs continues to be contained so far this year, judging by the behavior of producer prices. Annual producer inflation in March (measured with the imported PPI, plus the PPI for domestically produced and consumed goods) was very low (0.55%) and below the figure on record for December (1.62%). In fact, the annual variation in February was negative (-0.17%) (Chart 31). This is explained by less of an annual adjustment in the locally produced and consumed component, which went from 3.85% in December to 2.01% in March. The imported segment remained in negative territory, although it increased during this period (from -3.13% to -2.66%). Within the local component of the PPI, the slowdown was generalized: the annual change in agricultural goods went from 2.03% in December to -1.30% in March. In mining, it went from 9.21% to 5.79% (particularly for crude oil extraction). In industry, it declined from 3.93% to 2.57%.

Graph 31
PPI by Origin
(Annual change)



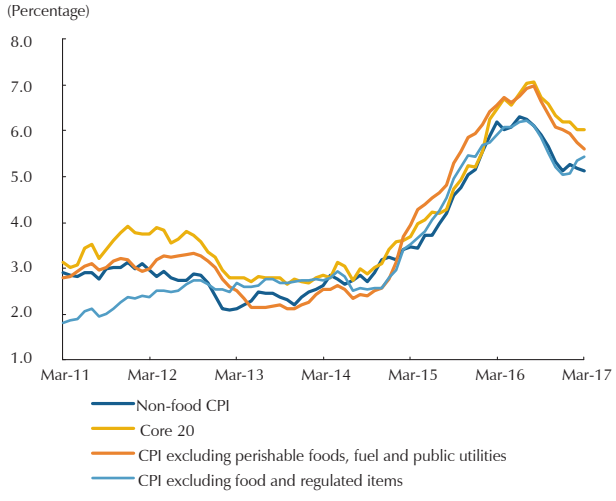
Source: DANE.

A. CORE INFLATION

In contrast to what happened with headline inflation, core inflation did not decline during the first quarter of 2017. The average of the four indicators that are monitored regularly by *Banco de la República* remained stable at around 5.6% during those three months, after having fallen continuously since August 2016.

All the core inflation indicators were above the range for inflation (2% to 4%) and performed differently during the quarter. Core 20, which was at the highest level, was among those that saw an annual reduction in growth (from 6.18% in December to 6.01% in March), together with the CPI excluding primary foods, fuel and public utilities (which went from 6.03% to 5.61%). On the other hand, the CPI excluding food and regulated items increased from 5.05% to 5.44%, while the non-food CPI (5.13%), which posted a lower increase, remained stable between December and March (Graph 32).

Graph 32
Core Inflation Indicators



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

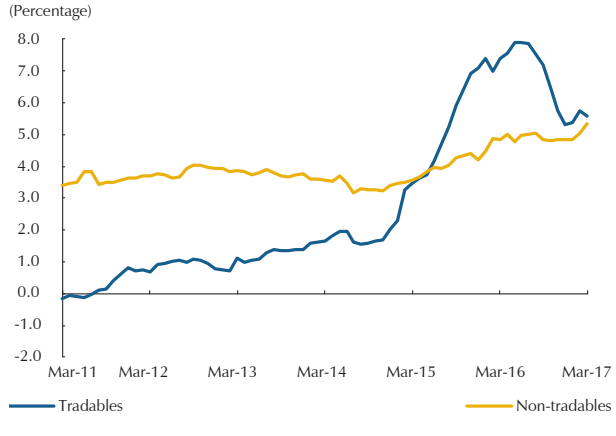
In the case of the CPI, its relative stability during these months can be explained by the presence of opposing inflationary pressures. On the one hand, the upward pressures would be associated with the increase in annual inflation expectations since the end of 2015 to a point above the 3.0% target, a situation that persisted in 2016, even though the upward trend was interrupted. The activation of indexing mechanisms was a factor as well, coupled with the impact of the increase in indirect taxes (higher VAT, the green tax and the new liquor law) as of January, which was largely foreseen in the projections outlined in the previous edition of this report.

These upward pressures were offset by weak demand, by depletion of the transfer of peso depreciation to consumer prices and by lower adjustments in production costs, as evidenced by the decline in producer inflation that was mentioned already.

Within the non-food CPI, two dynamics can be identified. On the one hand, the annual variation in the CPI excluding food and regulated items (tradables and non-tradables) increased during the first quarter. On the other hand, regulated items exerted downward pressure on inflation during this period.

The annual change in the tradable CPI excluding food and regulated items went from 5.31% in December to 5.59% in March. According to the foregoing analysis, this was the segment of the consumer basket that was hardest hit by the increases in VAT and liquor taxes. These upward pressures were only partially offset by weak demand and by increasingly less pressure from cumulative depreciation of the exchange rate.

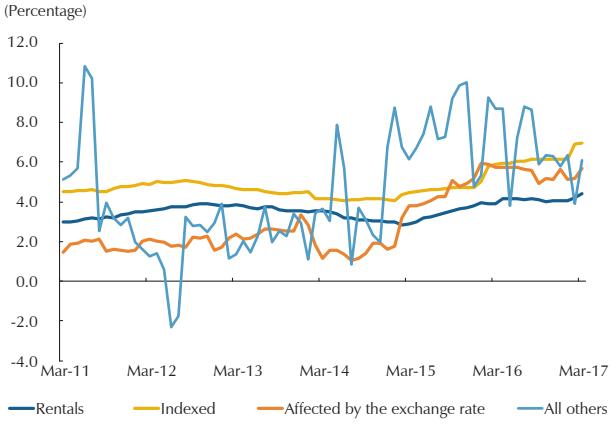
Graph 33
Tradable and Non-tradable CPI Excluding Food and Regulated Items (Annual change)



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

In the case of the non-tradable CPI, after remaining relatively stable between 4.8% and 5.0% since February of last year, the first three months of 2017 saw an increase in its annual variation from 4.85% in December to 5.33% in March (Table 5, Graph 33). This was concentrated mainly in the rental CPI; its annual variation in March (4.43%) was 37 bp higher than in December (Graph 34). The acceleration was focused in Bogotá and especially in the middle-income bracket of the CPI. According to information from the real estate trade, there seems to be a strong demand for rentals in the downtown sectors of the nation's capital (especially in socioeconomic stratum no. 4).

Graph 34
Non-tradable CPI Excluding Food and Regulated Items, by Groups
(Annual change)



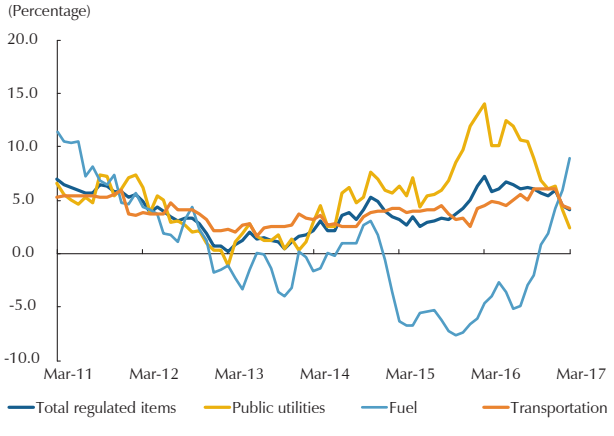
Source: DANE; Calculations by *Banco de la República*

Among non-tradables excluding food and regulated items, the annual change in the so-called "indexed" basket went from 6.16% in December to 6.95% in March. This subgroup includes items, apart from rentals, that usually are more subject to indexing formulas or practices within the CPI, and whose prices also are highly influenced by the behavior of wages, because they pertain to services, such as education, health care and housing occupancy costs, which are quite labor intensive.

Similarly, the annual change in the sub-basket that includes "all others" was 6.09% in March, which is higher than it was in December (5.79%). This rise is explained by the increase in annual adjustments in games of chance and vehicle insurance payments. Finally, within non-tradables (5.67%), the items affected by the exchange rate experienced no significant changes compared to the figure registered in December.

On the other hand, the annual change in the regulated CPI, which, as mentioned, exerted bearish pressure during the first quarter, went from 5.44% in December to 4.05% in March (Table 6 and Graph 35). This decline is explained by the behavior of rates for public utilities (which dropped from 6.08% in December to 2.36% in March) and for transportation (which went from 6.06% to 4.29% during the same period). Within public utilities, there was downward pressure in electricity (from 6.00% in December to -0.06% in March) and in gas (from 8.75% to 2.62%). In both cases, the favorable movement in rates, in terms of inflation, is associated with the fact that the country's reservoirs recovered, once the water supply constraints caused by the latest bout of *El Niño* weather had been overcome. As mentioned in previous reports, this phenomenon boosted prices for generating power and, in doing so, significantly increased the demand for gas to produce thermal energy. In contrast, water was the only public utility that increased, having gone from 4.92% in December to 5.56% in March. According to authorities in the sector, this rebound is related to higher operating costs due to added investments and increased coverage in certain cities in the country.

Graph 35
Regulated CPI and Components Thereof
(Annual change)



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

In the case of public transportation, although fares were adjusted at the beginning of the year in a

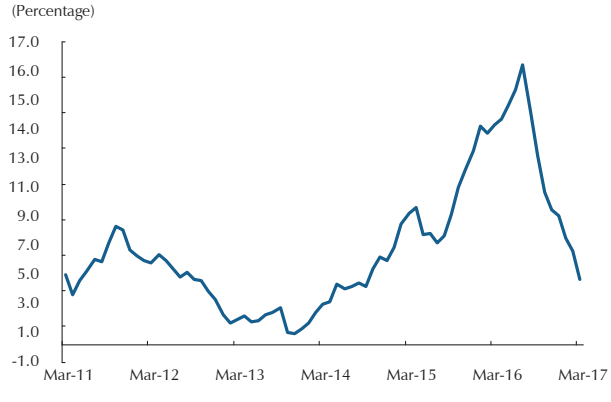
number of cities throughout Colombia (between 5% and 10%), the annual changes in this segment of regulated items was low due to the statistical base of comparison. However, for the second quarter, fare hikes were announced in Bogotá, in the case of mass transit (SITP and Transmilenio); they took effect as of April 1.

Contrary to the situation with public utilities and transportation, the annual change in fuel prices increased, ending March at 8.98%, which is well above the figure in December(1.83%). The green tax, authorized in the latest tax reform (which taxed automotive gasoline at 135 pesos), coupled with the 141 pesos per gallon increase in March owing to the tax formula (which includes recent increases in international prices and biofuels), in addition to a very low statistical base of comparison (fuels registered negative variations during the first three months of last year), significantly boosted the annual change in the CPI for this regulated sub-basket. As for the rest of the year, the price of fuel could continue to increase, since the new formula for calculating the gas surcharge has yet to be defined. It could increase by about 200 pesos per gallon of gasoline, according to preliminary calculations by the Ministry of Mines And Energy.

B. FOOD INFLATION

The bulk of the drop in annual inflation since August of last year, including the first quarter of 2017, was possible thanks to a sharp decline in the annual change in the food CPI. The agricultural supply available for domestic consumption recovered substantially during these months, following the negative shocks it suffered due to striking farmers and trucker in mid-2016, and especially as a result of the latest episode of *El Niño* weather, in 2016.

Graph 36
Food CPI
(Annual change)



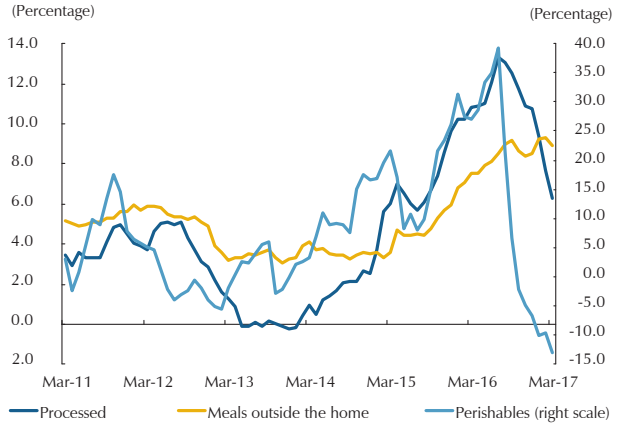
Source: DANE; Calculations by *Banco de la República*

In fact, after the annual change reached a maximum in July 2016 (15.71%), it declined sharply and steadily to 7.22% in December, and then to just 3.65% in March (Graph 36). Yet, despite this important reduction, the results have been somewhat above those forecast in previous editions of this report and more than what has been observed in similar episodes, after bouts of *El Niño* weather.

Bearish pressures were concentrated in the annual changes in prices for food, other than meals outside the home. Perishable food was the segment with the biggest decline: going from 39.27% in July, it ended in negative territory in December (-6.63%) and continued to decline to -13.09% in

March. This tremendous downward momentum was evident in most prices for greens, tubers, fruits and vegetables, particularly potatoes, which dropped back from 93.54% in July to -25.08% in December and -48.01% in March.

Graph 37
Food CPI, by Groups
(Annual change)



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

A highlight during the year to date is the recovery in supply levels at wholesale markets in the country's major cities, reflecting the added supply of fresh or perishable foods. This improvement in performance would be related to greater investment confidence among entrepreneurs in the sector, due to a government program known as Colombia Siembra (Sowing Colombia), in addition to better weather conditions.

The annual variation in the CPI for processed foods also declined in recent quarters, although to a much lesser extent, having gone from a recent high of 13.33% in July 2016 to 10.74% in December and 6.28% in March (Graph 37). This reduction was possible due to several circumstances, such as less pressure from the exchange rate, given added stability of the peso against the US dollar and other currencies in recent quarters. The halt in the upward trend in beef prices witnessed since the end of last year, which allowed the annual change in these prices to decline (from 20.44% in December to 17.61% in March), was also a factor, as were lower international food prices in the last two months. These circumstances would have more than offset the upward pressure exerted on some items as a result of the VAT hike authorized in the tax reform.

Finally, the annual change in the CPI for meals outside the home increased slightly between December (8.54%) and March (8.94%), reaching a high of 9.31% in February. The sharp rise in the adjustment in this item, despite lower increases in prices for perishables and processed foods, is partly due to the hike in the minimum wage (7.0%). It is also possible that the change in the tax regime for franchise restaurants (from VAT to consumption tax) explains the relatively high rate of adjustment in prices for meals outside the home, even though demand is weak and should not be a source of inflationary pressure on this item or others.

IV. Medium-Term Forecasts

The forecast for GDP growth in 2017 was reduced in this report. According to the most likely scenario, it would be 1.8% and within a range of 0.8% (a pessimistic scenario) to 2.6% (an optimist one).

By 2017, GDP growth is expected to be more balanced than it was in 2016, with aggregate demand based not only on the domestic supply of goods and services, but also on imports.

Annual consumer inflation would continue to decline at a moderate pace during the remainder of the year, now that food prices have returned to normal and there is expected to be very little pressure on the side of demand and the exchange rate.

The effect associated with the hike in indirect taxes will disappear at the beginning of 2018 and inflation will be within the range set by the Board of Directors of *Banco de la República*.

A. ECONOMIC GROWTH IN 2017

The GDP growth forecast for 2017 presented in this report was revised downward *vis-à-vis* to the forecast published last quarter. As noted in Chapter II, economic activity at the start of the year would have been weaker than expected. Also, the last few months have seen an increase in the likelihood that some of the medium- and long-term risks to growth contemplated in previous editions of the *Inflation Report* might materialize.

Among its components, the GDP growth forecast with respect to expenditure in 2017 contemplates more balanced momentum. The import substitution process, which has been witnessed since 2015 and was consolidated in 2016, is expected to ease this year, in which case the growth in domestic demand during 2017 would rely not only on the domestic supply of goods and services, but also on imports.

The forecast range outlined in this report remains broad and continues to be biased downward, reflecting the high degree of uncertainty that exists and the risk posed to growth fundamentals this year. As usual, the forecast scenarios for GDP growth were developed in keeping with those for the balance of payments presented in Chapter I.

Some recovery in exports is expected for 2017.

Therefore, the main changes in the assumptions on the external context (see Chapter I) that affect GDP growth are related to: 1) the momentum in external demand; 2) international prices for the raw materials exported by Colombia, and 3) the cost of external financing. In the first case, as explained in Chapter I, the forecast for economic growth on the part of our trading partners such as the euro zone and China was revised upwards, while the forecast for the United States was ratified. This should be reflected in an increase in external demand for the commodities Colombia produces. However, it will depend on the quantities produced and how the traditional export sectors are expected to perform. In contrast, the economic momentum forecast for our trading partners in the region, particularly Peru, Chile, and Mexico, was revised downwards. This would limit possibilities for increased exports of manufactured goods and services, since these countries are the main markets where those products are sold.

As for the second aspect, terms of trade are still expected to recover in 2017 compared to 2016. However, the international price of coal was revised downwards with respect to what it was last quarter. As for all other goods, the prices forecast in the previous edition of this report are maintained.

In the third case, the expected rate hike by the Fed in the United States and a less lax monetary policy in other advanced economies would translate into an increase in the cost of financing for Colombia and other emerging market economies. In this context, the forecasts for growth assume the current account deficit will narrow, as illustrated in Chapter I of this report.

With respect to the domestic context, the different supply shocks witnessed in 2016 (particularly *El Niño* weather and the trucker strike) will be dispelled entirely during 2017. Even so, approval of the tax reform bill and its entry into force presumably would have some impact on the real economy in 2017, as explained below. The forecasts for GDP growth outlined in this report also assume the momentum in government consumption during 2017 will be similar to what is was in 2016. Although a higher level of spending on the part of regional and local administrations is expected, it would be offset by reduced budget performance on the part of the central government (CG) in a situation where the latter would continue to adjust gradually to the drop in terms of trade and the slowdown in economic activity. This is consistent with forecasts for less of CG fiscal deficit and not as much of a surplus for regional and local administration, as indicated in the latest version of the so-called Medium-term Fiscal Framework.

The forecasts for growth in 2017 assume the momentum in government consumption will be similar to what it was in 2016.

This report maintains the assumption that there will be more investment in civil works than in 2016. Specifically, this item is expected to grow as a result of the highways that are part of the 4G construction projects and because of added spending for infrastructure on the part of regional and local

The central scenario outlined in this report contemplates investment in civil works during 2017 with downside risks.

administrations (as is typical during the second year of their term in office). Moreover, according to recent reports from a number of companies in the hydrocarbon sector, the anticipated recovery in the international price of oil would partially reactivate spending in Colombia on oil exploration and extraction. This should lead to a boost in civil works for mining. However, although the projected growth rate for this item of GDP would be higher than is estimated for all the other components of demand, it was revised downwards from what was contemplated in the previous *Inflation Report*. There is still a great deal of uncertainty about the behavior of payments within this line, and the risks to growth in civil works during 2017 would be on the downside.

Private investment still is expected to be mediocre, although somewhat better than was implied in the growth forecasts presented last quarter. In this sense, despite the fact that the rate of growth in spending on machinery and equipment and on transport equipment would recover compared what was observed in 2016, it would still be far below its historical average. Factors such as accumulated real depreciation of the peso, the slowdown in the economy and the lags in monetary policy (the time it takes changes in the stance of monetary policy have an effect on real sector) prevent any expectation of an added contribution to GDP growth from these items of gross capital formation. It is emphasized that the forecasts for real activity presented in this report assume the reduction in the corporate tax burden, as contemplated in the tax reform, would have positive consequences for investment, especially after 2018. In this report, the forecast for private investment assumes there will be more demand for imports of capital goods.

Investment in building construction would increase during 2017, but not to the extent that was forecast last quarter. Although positive contributions from the residential component are anticipated, particularly due to consolidation of the central government's low-income housing plans and the expansionary effect of subsidized interest rates on new home purchases in the low and middle-income brackets, the non-residential component is expected to be sluggish. An excess supply would limit possibilities for growth in the sub-sector that consists of non-residential buildings and upper-income housing.

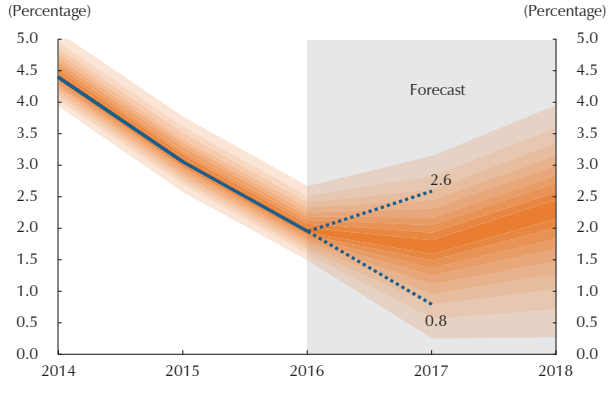
Some slowdown in private consumption during 2017 is expected compared to what it was in 2016.

A minor slowdown in private consumption is forecast for 2017, compared to 2016. Although inflation would continue to decline and converge towards the ceiling of the range, the increase in VAT would negatively affect the purchasing power of household income throughout the year. Also, since growth has been week for several quarters, some decline in the job market is anticipated for 2017, with the pace of formal job creation being slower than in the past. This would be a blow to household consumption during the year.

On the supply side, a slight recovery in tradable activity is anticipated. In the case of industry, growth in production is expected to be positive but moderate. Performance in the various branches of industry will depend on the revival of domestic demand and the recovery of trading partners who buy industrial goods. At the same time, agricultural activities that produce products for export, such as coffee, would enjoy better weather and favorable prices. So, good performance can be expected.

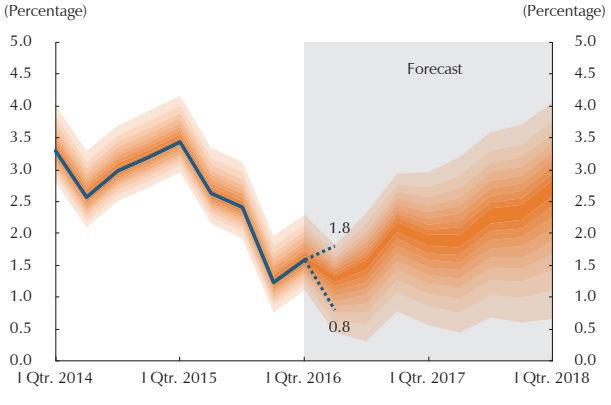
The estimates developed by *Banco de la República*'s technical staff suggest tradable production would continue to recover in 2017, partly because of the effects of depreciation and the shift in production towards local goods. In addition, a drop in mining production like the one in 2016, particularly in the case of oil, is not anticipated, and the improvement in international commodity prices is expected to stimulate capital flows and investment in tradable activities, such as mining.

Graph 38
Annual GDP Growth Fan Chart



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

Graph 39
Annual Quarterly GDP Growth Fan Chart



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

On the other hand, the CG building programs and the schedule for the so-called 4G civil works would stimulate non-tradable production and contribute significantly to GDP growth this year and the next, provided they are completed. It is important to note that this sector has productive links to branches such as industry and transportation, which contribute a great deal to the increase in the national aggregate.

A risk-balance exercise (fan chart) for GDP growth was developed based on the central path of the medium-term model. The forecast for output in the most likely scenario is around 1.8% for 2017 (Graphs 38 and 39), with a forecast range between 0.8% and 2.6% (Table 7). The breadth of the intervals remains wide, but is slightly narrower than what it was last quarter. Compared to the previous quarterly report, the central path was reduced for 2017 and 2018. The balance of risk still has a slight downward bias, due to the high degree of uncertainty in the international context and the impact of the tax reform on household confidence and spending.

The main downside risks are associated with less growth on the part of our trading partners, which seriously affects non-traditional trade. Likewise, compared to what is contemplated in the central forecast scenario, the possible effects of the VAT hike on private consumption and household purchasing power

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

Range	2017	2018
<-1.0	0.12	0.43
-1.0 - 0.0	2.65	3.06
0.0 -1.0	18.67	12.63
1.0 - 2.0	41.83	28.26
2.0 - 3.0	29.76	33.70
3.0 - 4.0	6.54	17.87
> 4.0	0.44	4.06
Between 3 & 5	6.97	21.61
Between 2 & 4	36.29	51.57
Between 1.5 & 3	52.02	49.60

Source: Calculations by *Banco de la República*

in 2017 might increase, due to a reduction in disposable household income. In addition, government investment might be less dynamic than is contemplated in the central scenario, depending on efficient execution, particularly with respect to the timetables for the 4G civil works.

The main upside risks are associated with more-than-expected momentum in the country's productive apparatus for tradables, given accumulated depreciation, which should stimulate tradable production, and added investment, thanks to the tax reform bill, which has been sanctioned into law and is now in force. This could increase capital flows and lower the perception of country risk, allowing for greater access to sources of external financing and less volatility in the exchange rate. All of these circumstances would favor growth, and could offset the declines indicated already with respect to the demand for exports.

B. INFLATION

1. Forecasts

The forecasts in this inflation report and the accompanying fan charts were developed using the PATACON model. Prior to and including the December report, the central forecasts used to analyze the outlook for inflation were based on the Transmission Mechanism Model (MMT).

As explained in Box 2, which is included in this chapter, PATACON is a dynamic stochastic general equilibrium model and is micro founded, unlike the TMM, which is a semi-structural gap model. For this reason, the struc-

Annual consumer inflation would converge towards 3% during the second half of 2018.

ture of both models is different. This makes it difficult to draw comparisons between the medium and long-term projections presented in this document and those outlined in previous reports.

Another important aspect of PATACON, in terms of inflation forecasts, is the fact that the model breaks down the CPI into three baskets: food, regulated items, and non-food and non-regulated items. In contrast, the sub-baskets in the TMM that were used to forecast inflation included the first two, plus non-food and non-regulated tradables and non-tradables excluding food and regulated items. This characteristic made it possible to chart a forecast path for the non-food CPI, which operated as the core inflation indicator in the TMM and entered into its policy rule or reaction function. In the case of PATACON, this role is performed by inflation excluding food and regulated items. Also, because PATACON is not a gap model, this report does not show the output gap, as was customary in the past (see Box 2).

Taking this into account, the central forecast scenario for annual consumer inflation indicates it will continue to decline during the second quarter of the year, stabilizing temporarily at a point somewhat above the ceiling of the range during the second half of the year and ending 2017 at slightly above 4.0%. By the first quarter of the following year, headline inflation should resume a downward path and enter the range. Among other reasons, this is because the impact of the increase in VAT and other indirect taxes would be diluted, as explained below. According to *Banco de la República*'s central model, inflation would converge towards 3.0% during the second half of 2018.

In the case of inflation excluding food and regulated items, the forecast shows a momentum similar to that of headline inflation. The annual change in this indicator is expected to decline sharply during the second and third quarters of 2017, although to levels above those for headline inflation. These levels would continue until the end of the year. The first half of 2018 is expected to see a further significant decline that would bring inflation excluding food and regulated items to 3%. It would remain near this level during the second half of that year and beyond.

The reasons why annual headline and core inflation (the CPI excluding food and regulated items) will continue to decline in the coming quarters are similar to those identified in the previous report.

The second and third quarters of 2017 are expected to see a reduction in inflation excluding food and regulated items.

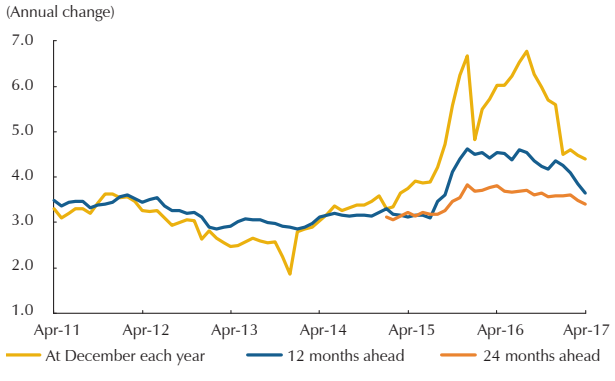
First of all, the effects of *El Niño* weather on food prices continue to wane in the first half of 2017. These prices will return to normal insofar as the agricultural supply recovers. This means the annual change in the food CPI should register an important additional decline to levels below 2% between April and June of this year, dragging annual headline inflation with it. The

preliminary figures that were available at the time this report was written pointed to much more growth in the agricultural and food GDP during the first and second quarters of the year than in the economy as a whole.

However, there is no expectation of further downward momentum during the second half of the year and towards 2018 on account of food prices. Once the *El Niño* effect on the annual variations has been dispelled, the agricultural cycle would resume its usual lead over price momentum, with a moderate increase in prices expected sometime between the third and fourth quarters. According to the model, the annual change in the food CPI at longer horizons should continue to oscillate around 3.0%

A second factor that explains the decline in inflation is the delayed effect of the benchmark rate hikes ruled by the BDBR between September 2015 and July 2016. Control over inflation expectations and moderation in aggregate demand are the main channels through which this policy action would be operating. As indicated in the previous edition of this report, the beginning of the upward rate phase during the fourth quarter of 2015 tamed the increase in expectations and, as of February 2016, allowed them to decline gradually towards the 3% target, a trend that has continued in the first quarter of this year.

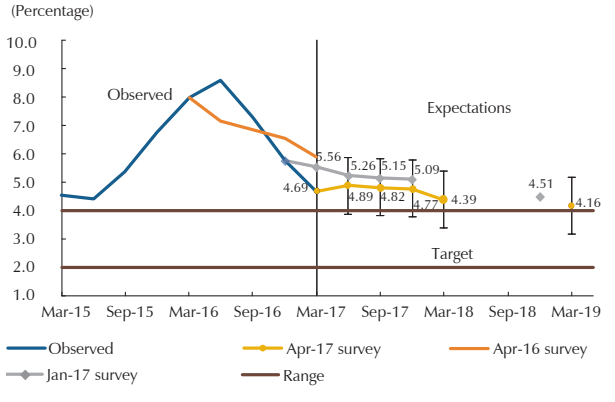
Graph 40
Annual Inflation Forecasts by Banks and Brokerage Firms



Source: *Banco de la República*

In fact, *Banco de la República*'s monthly survey of financial market analysts shows they anticipate 4.39% inflation by December 2017, on average, versus 4.51% three months ago. Similarly, the expectation for inflation at twelve months was 3.65%, compared to 4.25% in the previous edition of this report, and is now 2.4% for 24 months versus 3.59% before (Graph 40).

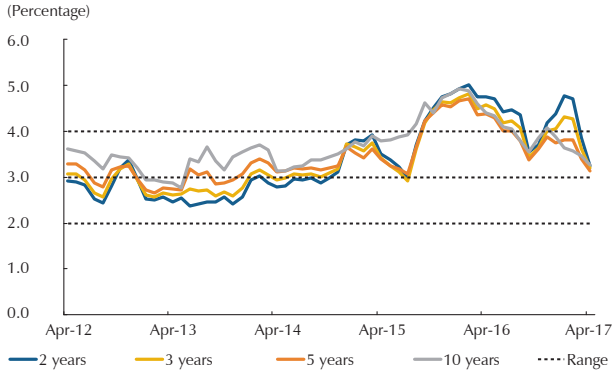
Graph 41
Observed Inflation and Inflation Expectations
(At three, six, nine, and twelve months)
(Annual inflation)



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

The quarterly business survey also showed significant reductions in the forecasts: the expectation for inflation at twelve months went from 5.09% to 4.39% and from 4.51% to 4.16% at 24 months (Graph 41). Break-even inflation expectations also tended to decline during the first quarter of 2017. Given the figures at mid-April, inflation at two, three and five years is forecast at 3.29%, 3.24% and 3.2%, respectively, versus 4.79%, 4.31% and 3.82% in mid-January (Graph 42).

Graph 42
Break-even Inflation (TES) Expectations (at two, three, five and ten years)
(Monthly average)[a/]



a/ Nelson and Siegel method
Sources: *Banco de la República* (Quarterly survey of expectations)

Weak demand in relation to the potential for economic growth helps to explain the decline in the forecast for headline and core inflation during the next eight quarters. In this respect, it is important to clarify that potential or long-term growth was revised downwards for the projection exercise presented in this report. As shown in Box 3, based on different methodologies, it is possible to conclude that Colombia's potential for economic growth is currently within a range of 3.0% to 4.0%. Realization of that potential most likely to be somewhere in the lower half of that interval. In the projections offered in previous editions of this report, implicit potential growth was near or above 4.0%. Despite this lower number, *Banco de la República*'s central model forecasts less of an increase in aggregate demand during the current year and in 2018. This growth, which is consistent with the economy's continued gradual adjustment to lower terms of trade and the need to balance the current account by eliminating some deficit, translates into bearish pressure on consumer inflation over the next eight quarters and plays an important role in its convergence towards the 3.0% target.

The increase in VAT and other indirect taxes, which bumped up annual inflation in the first quarter, is having an opposite effect on the central path of the forecast for early 2018. As explained in the December edition of the *Inflation Report*, this is a one-time shock to prices. In other words, it alters annual inflation during four quarters, at the end of which its effect disappears. Accordingly, the disappearance of that effect in the first quarter of 2018 partly explains the reduction in headline and core inflation during that period.

Generally speaking, these factors would explain the downward trend in inflation over the next eight quarters. However, significant upward pressures continue to weigh on consumer prices, making the decline in inflation and its convergence to 3.0% relatively slow, even though the direct impact of the food shocks and depreciation that caused the bulk of the increase in inflation during the last two years would disappear completely in 2017.

Perhaps the most important upward bias comes from the wage hikes, both in the minimum wage and others. As noted in Chapter III of this report, once gains in labor productivity are discounted, these adjustments still exceed the BDBR's inflation target by a wide margin. This situation is compounded by the presence of indexing mechanisms that prevented inflation from falling faster at the beginning of the year, particularly via price increases for different services, such as health care and education. These mechanisms

are expected to continue to operate during the rest of the year, but with less intensity. Both these factors have led to an increase in inflationary inertia during 2017.

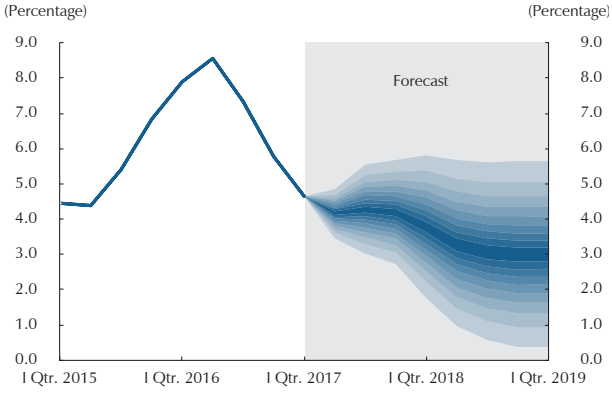
There is also upward pressure from regulated prices, which are expected to see annual variations of more than 5.0% during much of the remainder of 2017. Among other reasons, this is due primarily to the hikes anticipated for domestic fuel prices, owing to higher international oil prices this year, compared to the levels observed in 2016, and the increases required to compensate for the municipal revenue that was lost (via the gasoline surcharge) when the tax reform took effect.

Finally, given the assumptions and shocks mentioned above, it is important to point out that the central forecast for inflation is accompanied by a relatively stable exchange rate, compared to the movement witnessed in the past two years. This will result in far more moderate price changes for tradable goods in 2017 and 2018 than those observed during the last two years.

2. Balance of Risk

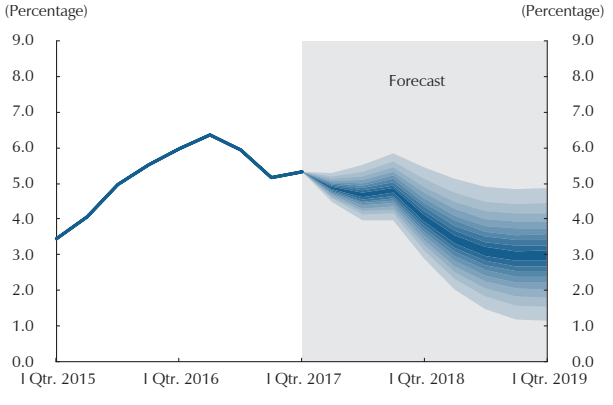
The balance of risks to headline consumer inflation and food and non-regulated inflation is shown in the fan charts in Graphs 43 and 44. A fan chart with a slight downward bias for the second quarter of 2017 and a slight upward bias as of the fourth quarter of this year is estimated for this report. The path of the central forecast assumes the effect of the tax reform was largely transmitted during the first quarter of the year. So, it should have no major additional impact on prices during the rest of 2017. The risks considered when constructing the fan chart are outlined below.

Graph 43
Headline Inflation Fan Chart



Source: *Banco de la República*

Graph 44
Non-food Inflation Fan Chart



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

A more pronounced drop in food prices than is expected, given the favorable outlook for supply

The following are the main downside risks:

There are several factors that could have a positive impact on food prices during the remainder quarters in 2017 and constitute a downside risk for this group. The increase in the amount of land under cultivation during the last two quarters, since weather conditions have returned to normal, and the significant rise in relative prices for food up to mid-2016, could lead to a sharper than expected drop in prices this year. In addition, the conclusion of the livestock retention cycle and the onset of slaughtering would be another factor that would push down meat prices. Besides having an impact on actual inflation, it could have a favorable effect on the inflation expectations of economic agents and, as such, on core inflation.

Less of an increase in domestic demand than is expected: When the risks to domestic demand (the sum of consumption and investment) were identified, there were two forces acting on headline inflation in opposite directions: 1) more dynamic consumption and 2) less-than-expected investment. In the first instance, there could be a recovery in confidence, which would make the impact of this factor less than was anticipated in the central forecast. This is because confidence levels would have been at a low point in early 2017. On the other hand, investment in civil works poses a downside risk related to possible problems with implementation, which would lead to delays in projects such as the 4G infrastructure initiatives, and more so when considering the trust issues that have emerged recently with respect to those projects. In weighing these effects, it is felt that the negative impact associated with investment would exert more influence. Consequently, in net terms, there would be a downward risk to inflation, which would help it to converge more quickly towards the target.

Less inflationary pressure from the exchange rate: A slower increase in the Fed's rate cannot be ruled out, given a more uncertain international outlook and slower growth. In this scenario, added capital flows to Colombia would push the exchange rate down and propitiate quicker convergence towards the target compared to what is contemplated in the central scenario.

The main upside risk is:

Less inflationary pressure from the exchange rate would lead hasten the speed of convergence towards the target.

Increased price and wage indexing, which might translate into greater inflationary inertia: The current path of inflation may have less implicit inflationary inertia than what could occur, because the wage hikes in a large subset of workers, including those who earn the minimum wage, exceeded observed inflation and the range. This tends to generate price and wage adjustments above the target, which could mean inflation at the end of 2017 would be higher than expected. This situation might even be replicated in

There is a 73.8% likelihood of inflation falling below 4% in 2018.

2018. It would affect the extent of headline inflation and its convergence towards the target, as well as the level of inflation forecast by agents in the market.

The balance of the set of risks outlined above suggests there is a 41.7% likelihood of headline inflation falling below 4% in 2017. This probability increases to 73.8% in 2018 (Tables 8 and 9). Graph 45 shows the most likely figure in the inflation forecast for December 2017 was practically the same as in the December 2016 report. However, due to the change in the central model, a full comparison of the results in this report with respect to those in previous editions is impossible. It should be noted that the extent of the density function of the forecasts shown in Graphs 43 and 44, according to the shaded area, only includes 90% of it. These results, like the central forecast, assume there will be an active monetary policy, with the benchmark rate being adjusted to ensure the inflation target is met.

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

September 2016 Report	58.9
December 2016 Report	40.2
March 2017 Report	41.1

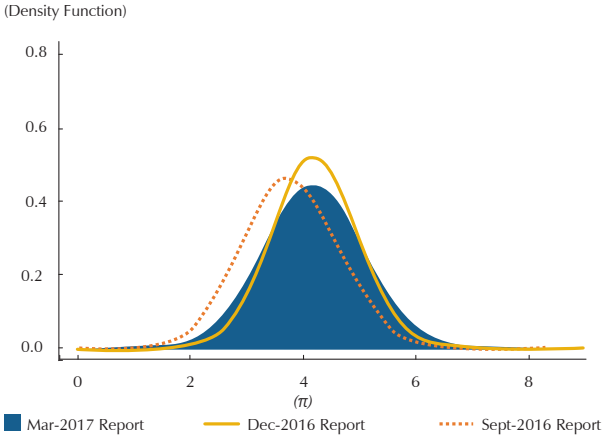
Source: Calculations by *Banco de la República*

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

Range	2017	2018
<2.0	0.6	26.9
2.0-2.5	2.1	11.2
2.5-3.0	6.2	12.3
3.0-3.5	13.0	12.2
3.5-4.0	19.8	11.0
>4.0	58.3	26.4
Between 2 & 4	41.1	46.7

Source: Calculations by *Banco de la República*

Graph 45
Cross-section of the Headline Inflation Fan Chart for December 2017



Source: *Banco de la República*

Box 2
THE PATACON MODEL

Macroeconomic Models Department *
Banco de la República

1. Introduction

The Macroeconomic Models Department at *Banco de la República* has been working on medium- and long-term forecasts for inflation and economic growth during the last six years. In doing so, its main forecasting tool has been a dynamic stochastic general equilibrium model that is useful in designing monetary policy for a small and open economy such as that of Colombia. This has been dubbed as a policy analysis tool applied to Colombian needs (PATACON). Central banks such as those in Canada, Sweden, Norway and Chile, which are recognized for adopting the latest technological tools, currently use models similar to PATACON. This demonstrates the constant efforts of *Banco de la República* to include the very latest academic development in its economic analysis.

The intent of this section is to describe the model in a simple way and, for that reason, the technical specifics are omitted. A detailed description can be found in González et al. (2011) and in Bonaldi et al. (2010).

The PATACON is a neo-Keynesian model adjusted to a small and open economy that includes a set of nominal and real rigidities. In contrast to the model currently used by *Banco de la República*, the transmission mechanism model (TMM), PATACON does not imply a conceptual change in the way macroeconomic phenomena are interpreted or in the mechanisms for monetary policy transmission. Rather, it complements this vision. The model expands the range of possible exercises, simulations and analysis the technical staff can develop to provide information that is relevant to making decisions on economic policy.

There are two fundamental differences between the TMM and PATACON. To begin with, PATACON is a more disaggregated model than the TMM. The different components of GDP demand are modeled explicitly, making PATACON consistent with the national accounts and, therefore, allowing observable variables to be explained. The TMM, for its part, works on gaps or deviations of the variables with respect to some potential or long-term level. Secondly, since PATACON is a model built on microeconomic principles, it is possible to carry out counterfactual economic-policy exercises to study the consequences of changes in policy rules. The results of these exercises are valid insofar as the model contemplates that economic agents react to changes in policy. This implies these exercises are not subject to Lucas's critique (Lucas, 1976).

It is important to note that both the TMM and PATACON are models of rational, dynamic, and stochastic expectations. Therefore, the solution of both models assumes the macroeconomic variables observed in a given period reflect both their most recent behavior and agents' expectations about what can happen in the future. The latter differentiates these models from traditional forecasts, which are constructed using time series methods.

PATACON can be used in at least four ways. The first is to summarize the information in a set of macroeconomic series in a coherent way that facilitates its interpretation. Secondly, PATACON can be used as a tool to design monetary policy. In this context, it is customary to construct counterfactual exercises to compare the effect of alternative monetary policies on the economy. The third type of exercise is the simulation of macroeconomic shocks and the quantification of their possible impact on the economy.[1] Finally, one of the most common uses for the model is to forecast. The main advantage with PATACON, and with models of this type in general, compared to others, is that the forecast can be fully explained in terms of the behavior of the exogenous variables. This is not conditioned and only reflects the structure of the model. Such information is useful when it comes to designing risk scenarios, since it is enough to divert the behavior of the exogenous variables in contrast with the central scenario. Accordingly, PATACON imposes discipline on these exercises, because it allows us to examine the consequences of these alternative assumptions within a coherent conceptual framework.

The forecast is conditioned in two ways using future paths of the exogenous variables, insofar as it is possible to consider the future behavior of the exogenous variables as being anticipated or not by the agents. In the first case, the agents in the model

* The opinions expressed in this section are solely those of the authors and imply no commitment on the part of *Banco de la República* or its Board of Directors.

1 These usually are developed using computable general equilibrium models in which there is no active monetary policy, and the decisions of economic agents across different period of time are not optimal.

use this information to make their decisions at present and in the future; in the second case, they are surprised by the future shocks from the exogenous variables. Finally, given the structure of PATACON and the computational platform on which the exercises are done, it also is possible to condition endogenous variables. In this case, PATACON identifies the path of the exogenous variables, which would be equivalent to conditioning the endogenous variable.

2. The Structure of the Model

The PATACON is structured on a neoclassical growth model in which there are households and companies that optimize the use of their resources over time. The source of growth is exogenous and depends on technological change and the rate of population growth. In this sense, the long-term growth rate is exogenous and the quarterly growth forecast converges to the previous one (see Box 3). Following the work of Christiano et al. (2005), and Smets and Wouters (2007), this model is increased with nominal wage and price rigidities, and with real rigidities, such as consumption habits, adjustment costs in investment, and the variable use of capital and its endogenous depreciation.

PATACON, which is a standard neo-Keynesian model, is adjusted to include some of the characteristics of the Colombian economy. This is reflected in the productive structure and in the exogenous shocks that are assumed to affect the economic cycle. These shocks can be of internal and external origin. The main ways PATACON varies from the traditional model are described below.

Colombia is a net borrower in the international capital market and, therefore, the behavior of the external interest rate could be expected to affect the way its economic cycle evolves. In the model, this interest rate depends on an endogenous risk premium and an exogenous risk that approximates the country's perception on international markets. The endogenous risk component is determined by the development of the external debt relative to GDP. The way the external interest rate behaves directly affects the country's borrowing capacity and the cost of future debt payments. In addition, the difference between external and domestic interest rates largely determines how the nominal exchange rate will evolve in the short term and, hence, the evolution of inflation and the trade balance, among other variables.

Although Colombia is not an economy that is especially open to foreign trade,[2] international prices do affect output and inflation. In fact, the baskets of final consumer goods and investment are composed of both locally produced and imported goods. Moreover, the economy needs imported input to produce. Therefore, the price of imported goods can affect inflation directly through the price of those that are for consumption and through production costs. It is worth noting that these goods must be marketed in pesos, which implies the use of local factors. Hence, their final price is a function of the external price, the nominal exchange rate, and the cost of marketing. Therefore, movement in the nominal exchange rate is not necessarily transmitted with the same intensity to the ultimate peso price of imported goods. The work of González et al. (2010) and Parra (2010) argue this result.

There are internal shocks that affect the economic cycle and their transmission channels are modeled explicitly in PATACON. The most important of these are exogenous cost shocks, which can be associated with weather phenomena or regulated goods, and shocks to demand, in terms of both consumption and investment, that can capture changes in fiscal policy or in consumer and investor confidence.

Finally, the model includes action taken the monetary authority, which is modeled through a policy rule used to determine the value of the short-term nominal interest rate. This aspect takes into account the fact that *Banco de la República*'s objective is to meet the inflation target and to ensure that output stays near its long-term sustainable level. This way of incorporating the monetary authority recognizes the fact that its policy cannot permanently influence the rate of economic growth.

3. Fan Chart

The fan chart is a tool that represents the possible future values of a variable based on available information. The further into the future the forecast goes, the more uncertain it becomes. In other words, the projection ranges are extended. The fan chart, created by the Bank of England staff in 1977, has been widely used in the price reports of various central banks in countries that use inflation targeting, such as England, Peru, Malaysia, Hungary, and Israel.

Since 1999, *Banco de la República* has made an effort to determine the factors that could affect macroeconomic variables in the medium term. Once they are identified, the Bank quantifies their impact on the probability distribution of the forecast for the variable; that is, the fan chart. Currently, the Bank uses the factors determined by the PATACON forecast model, namely; external demand, imported prices, commodity prices, transfers, consumer confidence, investment efficiency,

2 In fact, the most important ratio of exports to GDP is around 45%.

monetary policy, external interest rate, supply shock, wage cost shock, inflation in regulated items, food inflation and long-term growth.

The fan chart is a flexible, simple, formal, and independent tool of specific models. Compared to other methodologies, it is not only easier to apply, but offers several advantages. First, it communicates the potential risks that exist in the main forecast for a variable. This allows us to make the public aware of the presence of short- and medium-term risks that are not contemplated in the forecast for that variable. Secondly, it reflects future asymmetric risks in which the variable may assume values above or below the most likely forecast. In other words, the probability of being above or below the mode (most likely value) may be different. This advantage is relevant, for example, in situations where the central bank's loss function is asymmetric. Third, the fan chart incorporates uncertainty multipliers about the future values of factors and the variable, allowing not only greater flexibility in application, but also greater adaptability. This makes it possible to broaden or reduce the breadth of the forecast error to different horizons, which is reflected graphically. And fourth, it allows for introducing a wide variety of factors that could affect the variable in the future. In other words, this tool quantifies the effect biases in the forecast for exogenous factors have on the forecast for the variable. For example, it is possible to calculate the risk of a positive bias in the forecast for the external interest rate on the degree of asymmetry of the central forecast for inflation.

Finally, with PATACON, monetary policy becomes more transparent and communication with the public is easier, which helps to reinforce the central bank's credibility.

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Box 3
EFFECT OF THE DROP IN TERMS OF TRADE ON INVESTMENT AND LONG-TERM SUSTAINABLE OUTPUT

Juan Sebastián Amador
Juan Pablo Cote*

The recent drop in the country's terms of trade had a significant impact on economic growth. This section looks at what would happen to long-term sustainable growth if that decline were to be permanent. This is particularly important when considering the Board of Directors of *Banco de la República* (BDBR) has a constitutional mandate to keep inflation low and steady, in coordination with an economic policy that is intended to stabilize output and employment at their sustainable long-term or "potential" levels.

In their simplest form, estimates of the potential level of output assume that if a change in the actual level of economic output is sustained, part of that change will be permanent. For example, if the observed GDP of an economy declines as of a particular moment, a respective reduction in potential GDP should be observed.

However, this approach does not take into account information on the structure of the economy that can be important to explaining the evolution of the country's productive capacity. Therefore, we will use a production function to model the country's productive capacity as a function of capital and labor.

The main advantage of the production function is that it takes into account changes in the structure of the economy to estimate potential output.[1] However, the method poses a high degree of uncertainty and its results are especially sensitive to the different assumptions being made (for example, the particular functional form used to describe the economy's system of production).

To determine the value of potential output, each of the factors included can be corrected according to their noninflationary level of use. In the case of manpower, this would involve the noninflationary level of the unemployment rate (see Box 2) and the overall labor force participation rate. In this way, the resulting estimate includes economic information on the negative relationship between inflation and unemployment, which is a desirable property from the monetary authority's point of view.

Accordingly, to have an idea of what the economy's long-term or potential growth can be at present and in the coming years, using the production function method, it is necessary to identify the anticipated trends in capital, labor, and total factor productivity.

First, the decline in terms of trade has affected capital in the production function and will continue to do so. The rate of Colombian investment; that is, the ratio of gross fixed capital formation to GDP, reached a high of 25% in 2014. This was due largely to the increase in investment in the mining and energy sector during the last decade. However, the investment rate fell and was 23% in 2016, because the sector is now less attractive than it was in the past. Thus, less productive capital could be expected to accumulate in the future.

As for the next factor, the labor force, the main determinant of its future evolution is the projected growth of the population. According to DANE, the population is expected to grow in the coming years at an annual rate of approximately 1%, after having increased by an average of 1.5% during the last thirty years. On the other hand, labor force participation is now at levels close to its historic maximum (see Graph B in the shaded section of Chapter 2). These levels are relatively high from an international perspective. Therefore, it is reasonable to assume there would be little or no increase in labor force participation in the years ahead.

Total productivity is the most problematic factor in the production function methodology, since it is not observed, but is obtained in a residual way. This causes it to be contaminated by cyclical factors that are unrelated to its true dynamics and means that uncertainty about its behavior is greater. Therefore, the different scenarios

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1 For example, these models correctly identified an increase in production potential in the United States that was generated by the increased participation of women in the labor market during the 1960s and 1980s.

of potential growth rest largely on assumptions about whether structural reforms that affect long-term growth in productivity in Colombia will be implemented (or not) in the coming years.

Three scenarios, in particular, are contemplated for long-term growth in productivity. The first scenario more or less sticks to the International Monetary Fund's argument about the factors that could lead to long-term growth in productivity growth.[2] Specifically, it is assumed productivity will increase due to the implementation of policies that include the peace process, the tax reform, the reduction in trade barriers, and the construction of so-called fourth-generation highways. In the second scenario, it is suggested that productivity will evolve in keeping with its trend in growth during the last twenty years, isolated from variations generated by the economic cycle or fluctuations in commodity prices. Finally, in the third scenario, as opposed to the first one, it is assumed productivity will not grow in the long term; that is, it will maintain its current estimated level in the years ahead.

Taking the foregoing into account, the technical staff at *Banco de la República* estimates long-term sustainable growth of the Colombian economy would be somewhere between 3% and 4% annually, but most likely in the lower half of that range.

Finally, as mentioned earlier, it is important to remember these estimates are highly uncertain and the results are sensitive to the forecasts, assumptions, and specifications being used. It should be noted, moreover, that the range presented here was constructed assuming a permanent drop in the terms of trade. If there is a significant recovery in the products exported by Colombia, the sustainable growth rate might be higher in the long term.

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2 See, F. Roch (2017). "Colombia: Potential GDP Growth," IMF, selected issues papers, unpublished.

V. Risks to Macroeconomic Stability

The Colombian economy is completing a process of adjustment in response to the decline in national revenue witnessed since mid-2014.

As is characteristic of correction periods, the forecast for economic growth this year is low. However, it is better than the outlook for other countries in the region that were affected by the same shock.

In the central scenario, the adjustment is expected to be consolidated in an orderly fashion, which is important to reducing the economy's vulnerability to additional shocks. However, a slowdown beyond what is consistent with the new direction in national revenue could have negative consequences for employment and for household and corporate balance sheets.

The Colombian economy is completing a process of adjustment in response to the decline in national revenue witnessed since mid-2014. This deterioration, reflected primarily in a drop in oil investment and public revenue, made several macroeconomic imbalances in the Colombian economy more evident and they are being corrected. As forecast, the current account deficit in 2017 would again be lower, explained by an increase in revenue, mainly due to the value of exported goods.[4] Output growth would be low and somewhat less than in 2016, but with the momentum in domestic demand recovering shortly after bottoming out last year. Indebtedness in the economy, as a proportion of GDP, would decline once again and the rise in home prices would be more moderate, although both variables would maintain levels that can still be classified as historically high.

The tax reform bill approved by Congress would contribute to this orderly economic adjustment process forecast for 2017. In this way, the Government hopes to gradually increase the tax revenue it collects and, with the additional income and the correction in operating and investment expenses, it intends to reset the fiscal deficit on a declining path. These efforts are aimed at ensuring the country's fiscal and external sustainability and, in general, at promoting investment and sustainable economic growth.

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4 Instead of the decline in expenditures that happened in 2016.

As is typical in correction periods, which usually require restrained demand and tax reforms, the forecast for economic growth this year is low. It also is less than the growth registered in 2016 and below the country's historical average. However, it remains positive, and the outlook for Colombia is more favorable than that of other economies in the region that also were affected by the same negative shock to terms of trade. In this context, the central forecast scenario proposed in the previous chapters assumes the economy will continue to adjust in an orderly fashion, with respect to both external and internal variables. This is according to what has been observed so far. It is important for this process to be consolidated. If so, the economy will be less vulnerable to additional shocks.

By 2017, the current account deficit would continue to narrow, borrowing (relative to GDP) would be reduced, and home prices would continue to grow at moderate rates.

However, one cannot rule out the risk of a far more profound economic slowdown than is estimated, beyond what is consistent with the new course in national revenue. For example, this risk could materialize due to a more pronounced decline in household and corporate confidence, external demand than is much weaker than estimated, a sharp rise in the country risk premium, or steep increases in the cost of external borrowing.

If a risk scenario like the one described above materializes, employment could deteriorate, with negative consequences for household and corporate balance sheets. Although the level of indebtedness in the economy relative to its output is adjusting[5] and is lower than in other countries in the region, it is still near its historic high. Furthermore, the latest figures on portfolio quality show risk and delinquency have increased. In this environment, although lending institutions remain healthy and have adequate provisions, additional impairment in their assets would make the country's financial stability more vulnerable to other adverse shocks.

In the housing market, the momentum in prices and construction has eased, but some estimates, such as those presented here or those referred to by the International Monetary Fund, suggest there are further corrections that could be made.[6] However, due to the pre-sale scheme that operates in Colombia and the nature of financing, it is considered somewhat unlikely the correction will involve substantial losses for the financial system or for households.

Recent developments and certain perspectives and considerations regarding the current account, the real exchange rate, borrowing and home prices are outlined in this chapter. These are variables cited in the literature as being relevant to identifying possible macroeconomic imbalances and to understand-

5 This is explained by the reduction in the commercial loan portfolio relative to GDP.

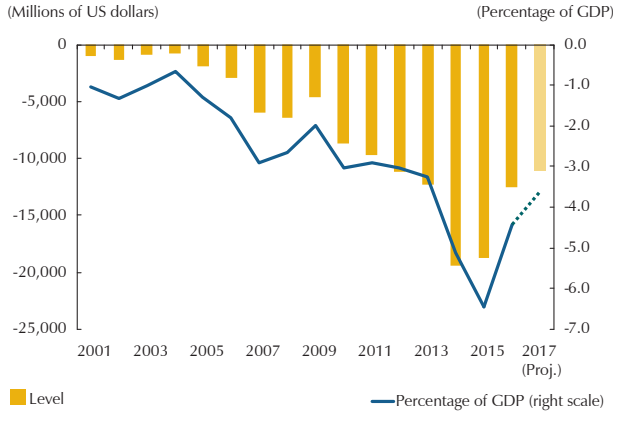
6 See F. Roch (2017). "Housing Finance and Real Estate Markets in Colombia", IMF, *Selected Issues Papers*, 2017, unpublished.

ing their process of adjustment. The macroeconomic imbalance index (MII)[7] is included as well. It combines the estimated gaps for each of these variables.

A. THE CURRENT ACCOUNT AND REAL EXCHANGE RATE

The current account deficit continued to narrow in 2016, when it came to USD 12,541 m (4.4% of GDP). This is similar to what it was in 2013 (USD 12,347 m, equivalent to 3.2% of GDP for that year) (Graph 46). As detailed in Chapter I of this report, the correction in the external imbalance was explained by a much larger decline in expenditure than in revenue. This is consistent with the slowdown in domestic demand in the face of less momentum in national revenue. It also is in keeping with accumulated depreciation of the peso. This occurred in a context of weak growth on the part of the country's trading partners and low terms of trade, which were similar to those registered in 2004 (Graph 47).

Graph 46
Current Account Deficit



(proj): projected
Source: *Banco de la República*

Graph 47
Terms of Trade Index[a/]

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

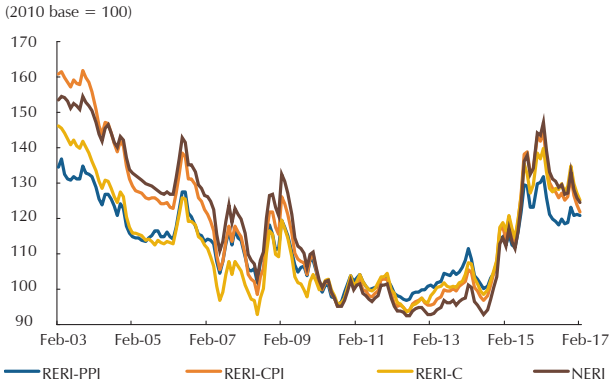
The deficit is expected to continue to adjust (to 3.6% of GDP) during 2017, although it would remain at levels above its historical average since 2000 (2.5% of GDP). The correction would be due to an increase in income rather than any additional reduction in expenditure. This is in line with the expected improvement in terms of trade (mainly due to international prices for oil and coal), and the slow recovery of our trading partners.

As for expenditure, the forecast indicates imports would cease to decline, consistent with a domestic demand that would accelerate compared to 2016. Payments for factor income would rise due to higher profits for companies in the mining-energy sector and because of interest payments to foreigners holding Colombian bonds.

In this scenario, the expected improvement in terms of trade could generate some pressure on real appreciation of the peso, as witnessed during the year (Graph 48). However, this effect could be offset, in part, by other factors such as foreign interest rate

7 See Arteaga, Huertas y Olarte (2012). "Índice de desbalance macroeconómico," *Borradores de Economía,* no. 744, *Banco de la República*.

Graph 48
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 to that of our main trading partners, using the PPI and the CPI as respective deflators. In the RERI-C (for competitiveness), a comparison is drawn with our main competitors in US markets for coffee, bananas, flower and textiles.
Source: *Banco de la República*

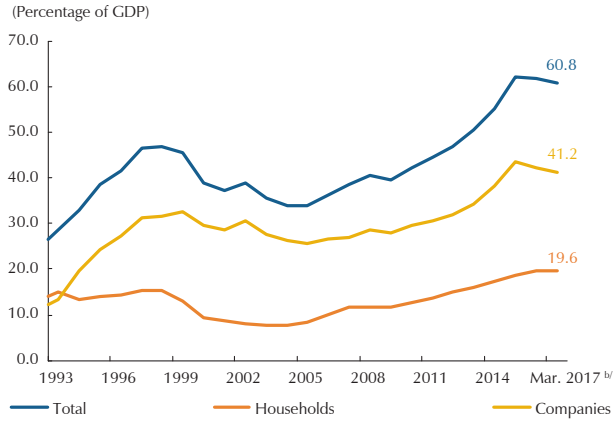
hikes due to the normalization of monetary policy in the United States, or some increase in risk aversion.

The projected correction in the current deficit, which is still required to reduce the country's external vulnerability to possible additional shocks, is not without risk. On the revenue side, the improvement in terms of trade could be less than expected if, for example, oil prices decline compared to those observed in the early months of the year. Less growth worldwide or on the part of our trading partners in the region, or protectionist trade policies, also would weaken the country's external revenue.

In terms of expenditure, after the low levels witnessed in 2016, imports could grow more than expected in the face of a stronger peso, as observed in the early months of the year. This possibility is even greater if the process of import substitution is already complete, following the change in the level of the exchange rate as a result of the permanent drop in oil prices.

In the opposite sense, a substantial reduction in access to external financing or less-than-expected momentum in domestic demand could imply a more pronounced closure of the balance in the current account. Although passage of the tax reform bill substantially reduced the possibility of a decline in the country's sovereign debt rating, some degree of volatility in international financial markets cannot be ruled out, due to an increase in the cost of financing. However, the information available for the early months of the year shows Colombia has continued to receive significant inflows of capital, larger than those contemplated in the previous quarterly report.

Graph 49
Household and Corporate Borrowing[a/]



a/ Includes bank loans in domestic and foreign currency, mortgage portfolio securitizations, bonds floated on the market, and foreign direct financing.
b/ The figure for 2017 is an estimate with information up to March.
Sources: Financial Superintendence of Colombia; Calculations by *Banco de la República*.

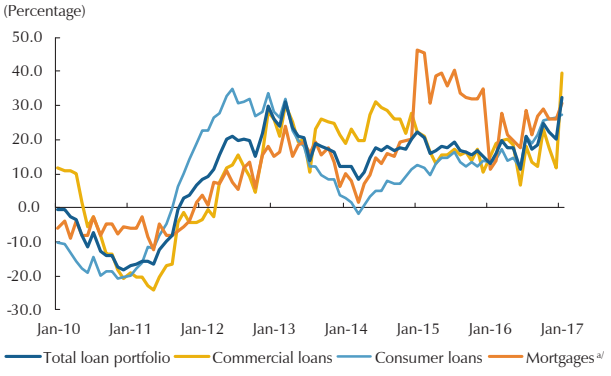
B. BORROWING

The information available for the first quarter of 2017 shows the slowdown in borrowing[8] continues, particularly corporate borrowing, which includes the portfolio with the financial system. Neverthe-

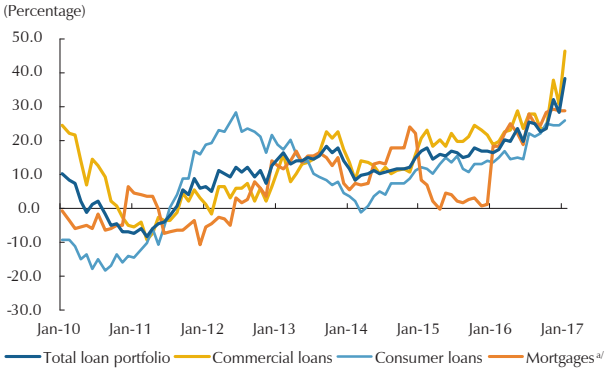
8 Includes bank loans in domestic and foreign currency, mortgage portfolio securitizations, bonds floated on the market, and foreign direct financing.

Graph 50
Annual Growth in Non performing and Risky Loans

A. Non performing loans



B. Risky loans b/



a / The change in the level of the series between January 2015 and January 2016 is due to the fact that home leasing was reclassified from the commercial portfolio to the home mortgage portfolio, given implementation of the IFRS.
b / Pertains to the non-A-rated portfolio.
Sources: Financial Superintendence of Colombia; Calculations by *Banco de la República*.

less, borrowing is still close to its all-time highs, both for companies and households (Graph 49).

With respect to quality, the non-performing portfolio had increased 32% by January, while risky loans were up by 38%.[9] A look at the different types of lending shows commercial loans posted 39.7% annual growth and risky loans, 46.3%; in both cases, there was considerable acceleration compared to what was observed in 2016 (Graph 50). It is worth noting that corporate loans are the most important component of the total portfolio of lending institutions. They account for nearly 56%. So, their momentum has a significant impact on balance sheets in the financial system. The corporate sector; that is, loans to larger companies, would be the one that contributed the most to the increase in the non-performing portfolio.[10]

The consumer portfolio, which is the second largest component of lending by financial institutions (with a share of nearly 28%), also experienced increases in non-performing and risky loans, although less than in the case of commercial loans.

An increase in credit risk is to be expected during a slowdown like the one the Colombian economy is going through, but it must be monitored closely to preserve the health of the financial system. So far, despite the added increase in non-performing and risky loans, the indicators for the total portfolio for each type of lending are lower than those observed in 2009, and the provisions that have been made cover more than 100% of the non-performing portfolio.

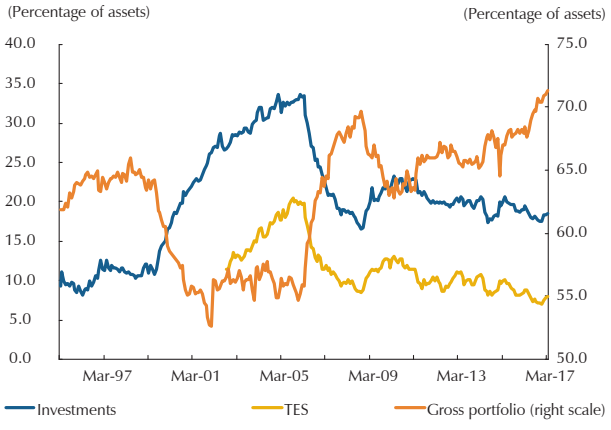
However, portfolio quality could deteriorate further, particularly in the case of consumer loans. Although the job market has shown resilience in the face of less economic growth and even though wages continue to rise at high rates, one cannot rule the possibility of some rise in unemployment in the coming

9 Other than A-rated.

10 See "Microfinanzas en las perspectivas de riesgo del sistema financiero," Presentation by the Deputy Superintendent of Risk Supervision at the IX National Forum of Asomicrofinanzas, Bogotá, March 24, 2017, available at: http://www.asomicrofinanzas.com.co/pdf/9foro/SuperFinanciera%20-%20Fabian%20Mauricio%20Arias.pdf

months and, hence, an increase in overdue loans, particularly when the extent of household borrowing (relative to GDP) continues to grow.

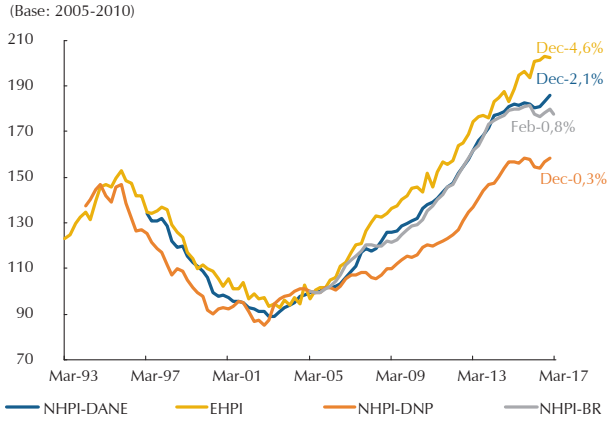
Graph 51
Loan Portfolio, Investments, and TES of Lending Institutions



Sources: Financial Superintendence of Colombia; Calculations by *Banco de la República*

A substantial decline in portfolio quality can slow the supply of credit, either by stiffening the requirements for granting new loans[11] or by including a larger risk component in the interest rate. Furthermore, if banks see the risk posed by their borrowers is increasing, they may consider restructuring their portfolios by moving from loans to investments, particularly considering the assets of lending institutions in recent months include only a small portion of TES (compared to their historic level) (Graph 51). A significant increase in credit risk also could delay the pass-through of recent policy rate cuts to lending rates, and the country's economic recovery might be slower and weaker as a result.[12]

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



a/ Third quarter 2016 data for NHPI-DANE, NHPI-NDP and NHPI-BR. The latest figures for the NHPI-BR pertain to Dec.-Feb. 2017.
Sources: DANE, DNP and *Banco de la República*

C. HOME PRICES

The available data on prices and quantities suggest the housing market continues to adjust. At the end of 2016, the increases in new home prices were still similar to those in the CPI, thus rounded out two years of relative price stability compared to the increases in the basic basket. During the fourth quarter of 2016, the annual variation in new home prices (relative to the CPI) was 2.1%, according to the index calculated by DANE (NHPI-DANE), and 0.3% according to the DNP (NHPI-DNP) for Bogota. As for December 2016-February 2017, the index calculated by *Banco de la República* shows an annual decline of 0.8% (relative to the CPI). The increase in prices for existing homes would have slowed during the latter part of 2016 (4.6% per year above the CPI) (Graph 52).

11 In the March 2017 Quarterly Survey of the Credit Situation, most banks claimed to be more restrictive when it comes to all types of lending, although the proportion that raised their requirements for consumer and commercial loans was less compared to what it was in December 2016. Those who did stiffen their requirements say this action was based on less favorable or uncertain economic prospects and deterioration in their balance sheet positions.

12 Bijsterbosch & Dahlhaus (2011). "Determinants of Credit-less Recoveries," *Working Paper Series*, 1358, European Central Bank. The authors suggest that although economic recoveries with restrictions on lending are relatively frequent, they tend to be weaker and take longer.

The housing market is slowing in terms of price and quantity.

As for quantity, the data on new homes, according to the Colombian Chamber of Construction Activity (Camacol),[13] suggest the supply at the end of 2016[14] would have begun to adjust to slower sales, particularly in the segment that does not include low-income housing (non-LIH).[15] This would be due to a sharp cutback in new projects on the market. In fact, during the twelve months ended in February 2017, non-LIH housing launches (in units) were down by 10.3% annually, while the number of units sold during the same period fell by 4.0%.[16] In the specific case of the housing segment with subsidized interest rates under PIPE 2.0,[17] a correction in launches is underway, even though annual sales have remained relatively stable (Graph 53).

Sales of LIH housing in the segment covered by Mi Casa Ya[18] are still dynamic. In the case of so-called priority housing (PIH) (priced at less than 70 SMMLV), sales continue to show a negative slope, pending the initiation of government housing plans for this segment [19](Graph 53).

At the same time, starts have declined (especially in the non-LIHS segment). According to Camacol, , this is due to a "change the way projects are planned," with " new launches expanding the time line between the date sales initiate and the start of work". The idea is to reduce the risk of accumulating a supply of units that are finished or under construction.[20]

In the short term, the added delay in housing starts helps to slow the momentum in the economy. Nevertheless, it does reduce the sector's vulnerability to a possible decline in household income. In recent years, construction has been a driving force of the country's growth and a major source of employ-

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13 Includes information for thirteen regions: Antioquia, Atlántico, Bogota and Cundinamarca, Bolívar, Cadas, Huila, Nariño, Norte de Santander, Risaralda, Santander, Tolima and Valle.

14 The supply refers to units available for sale that are in the hands of the builder. They can be pre-sold, under construction or completed.

15 For additional indicators that show how the momentum in sales has slowed, see Camacol (2017). "Evolución del impacto comercial de los proyectos de edificaciones: un indicador líder," *Informe Económico*, no. 87, April 17, 2017.

16 In other words, there were 12,500 fewer housing launches compared to the cumulative amount for the twelve months ended in February 2016., while sales were down by approximately 4,300 units.

17 The subsidy is 2.5 pp on the interest rate, applicable to new homes priced between 135 and 335 times the minimum monthly wage (SMMLV in Spanish).

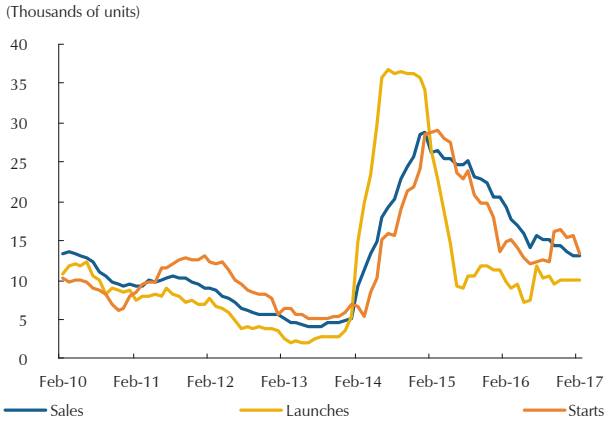
18 New homes priced at 70 to 135 times the SMMLV.

19 Plans have been announced for this segment. According to COMPES Document 3869 of October 2016, it would operate as part of *Mi Casa Ya*.

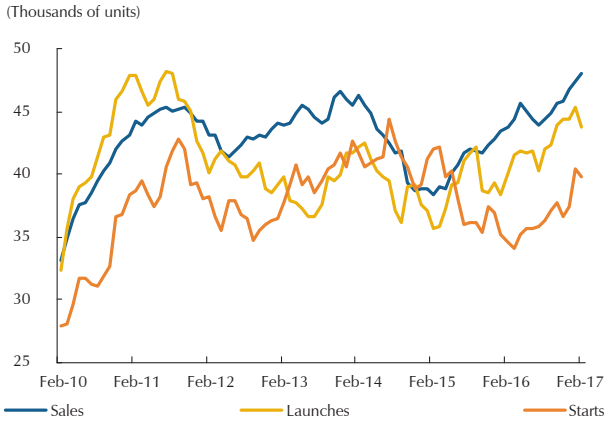
20 For additional indicators that show how the momentum in sales has slowed, see Camacol (2017). "Evolución del impacto comercial de los proyectos de edificaciones: un indicador líder," *Informe Económico*, no. 87, April 17, 2017.

Graph 53
New Housing: Sales, Launches and Starts (12-month cumulative figures)[a/]

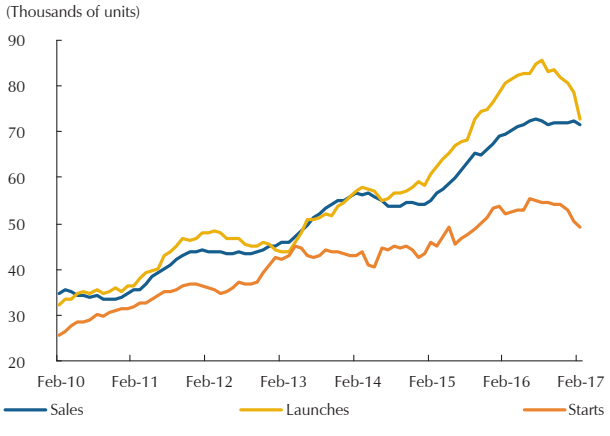
A. Priced at 70 SMMLV or less



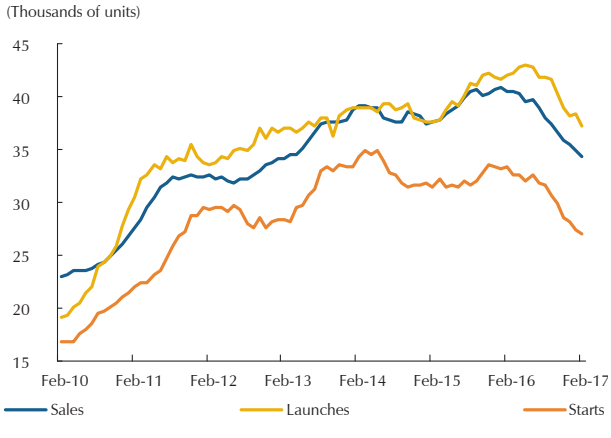
B. Priced above 70 SMMLV and at 135 SMMLV or less



C. Priced above 135 SMMLV and at 335 SMMLV or less



D. Priced above 335 SMMLV



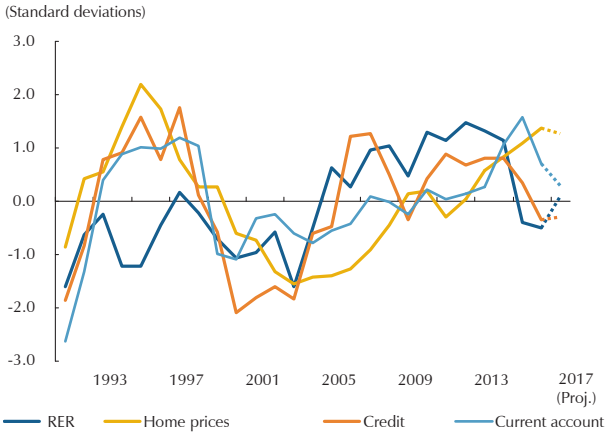
a/ Includes information on 13 regions.
Sources: Camacol; Calculations by *Banco de la República*

ment, particularly for unskilled workers. So, maintaining the health of this branch of the economy is fundamental to sustained growth in the medium- and long term.

D. THE MACROECONOMIC IMBALANCE INDEX (MII)

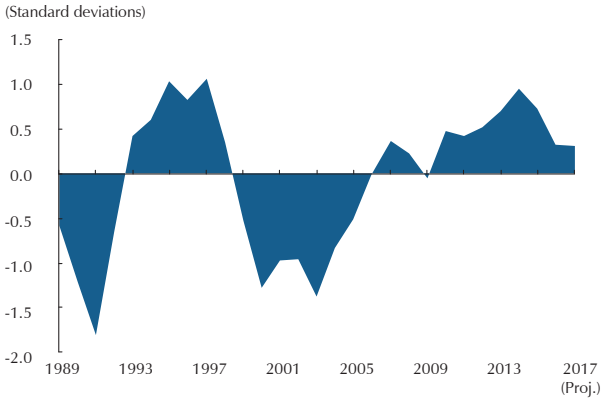
The information at hand and projections made by the technical staff suggest the current account deficit would continue to narrow during 2017. Better terms of trade would generate some pressure on real appreciation of the peso, which could be offset by other factors, such as higher external interest rates. Borrowing would continue to slow and the housing market would remain less dynamic than in past years.

Graph 54
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*

Graph 55
Macroeconomic Imbalance Index



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

According to the MII methodology, the current account gap would continue to close, although more slowly than was the case a year ago, and the real exchange rate could fail to help reduce in the aggregate imbalance. The gap in credit would be similar to the one in 2016. As for the housing market, if prices remain stable, the correction would be less (Graph 54). Therefore, in terms of the aggregate, the MII suggests the pace at which the economy has been adjusting its imbalances would be reduced significantly (Graph 55).

Attachment

Macroeconomic Forecasts by Local and Foreign Analysts

The latest forecasts by local and foreign analysts concerning the major economic variables for 2017 and 2018 are summarized in this section. At the time they were consulted, the analysts had access to data up to April 21, 2015.

1. Forecasts for 2017

The local analysts expect 2.2% economic growth, on average, compared to 2.4% estimated in the *Inflation Report* for last quarter. The foreign agencies who were consulted are forecasting 2.1% GDP growth, on average.

Table A1
Forecasts for 2017

	Real GDP growth	CPI inflation	Nominal exchange rate	Nominal FTD (fixed-term deposits)	Fiscal deficit	Unemployment rate in thirteen cities
	(Percentage)		End of	(Percentage)	(Percentage of GDP)	(Percentage)
Local Analysts						
Alianza Valores	1.5	4.8	3,200	5.3	3.8	10.2
ANIF	2.2	4.6	n.d.	6.2	2.8	10.1
Banco de Bogotá[a/]	2.5	4.4	2,900	6.2	3.3	9.8
Bancolombia	2.0	4.2	2,980	6.0	3.7	10.4
BBVA Colombia[a/]	2.1	4.1	3,015	5.7	3.6	10.5
BTG Pactual	1.9	4.2	3,060	n.d.	3.6	9.7
Corficolombiana	2.8	3.9	3,050	5.5	3.3	9.5
Corpbanca [a/, b/]	2.3	4.1	3,080	5.3	3.6	9.9
Corredores Davivienda [a/, c/]	2.0	5.6	3,000	6.0	3.7	9.8
Credicorp Capital [d/]	2.1	4.3	2,800	5.4	2.7	10.4
Davivienda [a/]	2.0	5.6	3,000	6.0	3.7	9.8
Fedesarrollo [a/]	2.4	4.3	n.d.	n.d.	3.6	n.d.
Ultraserfinco [a/, e/]	2.4	4.6	2,900	6.5	3.6	10.5
Average	**2.2**	**4.5**	**2,999**	**5.8**	**3.5**	**10.0**
Foreign Analysts						
Citibank-Colombia [a/]	1.8	4.0	2,930	6.2	3.6	10.7
Deutsche Bank	2.0	4.4	3,010	n.d.	3.7	9.7
Goldman Sachs	2.3	4.4	2,883	n.d.	3.5	n.d.
JP Morgan	2.2	3.9	3,100	n.d.	3.6	n.d.
Average	**2.1**	**4.2**	**2,981**	**6.2**	**3.6**	**10.2**

a/ The projected deficit pertains to the central government.
b/ Formerly Banco Santander
c/ Formerly Corredores Asociados
d/ Formerly Correval
e/ Formerly Ultrabursatiles
n.a. 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)		
Local Analysts			
Alianza Valores	**2.5**	**4.5**	**3,200**
ANIF	2.8	3.3	n.d.
Banco de Bogotá	3.0	3.4	2,950
Bancolombia	2.8	3.5	2,870
BBVA Colombia	2.7	3.4	2,958
BTG Pactual	3.0	3.2	3,090
Corficolombiana	3.5	3.5	3,100
Corpbanca [a/]	2.8	3.5	3,175
Corredores Davivienda [b/]	2.8	3.0	n.d.
Credicorp Capital [c/]	2.8	3.0	2,700
Davivienda	2.8	3.0	n.d.
Fedesarrollo	3.2	3.5	n.d.
Ultraserfinco [d/]	2.8	3.5	2,900
Average	**2.9**	**3.4**	**2,994**
Foreign Analysts			
Citibank-Colombia	3.2	3.1	2,830
Deutsche Bank	3.0	3.7	2,965
Goldman Sachs	2.7	3.5	3,000
JP Morgan	3.2	3.9	n.d.
Average	**3.0**	**3.6**	**2,932**

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 inflation forecasts, the local analysts anticipate 4.5%, while the foreign analysts expect inflation to be 4.2% by the end of the year. Both these forecasts are outside the range set by the Board of Directors of *Banco de la República* (JDBR) for 2017 (between 2.0% and 4.0%).

In terms of the exchange rate, the local analysts expect the representative market exchange rate (TRM) to be COP2,999 by the end of the year, on average, compared to COP3,055 estimated in the survey taken into account for the previous edition of this report. The foreign analysts forecast a TRM close to COP2,981 by the end of the year.

With respect to the fixed-term deposits (DTF), the local analysts forecast 5.8%, on average. They also expect 10.0% unemployment.

2. Forecasts for 2018

The local analysts expect 2.9% economic growth in 2018, while the foreign analysts are forecasting 3.0%. As for inflation, the local and foreign analysts are predicting 3.4% and 3.6%, respectively. In terms of the nominal exchange rate, the local entities consulted for this report expect it to average COP2,994, while the foreign analysts forecast an average of COP2,932.

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