June 2018

INFLATION **REPORT**

* Presented by the technical staff to the Board of Directors for its meeting on July 27, 2018.

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

ISSN - 2145-6526

INFLATION REPORT

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The technical staff of the Office for Monetary Policy and Economic Information dedicates this *Report* to the memory of Álvaro Torres M. (RIP), a friend, athlete, colleague and tireless and disciplined professional who was an outstanding example of commitment to work and service.

Insecurity and those dedicated to violence robbed us of his unbeatable smile, his sparkle and infinite joy, his vocation for helping others, and the possibility of him lending a hand to a friend whenever needed.

Álvaro, you will be in our hearts forever!

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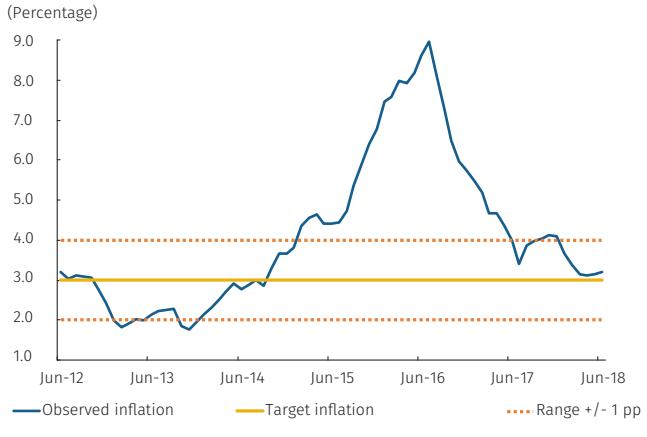
Evolution of Inflation and Monetary Policy Decisions

During the second quarter of 2018, inflation and inflation expectations, as well as several of the core inflation indicators, tended to stabilize and stood close to the 3.0% target. In that period, the economy´s growth would have been low, although improving, with a spare capacity that would have widened *vis-á-vis* 2017.

Chart A
Consumer Price Index



Sources: DANE and *Banco de la República.*

In June, the annual variation in the consumer price index (CPI) and the average of the core inflation indicators were 3.2% and 3.3%, respectively, figures similar to those registered in April (Graph A). Food, as well as those goods and services most affected by the increase in gasoline prices and by the exchange rate, were the groups that made the largest contribution to the increase of inflation. This behavior was offset by the slower pace of the CPI increase for non-tradable goods excluding food and regulated items, which has been slowing down since the beginning of the year. In the second quarter of 2018, inflation expectations showed no significant changes and remained somewhat above the target. Analysts' expectations point to 3.4% and 3.3% inflation figures in December 2018 and 2019, respectively. Those embedded in public debt bonds to two, three, and five years are within a range between 3.0% and 3.4%.

The behavior of inflation and its expectations took place in the context of a negative output gap, with a dynamic domestic demand that would have recovered in the second quarter, but that still exhibits low increases. The indicators of retail sales, consumer confidence, and imports of consumer goods in US dollars suggest that household spending in the second quarter would have been more dynamic than in the first. On the other hand, estimates of imports of capital goods in constant pesos indicate that they would have registered a lessnegative annual growth rate than the one observed in the first three months of the year.

With this, the Central Bank's technical staff considers that economic growth in the second quarter (seasonally adjusted and

corrected for working days) would be around 2.6%. This estimate assumes that the strong growth in public consumption recorded in the first three months of the year would have been transitory and that it would moderate in the second quarter. Also, that investment in civil works will fall less than at the beginning of the year. The contribution of net exports to growth would have been lower. A better dynamics of absorption would have taken place in an environment of recovery in the terms of trade and with a current account deficit that would have widened in US dollars and as a share of GDP. The latter estimate suggests that the closure of the external imbalance would have been slower than projected.

Calculations indicate that the real policy interest rate and that for commercial credit, mortgages, and consumer credit (except credit cards) are at levels below their averages for the past 10 years. This takes place within a context in which the reductions in the policy rate would have been completely transmitted to the rates of commercial credit and mortgages, while the transmission to the consumption rates has not yet been completed.

For the rest of the year, the new figures and forecasts of economic activity in the United States, the euro zone, and some countries in the region suggest that external demand will continue to increase, but at a rate somewhat lower than expected one quarter ago. The futures market at six and twelve-month horizons indicates that the oil price will decrease, but to levels still way higher than a year ago. Should this materialize, the terms of trade would remain at current levels and, together with the dynamics expected from the country's trading partners, would continue to favor the recovery of external income.

It is likely that the cost of external financing will continue to increase, as has occurred since mid-last year, as a result of the expected normalization of monetary policy in the United States and in other developed economies. In addition, with the country's external imbalance not yet completely corrected, there is a risk that other factors that exert upward pressures on the country risk measures and on the exchange rate become strong, such as an unexpected increase in global interest rates or in the risk premia of emerging markets, or a reversal of international oil prices.

Growth of the economy in the second half of the year is expected to be similar to the figure estimated for the first half (2.7%), although with a more homogeneous sectoral behavior. The increase in total consumption would be somewhat lower, with a more dynamic household spending and a lower increase of public consumption. Investment would grow, but at a low rate. Domestic demand would continue to recover slowly, and the contribution of net exports would be low, but positive. With this, the technical

staff maintained its 2.7% growth projection for 2018. Our calculations suggest that the spare capacity will be somewhat wider in 2018 than in 2017.

The monetary policy actions taken so far and the spare capacity of the economy should contribute to the convergence of inflation to 3.0%. However, there are risks that might slow down this process significantly. One of them is a more pronounced increase in the price of food than projected for the rest of the year. It has not been ruled out that some regulatory changes and other supply shocks (e.g., the increase in garbage collection rates) may generate increases in the prices of public utilities and maintain the annual variation of the CPI for regulated items high in the second half of 2018. There is also the risk of a stronger-than-expected depreciation of the peso that would be passed-through to domestic prices.

Based on this information, the Board of Directors considered the following factors in its decision:

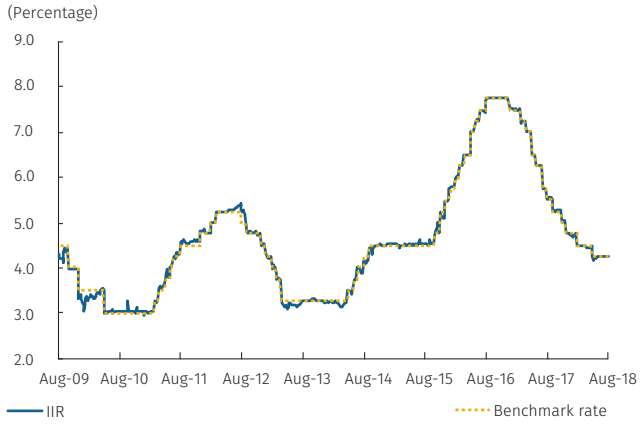
- Uncertainty about the pace of recovery of economic activity. On the one hand, it is projected that spare capacity would expand in 2018. On the other, if the price of oil remains at current levels for an extended period or the increasing trend in confidence persists, the dynamics of aggregate demand could be greater than expected. Uncertainty in this regard is high.
- The stability of inflation and its expectations above the target, and some risks that could push the inflation upwards and delay its convergence to 3.0%. Among them, a stronger-than-expected depreciation of the peso that would be passedthrough to domestic prices. Once again, uncertainty about these scenarios is high.

In this environment, after assessing the situation of the economy and the risk balance in its meetings in June and July 2018, the Board deemed appropriate to maintain the benchmark interest rate at 4.25% (Graph B).

The Board of Directors will continue to carefully monitor the behavior of inflation and the projections of economic activity and inflation in the country, alongside the international situation. Monetary policy will depend on the new information available.

Juan José Echavarría
Governor

Chart B
Banco de la República's Benchmark Interest Rate and the Interbank Interest Rate (IIR)
(2009-2018)[a/]



a/ The figures pertain to data from working days. The last figure corresponds to August 2, 2018.
Sources: Superintendencia Financiera de Colombia and *Banco de la República*

01

The International Situation and Balance of Payments

This *Report* shows slightly less GDP growth for the country's trading partners, but some acceleration is expected in 2018 compared to 2017.

The forecast for the international price of oil was revised upwards.

The country's current account deficit, as a percentage of GDP, is expected to continue to adjust during 2018, although slower than had been forecast last quarter.

A slight increase in external deficit, in dollars, is anticipated in the baseline forecast scenario for 2019.

1.1 The International Situation

One of the most relevant events for Colombia on the international front in recent months has been the persistence of international oil prices at levels above USD 70 per barrel, and the favorable effect this has on the country's terms of trade. Another important occurrence was the increase in the perception of risk in emerging markets, which has had a significant impact on the countries that are perceived as being the most vulnerable. Even so, there were no significant changes in global financial conditions, which remained favorable. Likewise, Colombia's trading partners have continued to recover economic growth so far in 2018.

Accordingly, the baseline forecast scenario outlined below assumes somewhat less external demand than was forecast in the last edition of this *Report*. However, it is expected to accelerate in 2018, compared to the previous year, and to be significantly higher than in 2016. As for oil, higher prices are forecast once again for 2018, but they would decline by 2019 due to an expected increase in

world supply. In addition, the normalization of monetary policy in the advanced economies is expected to continue gradually, with moderate effects on the cost of Colombia's foreign financing.

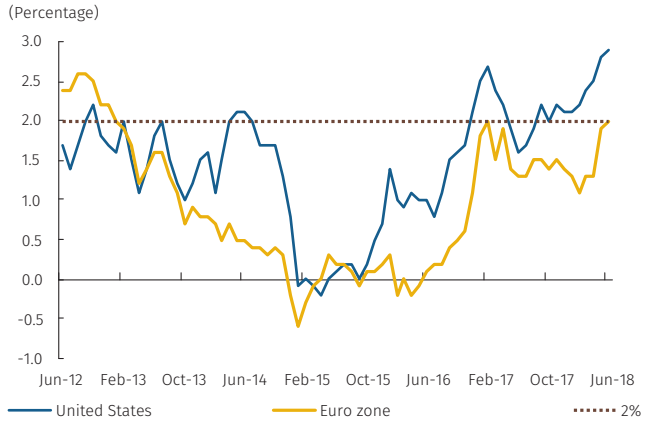
1.1.1 Real Activity, Inflation and Monetary Policy

New information available points to the fact that the US economy remains on a path of solid growth. At the statistical close of this *Report*, it was known that second-quarter growth for real gross domestic product (GDP) in the United States was 4.1%, annualized quarter (a.q.). This figure represents an acceleration with respect to the increase observed in the first quarter (2.2% a.q.), which was consistent with market expectations. The latest data confirm a strengthening of economic activity, with a strong labor market and greater household confidence and income, which have favored consumption. This behavior, added to the substantial fiscal stimulus associated with the reduction in taxes, is pushing output above its potential, which could exacerbate inflationary pressures in the future.

In the euro area, growth in output during the first quarter was 0.4% with respect to the previous period and 2.5% compared to the same quarter one year ago. This represents a slight deceleration,[1] which would be explained primarily by a weak external sector and by temporary supply shocks. The data available for the second quarter point to a recovery during the remainder of the year.

Inflation in the developed economies has increased in recent months, mainly due to the rise in fuel prices. In the United States, the annual change in prices during June was 2.9%, which is higher than the 2.4% recorded in March 2018. Annual inflation in the euro area went from 1.3% in March to 2.0% in June (Chart 1.1). The values for core inflation in these economies in June show no major changes with respect to the previous quarter, being 2.3% and 0.9%, respectively. The current economic momentum and the good results for the labor market in these economies are expected to bring upward pressure to bear on wages and prices, which will likely to be evident in the coming months

Chart 1.1
Indicators of Annual Headline Inflation in the United States and the Euro Zone
(Annual change)



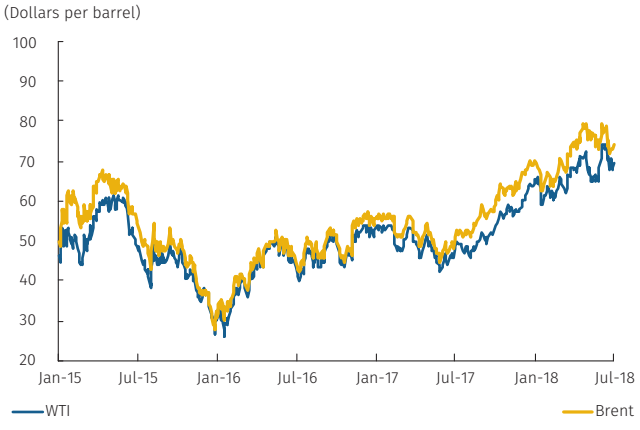
Source: Bloomberg.

1.1.2 Commodity Prices

With respect to the prices of the commodities Colombia exports, the persistence of oil prices at relatively high levels is particularly important.

1 The economic growth in the euro area during the fourth quarter of 2017, with respect to the same period of the previous year, was 2.8%.

Chart 1.2
International Oil Prices (Brent and WTI)

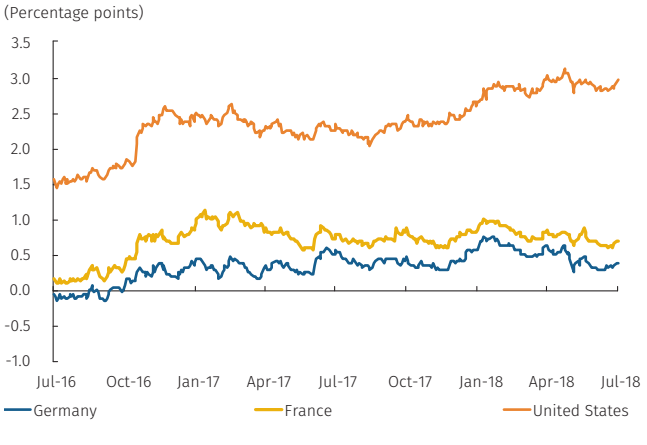


Source: Bloomberg.

Chart 1.3
Terms of Trade Index
(Foreign trade methodology)

Source: *Banco de la República*

Chart 1.4
Interest Rates on 10-Year Sovereign Bonds for Several Advanced Economies



Source: Bloomberg.

During the course of the year up to the second quarter, the average for the Brent reference remained at USD 71.12 per barrel (Chart 1.2). This is higher than the average observed in 2017 (USD 54.79 per barrel) and exceeds the average forecast in the last edition of the *Inflation Report*. The increase during recent months is a consequence of geopolitical factors and supply restrictions.

As a result, the country's terms of trade have improved over what was observed the previous year, although they remain below the levels registered prior to 2014 (Chart 1.3). On the other hand, the prices of imported goods have risen slightly, in line with international inflation.

1.1.3 Financial Markets

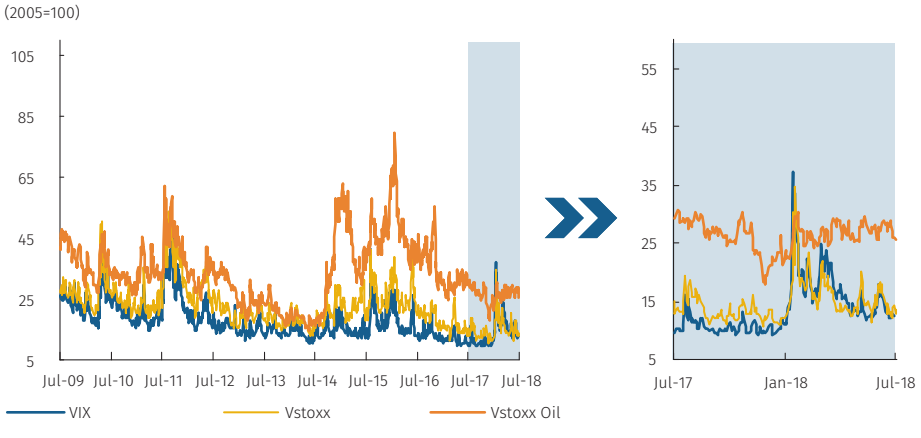
Monetary policy in some of the advanced economies has continued to normalize so far this year, in line with expectations. This is the case in the United States, where the Fed made two 25 bp interest rate hikes, one at its meeting in March and the other at its meeting in June. These increases were transmitted, in advance, to long-term US treasury bonds, particularly the ten-year bonds. The yields on these securities increased significantly between January and May, reaching over 3%. However, this performance has become more moderate in recent months (Chart 1.4).

Additionally, in recent months there has been a sudden increase in the perception of sovereign risk towards emerging economies by international markets, which has had a considerable impact on countries such as Argentina and Turkey, given their high debt levels. This situation led to a reduction in capital flows to these economies during the second quarter and up to mid-July. Added to this is the announcement and establishment of several protectionist trade measures by the United States. This sparked a sharp response from that country's trading partners, which also involved some correction in the prices of certain assets.

As for the volatility of financial markets, the increase recorded in February was due mainly to a change in market expectations concerning the rate of normalization in monetary policy in the advanced economies, after foreseeing a further acceleration in wage growth.[2] However, the wage figures were not as high and were in line with what was expected. Therefore, a correction in the behavior of the volatility indicators was observed in recent months, when they remained below their historical averages (Chart 1.5).

The currencies of several emerging market economies have depreciated significantly with respect to the US dollar, and there has been an outflow of capital (especially from Asian economies). The effect in most Latin American economies has also been one of moderate depreciation in their currencies; however, in recent months, the Argentine peso and the Brazilian real depreciated sharply, mainly because of political uncertainty and the less-friendly external environment, due to tighter global financial conditions (Chart 1.6 and Chart 1.7).

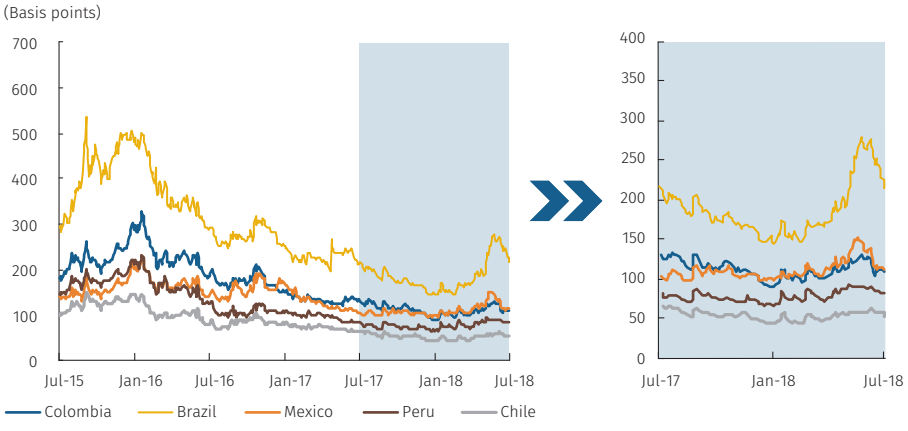
Chart 1.5
Financial Volatility Indexes



Source: Bloomberg.

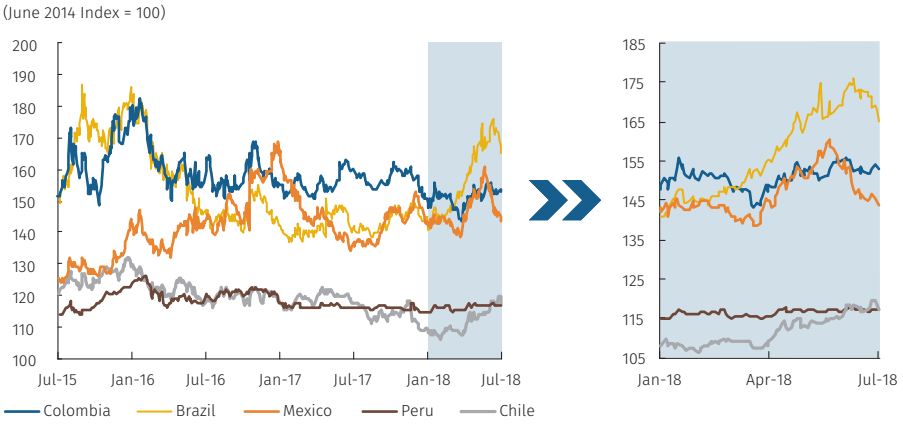
2 This was after the US Department of Labor published its *Jobs Report* on February 2, 2018.

Chart 1.6
Five-year Credit Default Swaps (CDS) for Several Latin American Countries



Source: Bloomberg.

Chart 1.7
Exchange Rate Index for Several Latin American Countries



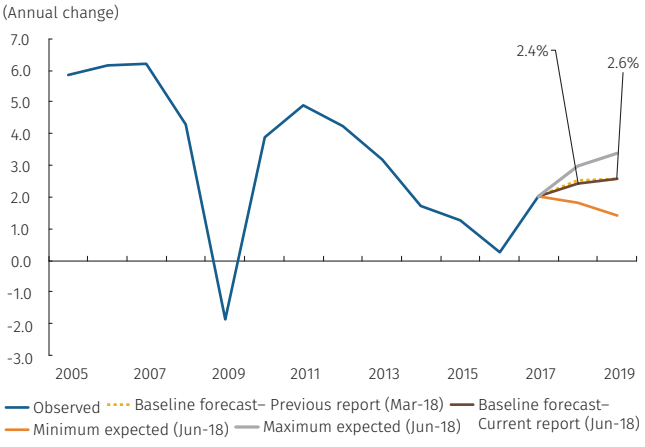
Source: Bloomberg.

1.1.4 Forecasts by *Banco de la República*'s Technical staff

Considering all the information at hand, the economic growth forecast for Colombia's trading partners in 2018 as a whole showed little change with respect to what was predicted in the March edition of the *Inflation Report*. In the baseline forecast scenario, consumption and investment would continue to be the driving force of growth in the advanced economies. In the emerging countries, moderation is expected, with outlooks that vary among countries. This is due to the more favorable prices for commodities that will benefit the countries that export them. Also, due to the growing commercial tensions involving China and the increase in the perception of risk in some economies.

Consequently, growth in the economies of the country's trading partners (weighted by non-traditional trade) is forecast at 2.4% for 2018 and 2.6% for 2019 (Chart 1.8). These figures represent an acceleration compared to 2017, when the growth figure was 2.0%. The following

Chart 1.8
Average Growth of Colombia's Trading Partners
(Non-traditional trade weighted)



Source: Calculations and projections by *Banco de la República*

were the revisions of the individual forecasts of the baseline scenario with respect to the previous edition of this *Report* (Table 1.1).

- For China, the forecast for GDP growth in 2018 and 2019 was revised upwards, since recent data has been higher than expected. Nonetheless, a lower expansion is forecast for 2019. This is consistent with the conversion of the economy from one driven by exports to one supported by consumption.
- For the euro area, the economic growth forecast was revised downwards, because the observed data have been weaker than expected, especially for Germany and France. Added to this is the unfavorable situation in Italy due to political uncertainty. Nevertheless, the economy is expected to continue recovering during the rest of the year, thanks to growth in domestic demand and the slow normalization of monetary policy by the European Central Bank (ECB).
- In Latin America, Chile's economic growth forecast was revised upwards for 2018 and 2019, due to the better results observed in the latest indicators. A strong global demand for copper coupled

Table 1.1
Growth Forecasts for Colombia's Trading Partners

Growth Forecasts for Colombia's Trading Partners	2017	Forecasts for 2018 Scenario			Forecasts for 2019 Scenario		
		Minimum forecast	Baseline forecast	Maximum forecast	Minimum forecast	Baseline forecast	Maximum forecast
Main partners							
United States a/	2.3	2.1	2.8	3.2	1.4	2.4	3.4
Euro Area	2.5	2.0	2.2	2.7	1.0	2.0	2.6
Venezuela b/	-14.0	-10.0	-7.0	-4.0	-7.0	-4.0	-1.0
Ecuador	3.0	0.5	1.8	3.0	0.0	1.5	3.0
China	6.9	6.2	6.6	6.8	5.6	6.4	7.0
Other partners							
Brazil	1.0	1.6	2.1	2.6	1.0	2.7	3.5
Peru	2.5	2.7	3.5	4.0	2.0	3.8	4.3
Mexico	2.0	1.5	2.2	3.0	1.0	2.3	3.5
Chile	1.5	2.8	3.5	3.8	2.0	3.3	4.0
Total trading partners (non-traditional trade-weighted)	2.0	1.8	2.4	3.0	1.4	2.6	3.4

a/ The figure for GDP growth in the United States during the second quarter was published on July 27. This information was part of the set of data used by the Board of Directors of *Banco de la República* for its decision on July 27. However, the forecasts presented here do not incorporate this new information.
b/ The 2017 figure for Venezuela is an estimate.
Source: Bloomberg; calculations and projections by *Banco de la República*.

with a domestic demand favored by a more relaxed monetary policy and an improvement in labor market conditions would boost the economy. In contrast, the growth forecasts for Brazil, Peru and Venezuela were reduced. In the first case, this was due to the effects of strikes, political uncertainty and tightening of financial conditions; in the case of Peru, it was because, although data for the first quarter were good, they were lower than expected. Added to this is the latent risk of a revival of political uncertainty. Finally, in Venezuela, the downward revision of the forecast reflects the drastic slump in economic activity, including the decline in oil production, despite the hike in oil prices.

The baseline scenario considers two additional increases in the Fed's policy rate during the remainder of 2018.

The baseline forecast scenario described here contemplates an increase in inflation in advanced economies during 2018, given demand factors and higher prices for some commodities, particularly oil.

In this environment, two additional hikes in the Fed's policy interest rate are expected during the remainder of 2018, coupled with the two previous ones at the March and June meetings. Consequently, by the end of 2018, this rate would stand within a range between 2.25% to 2.50%. However, even after the adjustments, it would still be historically low. Added to this would be the balance sheet reduction program, which would continue to be fulfilled pursuant to what was announced. On the other hand, no increases are expected in the ECB's policy rate during 2018. This means monetary policy in the world's major economies would continue to be loose, which would favor growth.

The baseline scenario considers no significant effects on economic growth stemming from the recent restrictions on international trade implemented by the United States and its trading partners. At the moment, they affect a very small proportion of this growth. On the other hand, this scenario does not contemplate the negative effects associated with the financial stress some emerging economies have experienced in recent weeks. The assumption is that, despite the gradual normalization of monetary policy in the advanced economies, the trend in financial conditions remains favorable, with isolated pressures determined by vulnerabilities in some economies.

Regarding raw materials, the forecast for oil prices in the baseline scenario increased for 2018 (Table 1.2), given the persistence of the level observed in recent months. Consequently, the expectation in this *Report* is an average price of USD 71 per barrel (Brent benchmark) for 2018 and USD 67 for 2019. This implies a drop during the remainder of 2018, from the high levels reached in recent weeks. The factors that would contribute to this decline are: 1) an increase in supply in response to high prices, which would be concentrated in the second half of the year, especially in the United States, and 2) a gradual

This report anticipates an average price of USD 71 per barrel (Brent reference) in 2018 and USD 67 in 2019.

Table 1.2
Benchmark Price Forecasts for Colombia's Commodity Exports

	2017	Forecasts for 2018			Forecasts for 2019		
		Scenario			Scenario		
		Minimum forecast	Baseline forecast	Maximum forecast	Minimum forecast	Baseline forecast	Maximum forecast
Brent crude (dollars per barrel)	54.79	68	71	76	57	67	77
Coal (dollars per ton)	70.32	75	79	86	60	75	85
Colombian coffee (*ex dock*) (dollars per pound)	1.52	1.3	1.4	1.5	1.2	1.45	1.8
Gold[a/] (dollars per troy ounce)	1,258	1,400	1,320	1,200	1,600	1,300	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*.

erosion of the agreements reached by the Organization of Petroleum Exporting Countries (OPEC).

The following are the main downside risks to the international situation considered in on this Report.

- *An increase in the cost of external financing:* if the monetary stimulus is withdrawn faster than expected, the cost of financing could increase for emerging economies and, particularly for Colombia, beyond what is contemplated in the baseline scenario.
- *Intensification of financial stress in emerging economies:* The recent episodes of financial stress in some emerging economies could worsen, resulting in negative effects on global economic activity and possible contagion.
- *An escalation in protectionist trade policies between the United States and its trading partners*: The resurgence of these measures might have a significant negative effect on international trade and global economic growth.
- *More persistent and accentuated political and commercial risks*: Again, several events could negatively affect the growth of Colombia's trading partners: 1) failure to renegotiate the North American Free Trade Agreement (NAFTA); 2) adverse news related to the Brexit negotiation, and 3) a build-up in political tension in several advanced and emerging economies.

1.2 Balance of Payments

1.2.1 Results for the First Quarter of 2018

Between January and March 2018, the current account in the country's balance of payments registered a deficit of USD 2,831 m, which is lower in dollars than a year ago, when it was USD 3,424 m. As a share of GDP, this comes to 3.5%, implying a reduction of 1.1 percentage points (pp) compared to the 4.7% observed in the first quarter of 2017.

The reduction in the current account deficit during the first quarter of 2018 was possible largely because of the improvement in terms of trade.

The current account deficit, in dollars, declined during the first quarter of 2018 by USD 593 m compared to the same period in 2017. This was explained by a lower trade deficit in goods and services, which fell by USD 803 m, and by larger current transfers, which increased by USD 201 m, thereby making it possible to more than offset the USD 411 m increase in net outlays of primary income. The results for the current account in the first quarter of 2018 show that the lower external deficit was explained by nearly a 12% growth in income, which exceeded the 6% increase in expenses. It should be noted that the increase in income was mostly explained to the improvement in the country's terms of trade, given the increase in export prices.

The lower goods trade deficit was thanks to USD 891m in export growth (9.7%), which mostly offset the rise in imports (USD242m, 2.2%). The increase in external sales occurred in an environment of higher commodity prices, especially oil and coal. External sales of industrial products also registered higher levels than a year ago (+ 16.7%), consistent with the increase in growth of Colombia's main trading partners. On the other hand, the rise in external purchases was mostly driven by the growth in imports of input and capital goods for industry.

The deficit in the service account was down in the first quarter by USD 154 m compared to the same period in 2017. On the exports side, it is worth noting the increase in revenue from travels, as well as the sale of other services. The added expenditures that stand out with respect to imports include those associated with insurance and financial services, payments for business and transportation services, and expenses incurred by Colombian travelers abroad.

On the other hand, net outlays for primary income were USD 411 m during 2018 to March. This is attributed, on the one hand, to higher profits of firms in oil and mining sectors that have foreign investment in the country and, on the other, to higher interest payments associated with foreign loans and debt securities.

The decline in the trade deficit is explained by an increase in exports that more than offset the rise in imports.

Net current transfers increased annually by 14.2%, thanks mainly to the growth in worker remittances. The most important were from the ones sent from the United States, Spain and several Latin American countries.

As for external financing, the first quarter of 2018 saw USD 2,580 m in net inflows of capital. This is less than those of a year ago, which came to USD 3,122 m. During this period, net direct investment was USD 1,022 m, down by 42.7% due to the increased outflow of Colombian investment abroad and reduced inflows of foreign direct investment (FDI). Foreign direct investment received during this period was distributed as follows, according to economic activity: mining and oil (40.5%), financial and business services (18.4%), commerce and hotels

The net inflows of capital observed in the financial account during the first quarter were lower than those of a year ago.

(13.9%), transport and communications (13.3%), manufacturing industry (8.0%), and other sectors (5.9%).

In terms of foreign portfolio investment, the country received USD 185 m in inflows and established USD 1,904 m in financial assets abroad. The funds received from the purchase of TES by foreign investors, offset amortization payments made during the first quarter of the year on long-term debt securities.

As for other capital flows, the country registered USD 2,166 m in net inflows during the first quarter, mainly from loans acquired with foreign commercial banks and multilateral institutions. During the period under analysis, international reserves on balance of payments transactions increased by USD 137 m, due to the net return on the portfolio. As of March 2018, Colombia's net international reserves amounted USD 47,608 m; for June, this figure was USD 47,491 m.

1.2.2 Forecasts

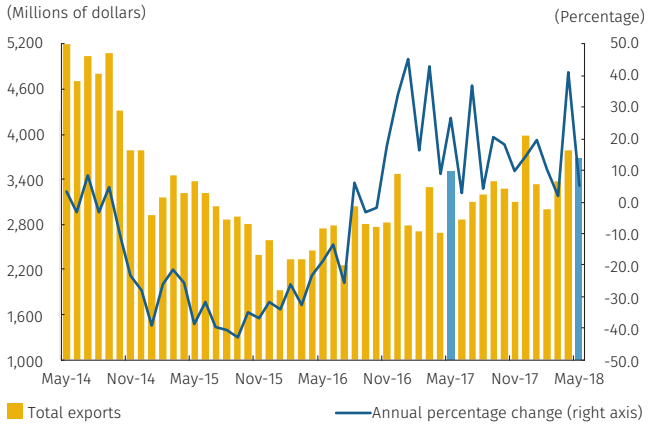
1.2.2.1 Estimate for the Second Quarter of 2018

Figures from the external balance for the second quarter of 2018 suggest its adjustment would be somewhat slower than expected. Based on the information at hand, this *Report* forecasts an increase in the deficit in the current account for the second quarter of 2018 compared to the same period in 2017, both in dollars and in proportion to GDP. This would have been near 3.7% in terms of GDP, which is higher than the 3.2% for the same period a year ago. Regarding foreign trade in goods, the available data show total exports in dollars increased by USD 1,276 m (20.6%) during the April-May period compared to the previous year (Figure 1.9), mainly due to the increase in the export value of oil and its derivatives, industrial goods and coal. Imports free on board (FOB) [3] were up by USD 943 m during that period (12.7% in annual terms), due to the generalized increase in different product groups (Chart 1.10) (See the shaded section on page 25).

An increase in the current account deficit is forecast for the second quarter of 2018 compared to the same period in 2017.

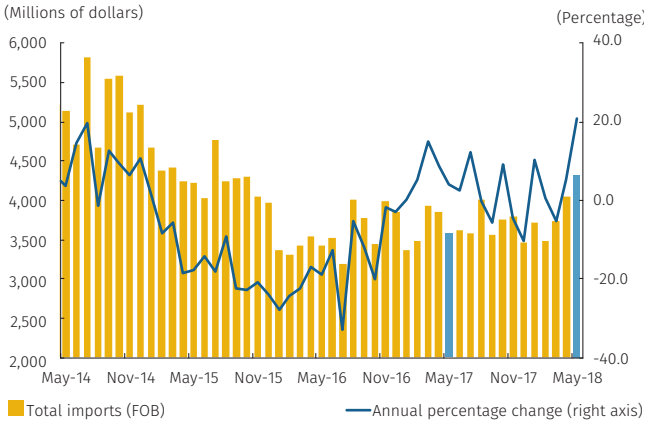
3 Unlike the measurement of the balance of payments, which takes the FOB value of imports into account, the calculation of GDP based on national accounts considers the cost, insurance and freight (CIF) of imports. CIF imports totaled USD $8,752 m during the two-month period from April to May. This represents an annual increase of 12.8%.

Chart 1.9
Total Exports of Goods (FOB)
(Monthly)



Observation: The blue bars represent total exports at May 2017 and 2018.
Sources: DANE; calculations by *Banco de la República*

Chart 1.10
Total Imports of Goods (FOB)
(Monthly)



Observation: The blue bars represent total imports (FOB) at May 2017 and 2018.
Sources: DANE; calculations by *Banco de la República*

Exports and Imports of Goods in Dollars for the Two-month Period from April to May 2018

In the two-month period from April to May 2018, total exports rose 20.6% in annual terms (Chart 1.9), supported by growth in the three types of goods. Mining exports contributed the most to the total variation (14.7 pp), followed by non-traditional exports (5.3 pp). The recovery in agricultural exports is a high point; they were up by 5.3%, after contracting during the first quarter of the year.

Higher international prices for export mining goods continue to boost sales in this sector.[1] The export value of coal and oil rose by 15.5% and 29.4%, respectively, compared to the same two months in 2017. The elevated growth in exports related to oil refining was an important aspect, contributing 3.0 pp to the variation during the period (Table A).

Non-traditional exports continued to exhibit good levels, growing 19.7% in the two-month period and thereby exceeding the annual figure of 16.4%, registered in the first quarter of 2018 (Chart A). External sales of goods of this type increased to all destinations, with the exception of Peru. The best annual performance was observed in external sales to Ecuador (35.4%) and to the other ALADI countries (29.3%).[2] The growth in exports to the United States, the country's main trading partner, has been greater than was observed in previous months, registering an increase of 11.4% in annual terms during the period under study. Exports to Venezuela continued to post positive growth rates (Chart B).

With respect to traditional agricultural exports, external sales of flowers and bananas recovered, growing by 25.4% and 1.1%, respectively, while

1 The price index for mining exports rose by 32% in the April-May 2018 period compared to the same period in 2017. The growth in the index during the February-March period was 20.6%.

2 Latin American Integration Association (ALADI), without Venezuela, Ecuador, Peru and Mexico.

Table A
Dollar-denominated Exports and Imports of Goods in the Two-month Period from April to May 2018 (FOB)
(Percentage)

Group	Annual change	Items with important contributions to the annual change	
		Items	Annual change in the item
Total exports	20.6		
Mining products	24.5	Crude oil	29.4
		Coal, lignite and peat	15.5
Remaining exports[a/] (Non-traditional)	19.7	Chemical products	24.2
		Non-metallic minerals and base metals	35.7
		To Ecuador	35.4
		To the other ALADI countries	29.3
		To the remaining destinations	17.7
Agricultural products	5.3	Flowers	24.5
		Bananas	1.1
		Coffee	-3.7
Total imports	12.7		
Capital goods	10.1	Capital goods for industry	19.7
		Construction materials	26.0
Intermediate goods	12.1	Raw materials for industry	25.7
		Raw materials for agriculture	11.8
Consumer goods	17.8	Durable goods	21.2
		Non-durable goods	13.9

a/ This group does not include petroleum or derivatives thereof, nor coal, nickel-iron, gold, coffee, bananas or flowers. It does include other mining and agricultural products. The majority are manufacturing exports.
Source: DANE; calculations by *Banco de la República*.

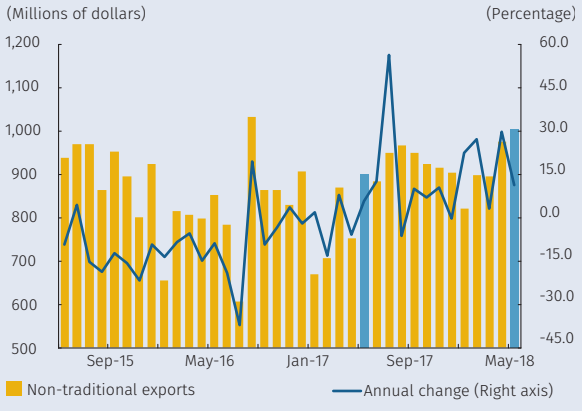
coffee exports were down by 3.7% in annual terms. The total variation in exports with respect to this group of goods is explained by an increase pf 13.9% in export quantities, which was partially offset by a 7.6% decline in the price index.

As for FOB imports, growth was reported in all groups of goods, with an annual increase of 12.7% in total imports, which is a higher rate of expansion than was observed in the first quarter of the year (Chart 1.10). The largest contribution was from the group of intermediate goods (5.5 pp), driven mainly by added momentum in external purchases of raw materials for industry (25.7%) and agriculture (11.8%) (Chart C).

Within the group of capital goods, which expanded by 10.1% during the two-month period in question, the category comprised of capital goods for industry contributed the most (3.7 pp), followed by construction materials (0). , 7 pp). Imports of transport equipment continued to decline, having fallen by 11.4%.

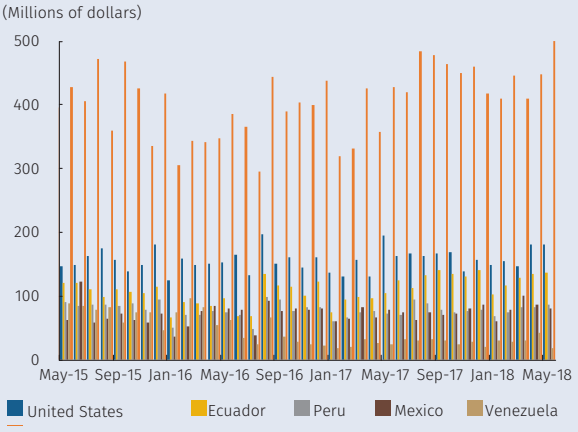
In terms of consumer goods, imports of non-durables rose 21.2%, supported by purchases of foodstuffs and pharmaceutical products. On the other hand, external purchases of durable goods grew by 13.9%, signifying a recovery that is explained largely by the increase in the item that includes machinery and appliances for domestic use and private transportation vehicles.

Chart A
Exports of Non-traditional Goods [a/] (FOB)
(Monthly)



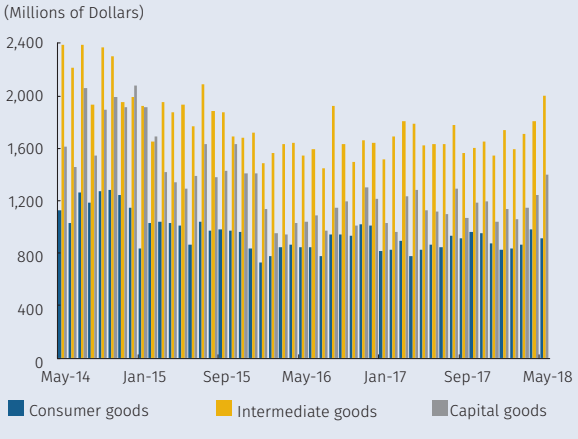
Observation: The blue bars represent non-traditional exports (FOB) corresponding to May 2017 and 2018.
a/ Excluding petroleum and derivatives thereof, coal, nickel-iron, gold, coffee, bananas and flowers. It includes other mining and agricultural products. The majority are manufacturing exports.
Source: DANE; calculations by *Banco de la República*.

Chart B
Exports of Non-traditional Goods, by Destination: United States, Ecuador, Peru, Mexico, Venezuela and All Other Destinations[a/] (FOB)



a/ Excluding petroleum and derivatives thereof, coal, nickel-iron, gold, coffee, bananas and flowers. It includes other mining and agricultural products. The majority are manufacturing exports.
Source: DANE; cálculos del *Banco de la República*.

Chart C
Imports, by Type of Goods (FOB)
(Monthly)



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

On the other hand, the deficit in non-factor services and factor income is expected to be greater during the second quarter than what was registered for the same period a year ago. The deficit in factor income is driven by the profits of companies with FDI that operate in the mining and energy sector. Moreover, the payment of interest on loans and debt securities is expected to continue to be an important source of pressure on the current deficit, as it has been since 2017. Also, there is an estimated additional impact on service imports due to the World Cup and its effect on the spending by Colombian travelers abroad, as well as higher freight payments as a result of imports growth and the increase in fuel prices.

As for capital flows, it is estimated that FDI would have been higher during the second quarter of 2018 than it was during the same period a year ago, thanks to the resources received by companies in the mining and oil sector, given the improved outlook for international prices. On the other hand, the figures available on capital flows from the foreign exchange balance show an annual increase in foreign investment resources from the private sector portfolio between April and June.[4] Added to this would be the resources from foreign loans by multilateral banks, especially those obtained by the government and other entities in the public sector.

An increase in FDI is estimated for the second quarter of 2018.

1.2.2.2 Forecasts for 2018 and 2019

The forecast exercises done for this *Report* indicate the current account deficit in terms of GDP would decline in 2018, but would cease to adjust in 2019. In the most probable scenario, the current deficit for 2018 would be around USD 11,151 m; this comes to 3.2% of GDP in a range between 2.9% and 3.5% (Table 1.3).

It is estimated the trade balance in goods for 2018 as a whole would continue to show a deficit, but less so than in 2017, largely because of more exports of oil and industrial goods. The increase in external sales would be driven mainly by the behavior of international prices for crude oil and the effect of the recovery in external demand on Colombian manufactured goods.

As for imports of goods, 10.8% annual growth is expected for all of 2018, continuing with the recovery observed in 2017. This is a result of the added economic activity forecast for this year, which should encourage imports by all sectors, in general, and the increased acquisition of capital goods by the mining-energy and transport sector.

In terms of factor income, net outflows are expected increase in 2018, due to a rise in the profits of foreign companies operating in the mining and energy sector, which is consistent with the higher prices for exports. The profits of companies that operate in other sectors are expected to improve as well, in line with the anticipated increase in economic growth. Added to this would be the higher interest payments on foreign borrowing, given the greater debt level and the increase in foreign interest rates.

In the most likely scenario, the current deficit for 2018 would be around 3.2% of GDP.

The deficit in services estimated for 2018 is on par with those of the previous year. Expenses would increase, mainly, due to the higher cost of foreign travel for Colombians and, to a lesser extent, the increase

4 Although the capital flows registered in the foreign exchange balance do not correspond exactly to what is recorded in the balance of payments, given that the former refer to the entry and exit of foreign currency, they give some idea of the trend.

Table 1.3
Balance of Payments
Annual Flows (Millions of US dollars)

	2014	2015	2016 (pr.)	2017 (pr.)	2018 (proj.)	2019 (proj.)
Current account (A+B+C)	-19,762	-18,549	-12,025	-10,437	-11,151	-11,833
Percentage of GDP	-5.2	-6.3	-4.2	-3.3	-3.2	-3.2
A. Goods and services	-11,862	-18,252	-12,676	-8,942	-7,562	-9,306
B. Primary income (factor income)	-12,521	-5,727	-5,227	-8,089	-10,882	-10,593
C. Secondary income (current transfers)	4,622	5,430	5,878	6,594	7,293	8,066
Financial account (A+B+C+D+E)	-19,292	-18,250	-12,683	-9,831	-11,151	-11,833
Percentage of GDP	-5.1	-6.2	-4.5	-3.1	-3.2	-3.2
A. Direct investment (ii-i)	-12,268	-7,505	-9,332	-10,235	-8,653	-8,976
i. Foreign investment in Colombia (FDI)	16,167	11,723	13,850	13,924	12,756	13,369
ii. Colombian investment abroad	3,899	4,218	4,517	3,690	4,103	4,392
B. Portfolio investment	-11,565	-9,166	-4,839	-1,597	-219	-844
C. Other investment (loans, other lending and derivatives thereof)	104	-1,994	1,323	1,455	-2,867	-2,974
D. Reserve assets	4,437	415	165	545	587	961
Errors and omissions (E & O)	470	299	-659	606	0	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*

in freight expenses and the growth in oil technical services, given the rise in international oil prices. Meanwhile, revenues would rise, mainly from tourism, which would be favored by the improvement in growth worldwide.

Finally, the forecast suggests there will be more net income from transfers, particularly because of the momentum observed in the world economy (see Section 1.1 of this chapter).

As for capital flows, direct investment in 2018 should continue to be the main item in terms of foreign capital inflows. Also, more loans (net disbursements) are expected to be contracted with multilaterals and foreign banks, in contrast to the net amortizations in 2017. With regard to portfolio investments, the baseline scenario for 2018 assumes less bond placement by the public sector and more momentum in the TES market from foreigner investors.

Prices for Colombia's major commodity exports are expected to decline slightly by 2019, while the increase in exports of goods would be due to the momentum in external sales of industrial products. The positive path toward import growth is expected to continue, in line with a more dynamic economy. The foregoing would imply a larger trade deficit in goods compared to the forecast for 2018. Less of a

deficit in non-factor services and a slightly lower level of factor income are expected as well. Accordingly, the current account deficit forecast for 2019 in the baseline scenario comes to USD 11,833 m (3.2% of GDP) (Table 1.3).

As for financing, 2019 is expected to see an increase in FDI and other investment flows, while foreigners would continue to purchase TES. The emission of bonds by the government and public entities is expected to decline, as well as portfolio outflows by the private sector.

02

Domestic Growth: Current Situation and Short-term Outlook

Economic growth accelerated in the first quarter of 2018.

Public consumption displayed important momentum, while investment contracted.

Available information for the second quarter suggests economic activity would have slowed slightly compared to the result for the first quarter.

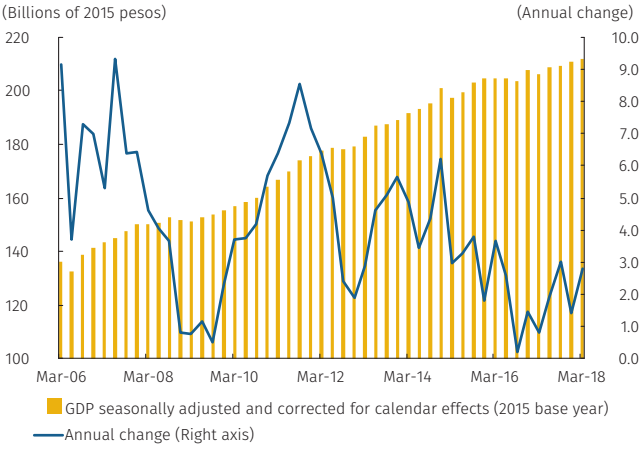
2.1 GDP Performance during the First Quarter of 2018

The latest GDP figures showed the pace of expansion in the Colombian economy accelerated during the first quarter compared to the records at the end of 2017, both in the original series and in the seasonally and calendar adjusted series. In fact, annual growth in the original GDP series for the fourth quarter of 2017 was 1.8%, and went to 2.2% for the first three months of 2018. The annual change in the adjusted series was 2.8% for the same period (Chart 2.1). This figure, which is comparable to the forecast exercise done by *Banco de la República*'s technical staff, coincided with the ceiling of the interval outlined in the previous *Inflation Report* (between 1.8% and 2.8%, with 2.3% being the most likely figure). The growth between quarters was 0.7%, which corresponds to an annualized figure of 2.8%.

Although economic recovery was observed in the first quarter compared to what was on record at the end of last year, growth was less balanced than the one forecast by *Banco de la República*'s technical staff. This was the result of a positive shock in the case of public consumption and a negative one for investment.

Several external and internal factors contributed to the acceleration in growth of the Colombian economy. In principle, and as mentioned in Chapter 1 of this *Report*, the fact that external demand performed better led to an increase in exports, which grew at an annual rate of 1.3%. This outcome contrasts with the reductions observed during the second half of last year (-1.0% and -4.4% in the third and fourth quarter of 2017, respectively). Imports, on the other hand, declined at an annual rate of 2.5%, completing their second consecutive quarter of negative growth rates (Table 2.1). In this way, net external demand contributed positively to GDP growth.

Chart 2.1
Gross Domestic Product
(Seasonally adjusted and corrected for calendar effects)



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

With respect to domestic factors, in addition to the demand shocks mentioned already, such as the drop in inflation and its convergence towards levels close to the long-term target of 3.0%, the significant recovery in household confidence between January and March of 2018 and the advances witnessed in terms of the reductions in *Banco de la República*'s intervention rate being transmitted to market rates would have favored the performance of private consumption. Moreover, the negative effect of the value-added tax hike at the beginning of 2017, which affected the expansion in this component of spending, especially during the first half of last year, would have

Table 2.1
Real Annual GDP Growth, by Type of Expenditure (Seasonally adjusted and corrected for calendar effects. 2015 base year)

	2017				2017	2018
	I Qtr.	II Qtr.	III Qtr.	IV Qtr.	Full year	I Qtr.
Total consumption	1.8	2.4	2.6	2.2	2.2	3.3
Household consumption	1.3	1.8	2.3	1.7	1.8	2.3
Final government consumption	2.3	4.4	4.5	4.8	4.0	7.2
Gross capital formation	1.5	0.9	-1.3	1.3	0.6	-5.6
Domestic demand (consumption + investment)	1.8	2.1	1.7	2.0	1.9	1.3
Total exports	-1.9	4.5	-1.0	-4.4	-0.7	1.3
Total imports	-0.2	3.8	0.1	-2.6	0.3	-2.5
GDP	0.8	1.9	3.0	1.4	1.8	2.8

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

An important increase in public consumption was observed during the first quarter.

dissipated during that period. On the other hand, there was an important acceleration in public-sector consumption, which would have been related largely to the temporary increase in national central government (NCG) spending in a context marked by entry into force of the Assurances Act, a population census, and elections for public office. In addition, regional and local governments entered their third legislative year, a period normally associated with an increase in the extent of budget spending. However, the growth of total consumption in its seasonally and calendar adjusted series accelerated compared to the end of 2017, when it went from an increase of 2.2% in that period to 3.3% during the first three months of the year (Table 2.1).

In contrast to what was observed for consumption, gross capital formation (GCF) contracted sharply at the start of 2018: 5.6% compared to the same quarter of 2017 (Table 2.1). According to the GDP data in the new series with 2015 as the base year, this figure is the worst on record for this GDP component on the last five-years. The figures on economic performance in the first quarter, published recently by DANE, do not allow for a detailed analysis of the components of investment. Consequently, it is hard to ascertain which subcomponent of gross fixed capital formation suffered the largest setback. However, and as explained below, an analysis of GDP in the construction sector (a mirror of investment in this type of capital goods) suggests the drop in GCF would have been related to major reductions in the construction of civil works and buildings.

It should be noted that DANE did not publish a disaggregated series for the components of domestic demand, but the sum of total consumption and investment showed low growth, although better than the aggregate for 2017. This limits possibilities for a more disaggregated analysis of the behavior of the Colombian economy, and makes the forecasts more uncertain. As explained already, heterogeneity within this indicator was broad: while total consumption accelerated, GCF dropped sharply. However, improvement in GDP performance was clear. This would have delayed effects on other sectors in the economy, as suggested by the recent behavior of the job market (see the shaded section on page 34), which shows slight signs of recovery.

However, gross capital formation fell sharply.

As for the different branches of the economy, the sectors with the highest growth rates during the first three months of the year were financial and insurance activities (8.4%) and the sector that includes government administration and defense, education, health and social services (7.0%). On the contrary, there were significant reductions in construction (-7.9%) and mining (-3.9%), while commerce, agriculture and industry posted moderate growth (Table 2.2).

Labor Market Performance during the Second Quarter of 2018

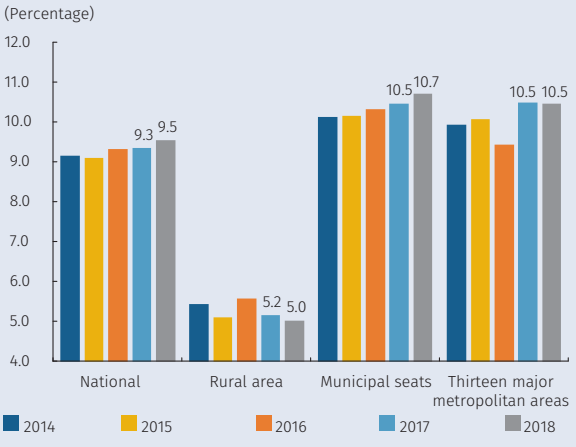
The information up to May 2018 indicates the unemployment rate (UR) deteriorated with respect to the national total and remained stable in the thirteen major metropolitan areas, compared to the figures on record for the same period in 2017 (Chart A). However, a look at the seasonally adjusted series (moving quarter) shows no deterioration with respect to what was observed in the first quarter of 2018: the national UR averaged 9.5% between April and May, remaining unchanged compared to the average for the first quarter of 2018, while the UR for the thirteen major metropolitan areas was 10.6% between April and May, a slightly lower percentage than the one observed between January and March (10.7%) (Chart B).

The few changes there were in the UR in the thirteen metropolitan areas are explained by the fact that the momentum in the employment rate (ER) and that of the overall participation rate (OPR) have been similar for several quarters (Chart C). In other words, labor supply and demand have moved in parallel. Both rates fell from mid-2016 up to the end of 2017. However, this trend was interrupted during the course of 2018 to date, when both increased in similar proportions.

In terms of employment, the seasonally adjusted figures in recent months indicate the number of employed persons has increased, annually and in the margin, both for the national aggregate and the thirteen major metropolitan areas. During the moving quarter ended at May, the employment rate was up by 0.5% annually in the national total and by 1.4% in the thirteen major metropolitan areas (Chart D, panels A and B). During this period, the increase in the number of employed persons in the national total was determined, mainly, by the growth in urban employment.

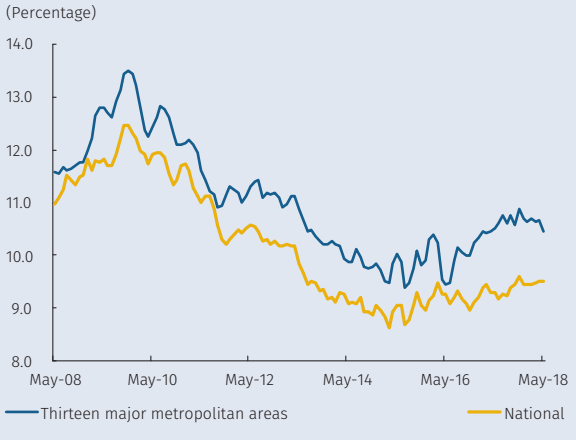
The indicators of employment quality deteriorated slightly during April and May in the thirteen metropolitan areas. Although the number of salaried workers and formal employees[1] rose marginally with respect to the figures for the previous quarter, the increases in non-salaried employment and in informal employment were more

Chart A
Unemployment Rate
(Quarterly Moving Average for March-April-May



Source: DANE (GEIH).

Chart B
Unemployment Rate
(Seasonally adjusted quarterly moving average)



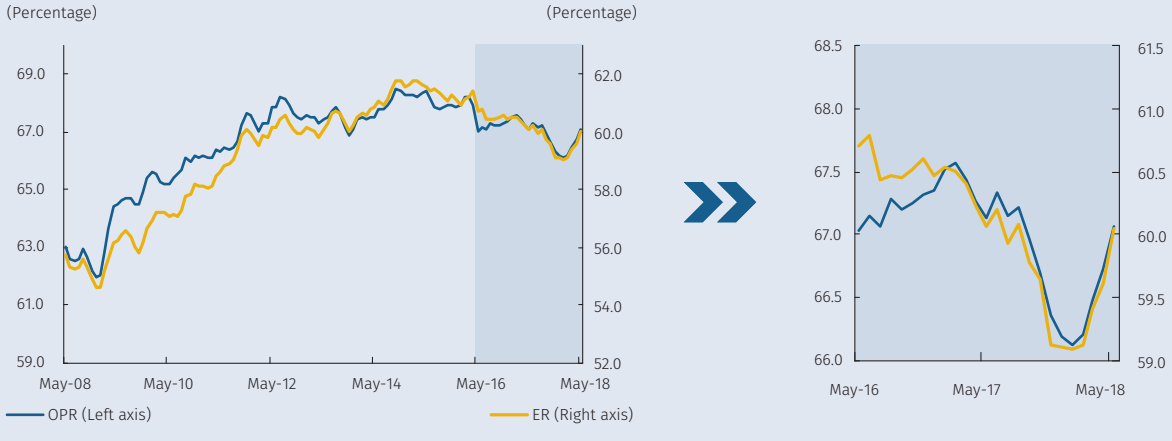
Source: DANE (GEIH).

1 According to the definition used by DANE, which is based on resolutions adopted by the United Nations International Labor Organization (ILO), employers and workers in companies with up to five workers, unpaid family workers, unpaid workers in other household companies or businesses, domestic workers, day laborers or unskilled farm workers, and independent laborers who work in establishments of up to five people, with the exception of independent professionals, are regarded as informal workers (DANE, 2009).

pronounced. In annual terms, the growth rate for salaried employment was 0.7% during the moving quarter ended at May, while that of non-salaried employment was 2.1% (Chart E). During this same period, the annual changes in formal and informal employment were -0.1% and 3.0%, respectively (Chart F).

Likewise, subtle signs of recovery in the labor market are beginning to be evident. The marginal increases in the OPR and the ER in the thirteen major metropolitan areas, coupled with the increase in the number of employed persons, both nationally and in the urban area, are indicators of slight improvements in the labor market. However, more positive marginal and annual changes are observed in lower quality employment than in salaried and formal employment. Yet, the prospects for economic recovery during the coming quarters should contribute to good momentum in the labor market.

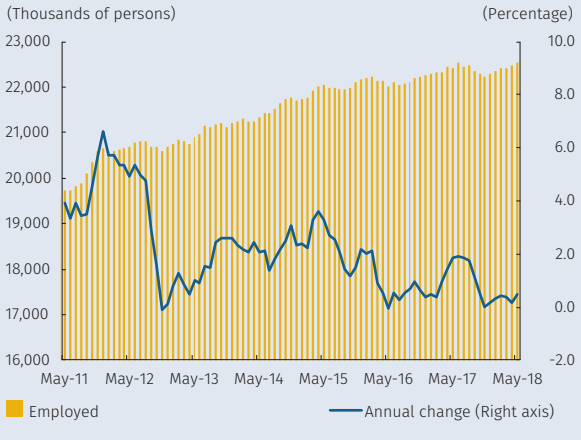
Chart C
Overall Participation Rate and Employment Rate
(Thirteen major metropolitan areas, seasonally adjusted)



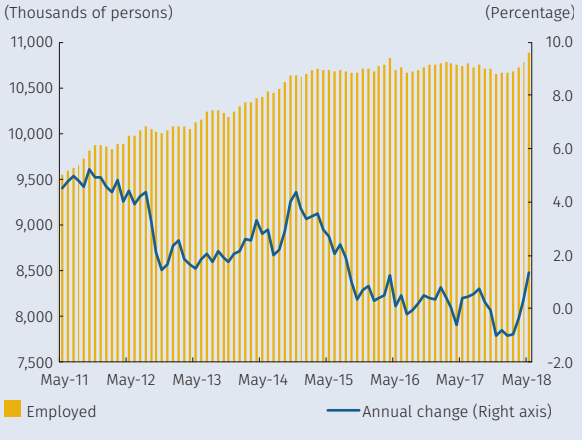
Source: DANE (GEIH).

Chart D
Number of Employed
(Seasonally adjusted and annual change)

A. National total

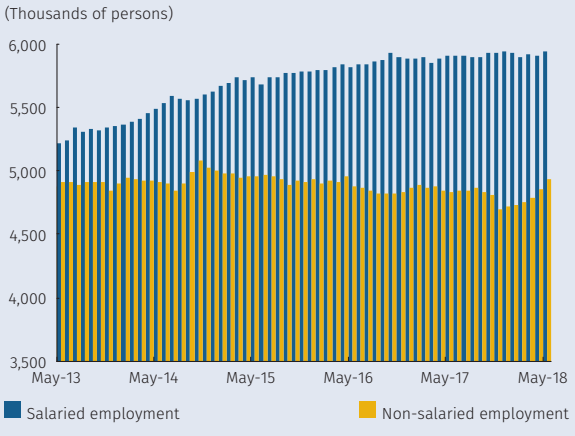


B. Thirteen major metropolitan areas



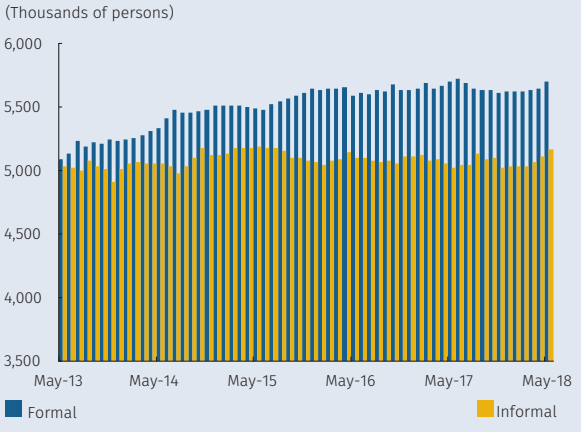
Source: DANE (GEIH); calculations by *Banco de la República*

Chart E
Employment, by Type of Occupation
(Thirteen major metropolitan areas, seasonally adjusted quarterly moving average)



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

Chart F
Employment, by Formality
(Thirteen major metropolitan areas, seasonally adjusted quarterly moving average)



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

The moderation in annual growth in the agricultural sector during the first quarter was due to lower growth in permanent and temporary crops (3.6%) and livestock (4.3%). The decline in coffee production contributed to the slowdown in the first branch (-5.5%) and is explained largely by of the adverse weather conditions for this crop, witnessed during the second half of 2017. This impact was offset, in part, by the fact that forestry and fishing posted smaller reductions than those observed at the end of the previous year.

Mining, on the other hand, fell sharply during the first three months of the year, mostly explained by the lack of growth in oil production during that period and a steep decline in coal production (-8.1%). Although this outcome occurred in a particular context where problems with law and order in February affected the country's oil infrastructure, it is important to point out that oil production has remained stable at around 850 thousand barrels per day (tbd) since mid-2016, despite the decline in levels of investment in long-term projects, as a result of the dramatic plunge in international prices observed in mid-2014.

In contrast, the manufacturing industry as a whole reported better performance than what was observed throughout 2017, halting its decline and growing 1.5% during the first quarter of 2018. Excluding oil refining, industrial manufacturing was up by 1.1%. The highlights in this positive performance include meat processing and preservation (8.9%), the production of milling products (7.2%) and beverage production (3.2%). Despite this favorable outcome, a survey done by

Table 2.2
Real Annual GDP Growth by Branch of Economic Activity
(Seasonally adjusted and corrected for calendar effects, 2015 base year)

	2016	2017				2017	2018
	Full Year	I Qtr.	II Qtr.	III Qtr.	IV Qtr.	Full Year	I Qtr.
Agriculture, forestry, hunting and fishing	2.2	-0.2	5.2	11.2	6.5	5.6	2.3
Mining and quarrying	-3.0	-6.9	-1.7	-5.2	-3.2	-4.3	-3.9
Manufacturing industry	2.8	-2.2	-2.7	-1.3	-1.7	-2.0	1.5
Electricity, gas and water	-0.0	-0.7	1.0	1.5	1.6	0.8	0.7
Construction	3.0	-0.6	-0.8	-3.4	-3.2	-2.0	-7.9
Buildings	5.4	-1.7	-4.0	-9.4	-5.9	-5.3	-9.2
Civil works	-3.2	10.6	5.3	9.3	4.7	7.5	-8.2
Specialized construction activities	5.3	-4.7	-6.1	-3.8	-2.2	-4.2	-8.2
Commerce, repairs, transportation and lodging	1.9	0.5	1.1	2.0	1.1	1.2	3.3
Information and communications	-0.8	-2.6	0.7	0.8	0.8	-0.1	6.4
Financial and insurance activities	6.6	1.9	9.5	5.2	11.0	6.9	8.4
Real estate activities	3.3	3.1	2.8	2.6	2.5	2.8	2.8
Professional, scientific and technical activities	-2.3	5.8	3.6	3.6	0.9	3.5	3.5
Government administration and defense, education and health	3.6	3.5	4.2	3.9	3.7	3.8	7.0
Artistic, entertainment and recreational activities	5.5	6.1	5.5	-1.0	5.4	3.9	3.2
Subtotal –value added	2.0	0.9	1.8	1.9	1.6	1.5	2.4
Taxes minus subsidies	1.2	1.9	4.0	9.0	2.8	4.3	3.1
GDP	2.0	0.8	1.9	3.0	1.4	1.8	2.8

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

the National Association of Colombian Business Owners (ANDI) shows they still perceive demand (both domestic and foreign) as the main problem facing the manufacturing industry, followed by the cost of raw materials. Both these phenomena would have reduced the expected positive effect of accumulated depreciation of the exchange rate on the dynamic of this sector.

The branch associated with government administration and defense, education and health, which accounts for a large share of GDP (14.7%), posted sizeable growth in the first quarter (7.0%). This is consistent with the acceleration observed in government consumption. As for other sectors related to services, the real estate sector is particularly prominent, with a share of GDP equal to 8.9% and 2.8% growth during the January-March period. On the other hand, the sector that includes financial and insurance activities continued to expand at an important rate during the first quarter (8.4%), higher than was observed on average for 2017 (6.9%).

Finally, as mentioned before, construction industry experienced a major setback due to the sharp slowdown in the construction of buildings (-9.2%) and civil works (-8.2%). In the first case, according to the figures on square meters of on-going constructions from the building census published by DANE, the drop occurred both in the residential line (-19.2%) and in non-residential construction (- 7.1%). On the other hand, delays in the construction of several so-called fourth generation highways (4G) contributed to the poor performance in civil works. The setbacks were caused by delays in financial closure that have affected investments in these projects. As a result, the item comprised of specialized activities for construction also declined considerably (-8.2%)

There was a significant decline in construction during the first quarter.

2.2 GDP in the Second Quarter of 2018

The technical staff's forecast for the second quarter assumes that the negative effect of the demand shock on GCF, which was identified in the first quarter, would have continued throughout the second. It also presumes the positive effect of the shock to government consumption would have largely dissipated in these last three months. Together with the results for the short-term indicators that were available between April and June, makes it possible to predict a slight slowdown in GDP growth (seasonally adjusted and corrected for calendar effects) compared to what was observed in the first quarter. The fact that there is no longer available a higher decomposition of GDP on the expenditure side, coupled with the uncertainty related to the change in the base year and the possible revision of GDP growth figures (mainly associated with a consolidation phase of the methodology used to adjust for seasonal and calendar effects), expose the forecast to a great deal of uncertainty. This being the case, the technical staff estimates the Colombian economy would have expanded by 2.6% annually during the second quarter, in the absence of calendar and seasonal effects. It is important to note this forecast implies higher growth in the original GDP series than the 2.2% for the first quarter.

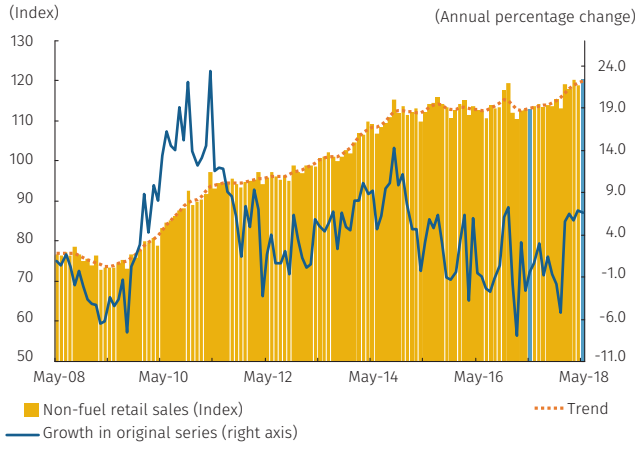
The behavior of GDP in the second quarter would have occurred in a macroeconomic context characterized by the good performance of external growth fundamentals. In principle, and as mentioned in Chapter 1 of this *Report*, economic performance of Colombia's major trading partners continued to gain momentum, which meant an increase in external demand. The prices of the country's main export commodities rose as well, which would have translated into an increase in terms of trade. Moreover, capital that would have been used to finance the expansion in domestic demand continued to enter the country during the second quarter, despite the recent hikes in the risk premiums of most emerging countries and the increases in the cost of external financing.

Second-quarter GDP growth is expected to be slightly less than it was in the first quarter.

As for the domestic fundamentals, inflation stabilized very near its long-term target of 3.0%. Likewise, transmission of the reduction in *Banco de la República*'s intervention rate to market rates continued. The cumulative effects of a looser monetary stance would have contributed to the changes in disposable household income and might have alleviated, in some way, the financial burden of net debtors. There was also an important recovery in confidence, marked primarily by a better outlook for future conditions in the Colombian economy, as will be discussed later.

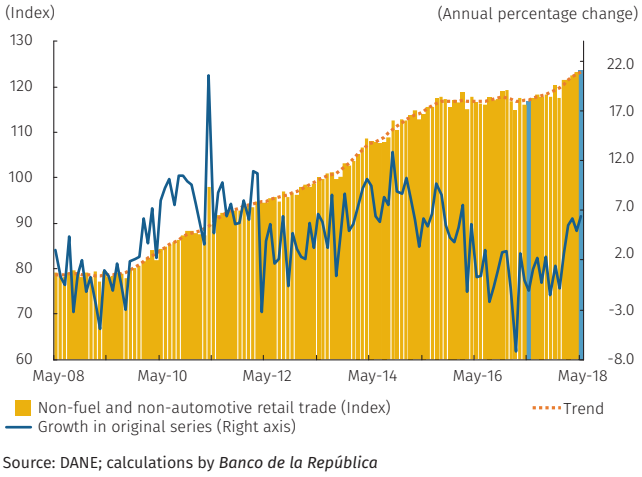
Given this context, the technical staff's forecast contemplates an increase in domestic demand (measured as the sum of total consumption, plus total investment) during the second quarter. In particular, the expectation is for better performance in private consumption and lower decline in investment. External demand, on the other hand, would have contributed positively to the growth in GDP, although less so than during the first quarter of 2018. In this sense, real exports would have increased, while imports would have fallen.

Chart 2.2
Monthly Retail Trade Survey (Total Non-fuel Retail Sales, Seasonally adjusted and corrected for calendar effects)



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

Chart 2.3
Monthly Retail Trade Survey
(Total Non-fuel and Non-automotive Retail Trade, Seasonally Adjusted and Corrected for Calendar Effects)

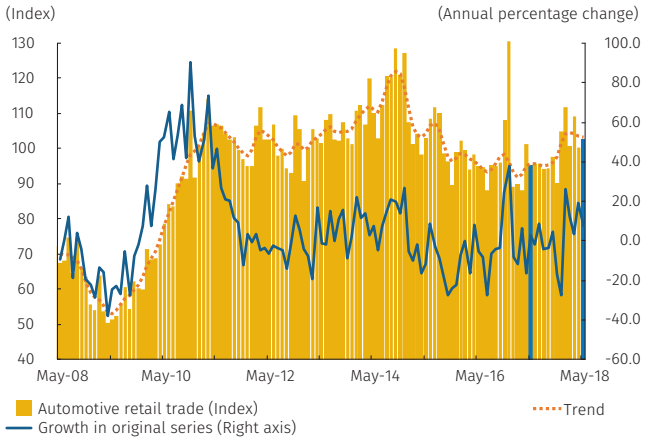


Source: DANE; calculations by *Banco de la República*

The results for many of the short-term indicators support the scenario just described. In fact, according to figures from the Monthly Retail Trade Survey (EMCM) conducted by DANE, non-fuel retail sales in May were up by 6.6% annually (Chart 2.2). The aggregate of this index for the two-month period including April and May registered an annual increase of 6.8%, which implies acceleration compared to 5.9% in the first quarter of the year. When vehicle sales are discounted, all other retail sales expanded by 6.5% annually during the same month (Chart 2.3). For the two-month period in question, the expansion was 5.7% annually, which also meant better performance with respect to the first three months of 2018 (4.8%).

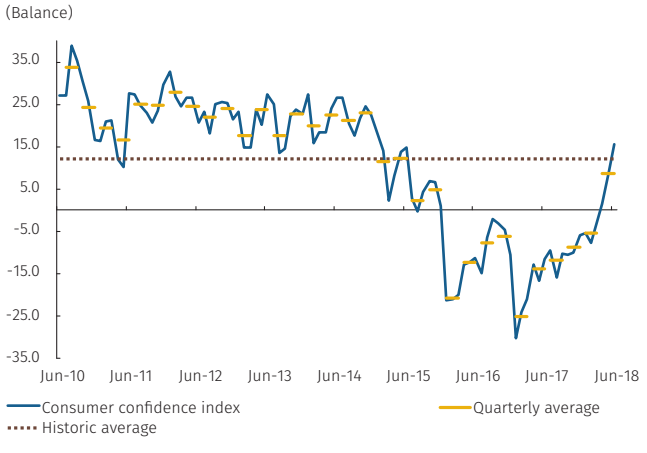
An analysis of the automotive retail sales segment, using the same survey figures, shows the May vehicle sales index was up by 7.7% compared to the same month in 2017. Growth in the April-May aggregate came to 13.0%, akin to the figure on record for the first quarter, when the annual increase was 13.2% (Chart 2.4). The vehicle registration series published by Fenalco would have behaved similarly. Although these registrations fell 7.7% annually in June, the aggregate for the second quarter showed an increase of 3.8%

Chart 2.4
Monthly Retail Trade Survey (Automotive retail trade, seasonally adjusted and corrected for calendar effects)



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

Chart 2.5
Consumer Confidence Index and Quarterly Average



Source: Fedesarrollo.

compared to the same period in 2017. This represents better performance with respect to what was observed at the beginning of the year, when there was an annual drop of -3.4%.

Other indicators that correlate closely with household consumption also point to better performance by this GDP component during the second quarter of 2018. Figures up to June in the *Consumer Confidence Index* (CCI) published by Fedesarrollo show continuation of the trend towards recovery that was evident in previous months, reaching - after almost three years - levels above its average calculated since November 2001 (Chart 2.5). Moreover, with figures up to May, the seasonally adjusted sales balance from *Banco de la República*'s *Monthly Survey of Economic Expectations* (EMEE) also suggests the rate of growth in private consumption would have accelerated between April and May 2018.

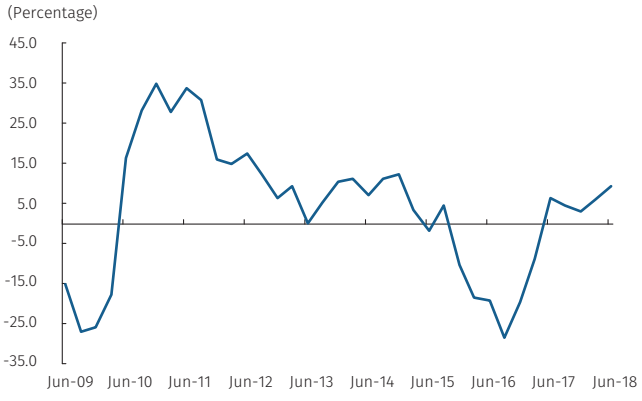
On the other hand, the projection for investment growth is subject to the assumption that the demand shock from the first quarter had not reversed completely. If there are new negative shocks, or if they are reversed earlier than anticipated, the accuracy of the forecast would be jeopardized. In addition, the absence of several disaggregated series means the technical staff's estimates are more uncertain than is usually the case.

That being said, the figures available for the second quarter of 2018 suggests the growth in GCF would have been negative, although less so than what was observed for this GDP item during the first three months of the year. When the figures published by DANE on imports of capital goods, in dollars, are converted to constant pesos, along with those released by DIAN on foreign trade, one sees the investment in capital goods would be driven more by spending on industrial machinery than on transportation equipment (Chart 2.6, panels A and B, respectively).

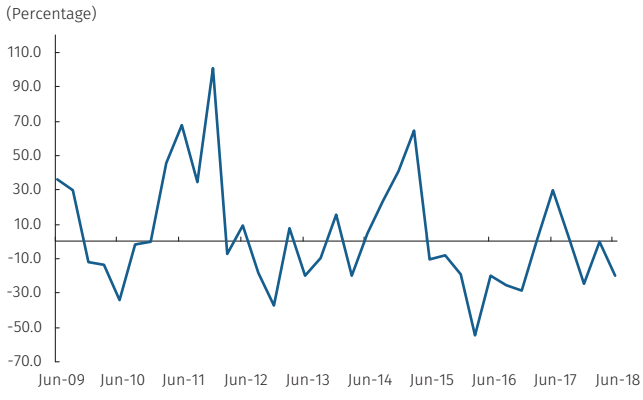
The baseline forecast in this *Report* contemplates poor performance for GCF in the construction sector during the second quarter. Specifically, a new decline is anticipated for investment in building construction. The indicators of economic activity for this subsector continued to show mediocre performance. The non-residential and upper-income housing segment continues to experience supply surpluses and low momentum in demand. The forecast also contemplates sluggish

Chart 2.6
Imports of Capital Goods (Real)
(Annual change)

A. Imports of capital goods for industry, in constant pesos



B. Imports of transportation equipment, in constant pesos



Observation: Figures in real terms. The March data correspond to a projection using the preliminary figures from DIAN.
Sources: DANE (national accounts and foreign trade) and DIAN; calculations by *Banco de la República*.

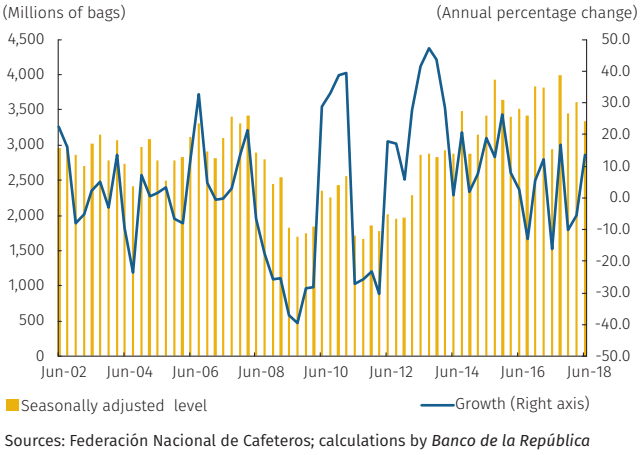
investment in civil works at levels similar to those registered a year ago. This means the shock observed in the first quarter would only dissipate fully as of the second half of the year, insofar as the delays in financial closure that have affected investment in infrastructure projects involving the so-called fourth-generation highways (4G) are overcome.

The second quarter, in terms of foreign trade, is expected to see an increase in real exports, driven primarily by sales of non-traditional goods and services. Imports, on the other hand, would be down again (although less so than during the first quarter). This would be related to poor performance by much of the investment. These results are derived from the figures on foreign trade in dollars published by DANE and DIAN, which are kept in constant pesos and with appropriate deflators used in both cases.

As to the different branches of the economy, the indicators at hand suggest economic performance during the second quarter of 2018 was mixed. They also point to slightly less growth in GDP than what was registered in the first three months of the year.

The figures for the agricultural sector show mixed results. On the one hand, according to the National Federation of Coffee Growers, coffee production came to 1,087,000 bags in June, representing an annual increase of 3.6% (Chart 2.7). This figure, which implies 13.2% growth during the second quarter, implies an improvement compared to the first quarter, when coffee

Chart 2.7
Coffee Production
(Quarterly and annual growth)



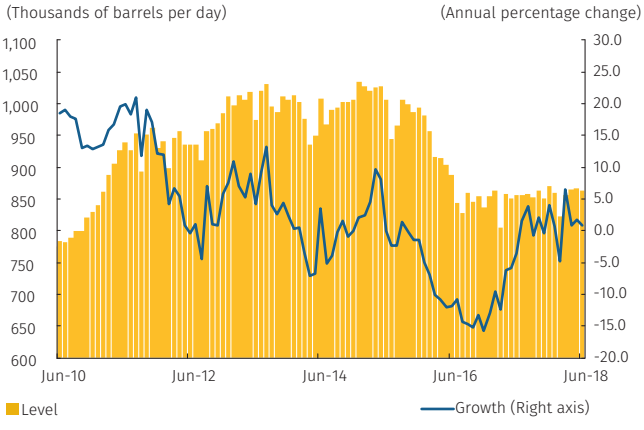
Sources: Federación Nacional de Cafeteros; calculations by *Banco de la República*

production suffered an annual decline of 5.5%. However, figures such as those in the DANE National Mechanized Rice Farming Survey, which reported a contraction of 23.1% during the first half of the year in the amount of area sown in the Llanos region, suggest the increase in other crops during the second quarter would not be as encouraging.

The indicators for mining point to some recovery in the sector. Average oil production during the second quarter (865 tbd) rose by 1.2% annually and surpassed the figure for the first quarter (847 tbd), which showed almost no growth in annual terms (Chart 2.8). The decline in coal production, which was substantial in the first quarter, is expected to come to a halt during the second, possibly because of the recent upswing in international prices for this product, which rose by nearly 17% annually during the April-June period (its growth in the first quarter was 6.7% annually).

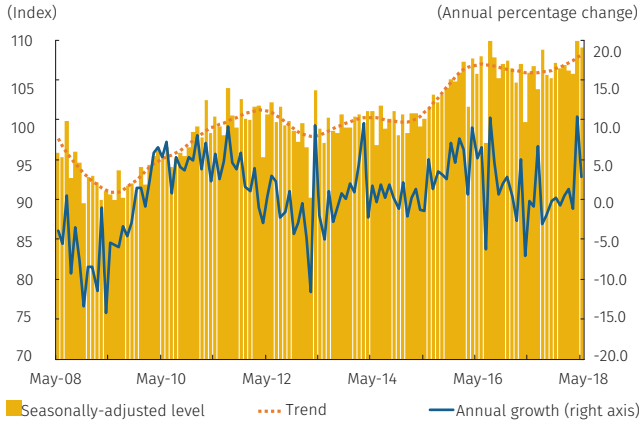
The figures for the manufacturing industry point to higher growth during the second quarter. According to the *DANE Monthly Manufacturing Survey*, the total for the sector rose 2.9% in May. When oil refining is excluded, the rest of the sector grew by 4.2%. For the two-month April – May aggregate, total industrial production, adjusted seasonally and for calendar effects, grew by 4.9%. This is an upswing compared to the average for the first quarter (1.6%). The trend component of this series also suggests a recovery in the sector (Figure 2.9).

Chart 2.8
Oil Production
(Monthly and annual growth)



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

Chart 2.9
Total Real Industrial Production
(Seasonally adjusted series, trend component and annual growth)



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

Additionally, the *Fedesarrollo Business Opinion Survey* for the industrial sector, with information up to June, shows favorable trends in both the indicator for orders and the stock indicator. With this, industrial confidence during the second quarter continued to strengthen.

As for construction, additional deterioration is expected, although it would be less pronounced than in the first quarter. This is due mainly to the fact that the poor performance registered for civil works should being to turn around, thanks to financial closure for some of the 4G projects. On the other hand, building construction would continue to go through hard times, as shown by the indicators related to this activity. Home building licenses declined in May (-5.3%), as did cement production and deliveries (-1.5% and -1.6%, in that order). Moreover,

inventories of housing, offices and business premises, especially in certain cities and for certain income levels, remain high.

On the other hand, growth in government administration and defense, education and health is expected to be much less than in the first quarter. As mentioned earlier, in the counterpart of this sector in spending the positive shock over government consumption is expected to dissipate. Financial and insurance activities would continue to exhibit good momentum, although their growth, in annual terms, would be less than what was observed during the first three months of the year, given a relatively high base of comparison in the second quarter of 2017. The forecast for the information and communications sector, which grew significantly during the first quarter of the year, is less growth in the April-June period given the income figures for the telecommunications sector, which were obtained from the *DANE Monthly Services Survey.*

Given all these figures, the technical staff estimates GDP growth, seasonally adjusted and corrected for calendar effects, would have been between 2.0% and 3.0%, with 2.6% being the most likely figure. The breadth of the forecast range is consistent with the uncertainty related to the performance of government consumption and civil works, and the assumptions in the different balance of payments scenarios for that period. It should be noted there is a significant margin of error in this forecast, since the coming months could see DANE reviewing the historical GDP series and the share of its different components, while consolidating the new base for the national accounts (see shaded section on page 44).

Additional deterioration is expected in construction during the second quarter.

The New Base Year for National Accounts: 2015

When DANE published the GDP growth figures for the first quarter of the year, it introduced a new base for the national accounts. First of all, in terms of the change in methodology, the base year for this data is 2015 and the structural year is 2014, as opposed to the base year for the previous version, which was 2005. Secondly, from standpoint of production, the productive sectors were reconstructed, going from nine major branches of activity to twelve. Their respective share of total production, as of the first quarter of 2018, is shown in Table A.

Table A
Sector Proportion of GDP
(First quarter of 2018)

	Proportion (percentage)
Agriculture, forestry, hunting and fishing	6.9
Mining and quarrying	5.1
Manufacturing industry	11.5
Electricity, gas and water	3.2
Construction	6.3
Commerce, repairs, transportation and lodging	17.5
Information and communications	2.7
Financial and insurance activities	5.2
Real estate activities	9.1
Professional, scientific and technical activities	7.2
Government administration and defense, education and health	13.6
Artistic, entertainment and recreational activities	2.3
Subtotal: aggregate value	90.7
Taxes minus subsidies	9.3
GDP	100.0

Observation: The portions are calculated with the original GDP series at current prices.
Source: DANE; calculations by *Banco de la República.*

As for expenditure, although the figures published at the time do not allow us to examine how domestic demand breaks down, they make possible to know the share of the major components of demand, with some detail for consumption. These proportions are listed in Table B.

Based on the output figures disclosed for the first quarter, with the new 2015 base year, DANE publishes, in addition to the original series, a seasonally and calendar adjusted GDP data series. This adjustment allows for comparisons between consecutive quarters that are not comparable in the original data due to the effect of working days. It is important to note that, from now on, the technical staff will monitor growth of the product series that is seasonally adjusted and corrected for business days, considering that, when estimating and removing the statistical noise of the calendar effect, this allows for a better analysis of changes in the state of the economy.

Table B
Portions of the Spending Components in GDP
(First quarter of 2018)

	Proportion (percentage)
Total consumption	83.0
Household consumption	69.3
Final government consumption	13.8
Gross capital formation	21.2
Total exports	15.0
Total imports	19.2
GDP	100.0

Observation: The portions are calculated with the original GDP series at current prices.
Source: DANE; calculations by *Banco de la República.*

Box 1

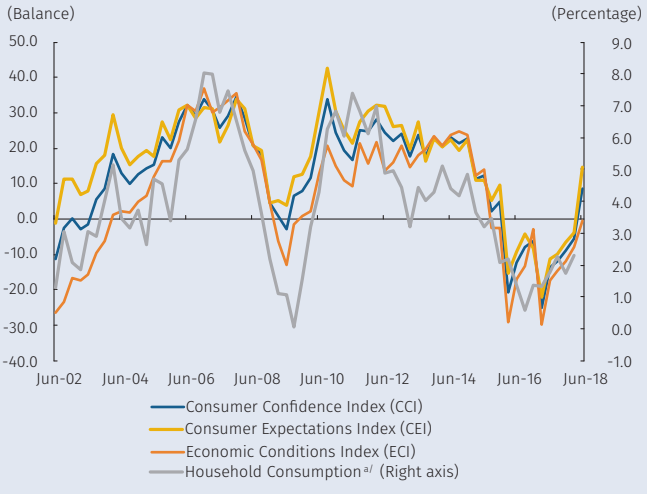
A Historical Decomposition of the Consumer Confidence Index in Colombia

Camilo Cárdenas Hurtado
María Alejandra Hernández Montes*

The Consumer Confidence Index (CCI), published by Fedesarrollo, summarizes the perception and expectations of consumers with regard to the country's economic conditions and those of households, as well as the willingness of individuals to spend on durable goods, such as furniture, appliances, vehicles, and even longer-term decisions, such as the purchase of a home. This indicator aims to closely monitor the behavior of demand and to register changes in the preferences and consumption habits of Colombian families. The CCI is monthly, in terms of its frequency, and is calculated as the average of the balances of five questions[1] in the *Consumer Opinion Survey* (EOC in Spanish). Two complementary indicators are also constructed on the basis of these questions: the *Household Economic Conditions Index* (ICE in Spanish) and the *Consumer Expectations Index* (IEC in Spanish).

The CCI plays an important role in the decision-making process of the economic authorities. *Banco de la República*'s technical staff and its Board of Directors follow this indicator because, given the frequency with which it is published and its high correlation with the dynamics of private consumption, it provides relevant information that can be used to analyze the state of economic activity. In fact, studies such as those by Carroll et al. (1994) and Ludvigson (2004), and Julio and Grajales (2011) for the Colombian case, show the confidence index helps to predict growth in the gross domestic product (GDP) and its components, with household consumption being the most relevant one. The coefficients of contemporaneous correlation between the EOC indexes and the annual rate of growth in private consumption are 84.0%, 80.6% and 80.5% for the CCI, the IEC and ICE, in that order, taking into account the figures for the first quarter of 2018 (Chart B1.1).

Chart B1.1
Consumer Confidence Index and Growth in Household Consumption



a/ Unofficial linking using the national accounts with base year 2005 and 2015.
Sources: Fedesarrollo; authors' calculations

1. The Macroeconomic Environment and Recent Performance of the CCI

In the most recent four-year period, the Colombian economy faced a variety of shocks that severely and persistently affected its equilibrium. The most relevant one was the unwinding of the international price of oil in mid-2014. As explained in previous editions of the *Inflation Report*, this plunge had macroeconomic consequences that included 1) a significant drop in terms of trade; 2) a deterioration in the dynamics of disposable income; 3) a sharp depreciation of the exchange rate and, through the effects of the second round, 4) the appearance of inflationary pressures on tradable goods, which impaired the purchasing power of Colombian families. The drop in the price of oil and its secondary effects on the economy were compounded by those derived from the impact El Niño weather had on food prices throughout 2015. This implied an additional increase in the cost of the consumer basket of goods and services.

In the context described above, the momentum in the CCI was consistent with the cycle of economic activity.

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* The authors are, respectively, specialized professional and professional in statistics within the Department of Monetary Policy and Economic Information. The contents of this box constitute a summarized and preliminary version of a working document by the authors entitled "Understanding Consumer Confidence Indexes in Colombia: A Structural FAVAR Analysis". The opinions and results presented herein are not binding on *Banco de la República* or its Board of Directors.

1 The balance is defined as the percentage of positive responses minus the percentage of negative responses. Its range goes from -100% to +100%. The questions on which the CCI is constructed deal with perceptions and expectations concerning the household (questions 1 and 2), the country (questions 3 and 5), and the willingness to purchase durable goods (question 11), as identified by the household head who is surveyed. For further details on the EOC methodology, consult https://www.fedesarrollo.org.co/encuestas/consumidor-eoc

Therefore, it fell sharply as of the third quarter of 2014, before bottoming out towards the end of 2016. Since then, it has shown a tendency to recover, even in times of political uncertainty and in the presence of shocks associated with the announcement and subsequent implementation of the latest tax reform. The recovery in household confidence occurred in a scenario that was marked by an orderly adjustment in the Colombian economy at levels consistent with lower terms of trade, but also by partial reversal of some of the shocks and the convergence of the pace of economic activity towards its potential level and inflation towards its the long-term target of 3%.

The rise in the CCI was more noticeable in recent months, propelled largely by the expectations component of the indicator (Chart B1.2). The country's economic authorities and its market analysts have taken this as a sign of economic recovery and as an indication of acceleration in the rate of growth in private consumption in the short term.

That being said, one can wonder about the reasons for the recent recovery in household confidence. This rebound would have different implications for the design of economic policy, depending on if it originates with an improvement in its fundamentals, or if it obeys new or isolated events unrelated to its determinants. It is, therefore, important to pinpoint what these fundamental variables are and how they have influenced the behavior of consumer confidence in Colombia.

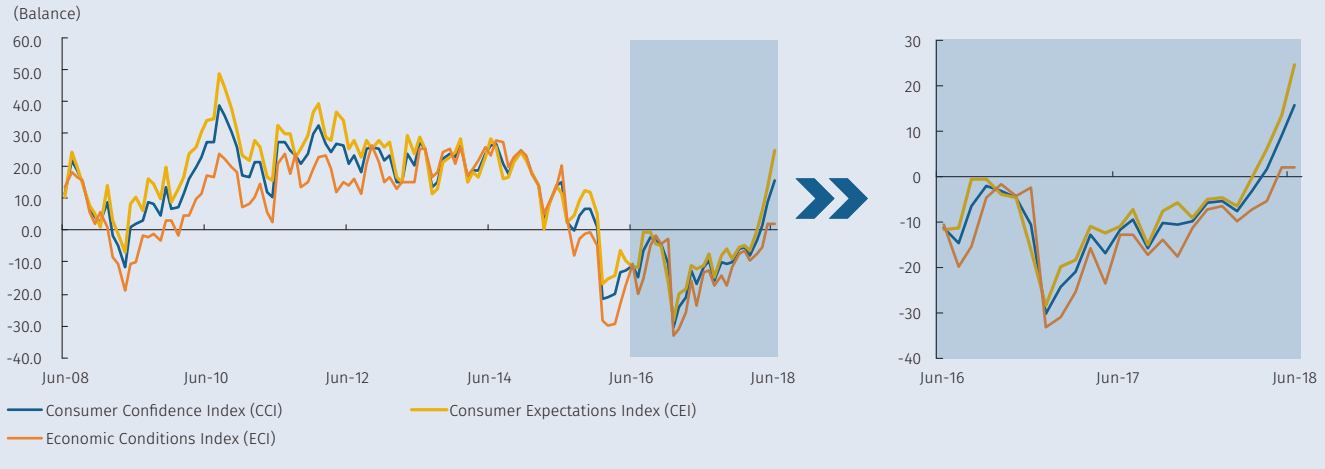
To that end, this box identifies some of the variables that are recognized in the international literature as determinants of consumer confidence. Then, a historical decomposition of the structural shocks to the fundamentals that determine movement in the CCI is developed by means of an econometric exercise. The results of the empirical exercise suggest the recent recovery in the CCI was due to fundamental factors, as well as to confidence shocks unrelated to its determinants. This allows us to conclude that, even in the absence of positive confidence shocks not explained by its fundamentals, the CCI would have registered a positive trend.

2. Fundamentals of the Behavior of Household Confidence

The literature on what decides consumer confidence identifies variables that can be categorized into different groups. In principle, Souleles (2004) and Ramalho et al. (2011) find a short-term relationship between a country's economic performance (and the phase of the cycle) and consumer confidence, which complements the role of the population's demographic features and events of an electoral and/or political nature. The results obtained by Lahiri and Zhao (2016) point in the same direction; in addition to the aforementioned variables, these authors also underscore the importance of how each household interprets and perceives its financial situation and the cost of living. In this same vein, variables such as the country's financial situation, real household income, the unemployment rate, inflation expectations and the perception of the government's economic policy explain the behavior of consumer confidence.

Other authors, such as Mueller (1966), Ward (1999), and Özerkek and Çelik (2010), have found that consumer confidence closely follows what happens in the country and at home in terms of the job market, income and wealth in real terms, and the tax burden and tax levies. In particular, these studies show how the household head being unemployed significantly affects consumer expectations with regard to economic conditions, and how increases in stock prices and government spending have

Chart B1.2
Indexes of Consumer Confidence (CCI), Consumer Expectations (CEI) and Economic Conditions (ECI)



Source: Fedesarrollo.

a positive and a negative effect on consumer sentiment, in that order.

The effect of news and political events on the extent of consumer confidence has been studied as well. Mass media news is identified as a key determinant of trust (Mueller, 1966), and may even have an asymmetric effect: consumers seem to be more sensitive to negative events than to positive ones (Lahiri and Zhao, 2016). Also, it has been reported that the tone with which economic news is presented has a significant short-term impact on this variable (Alsem et al., 2008). Similarly, Throop (1992) finds that consumer confidence can move separately from its determinants when an important political or economic event occurs.

Similarly, De Boef and Kellstedt (2004) show that, after controlling for economic performance, the way citizens perceive the ability of governments to manage the economy affects confidence in both the near and long term. Events such as wars, elections and the extent of political approval of the current government also explain several of the changes in confidence.

3. Description and Results of the Econometric Exercise

For this paper and according to the international literature, 78 economic series were classified into six (6) groups of variables, each one related to a particular determinant of consumer confidence. The first group is constructed with indicators of the international economic environment, and we refer to it as the "external context". The second contains variables associated with the country's economic situation in general, as well as several indicators of economic activity and government spending. It is called the "domestic context". The third group, "labor conditions", summarizes the conditions in the Colombian job market: employment and unemployment rates, quality of employment, and income and real wages. The fourth group, "financial conditions", includes different interest rates, amounts disbursed, and indicators of household loan quality. The fifth group, "taxes", is comprised of figures on the collection of direct and indirect taxes that affect Colombian consumers. The sixth group is related to the "cost of living"; it consists of different indexes with respect to consumer prices and inflation expectations.

Additionally, it is assumed the changes in confidence that are not explained by these determinants are caused by isolated shocks, referred to as "the rest". They do not depend on what happens to the fundamental variables and could be related to political events, issues concerning law and order, and news, among other factors.

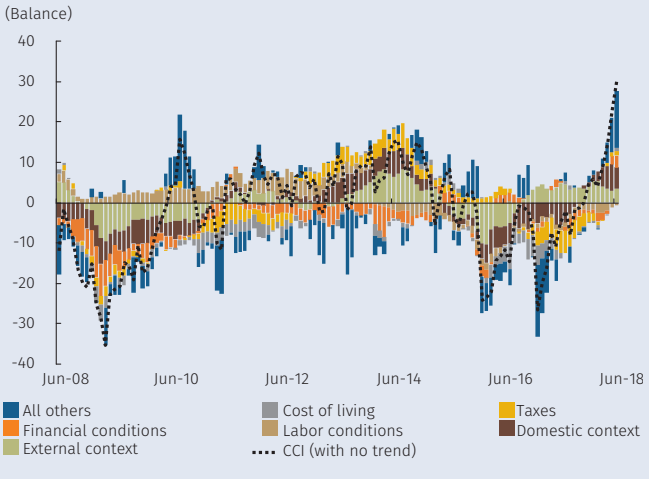
Then, the main components were analyzed to construct a representative series for each of the groups of determinant variables. As is customary, the first factor (main component) of each group was extracted. It summarizes the behavior of all the variables included in the group.

A structural factor-augmented vector autoregressive (SFAVAR) model was estimated to decompose the changes in the CCI between those explained by its fundamentals and those not related to the behavior of its determinants. The tendency was eliminated from all series of the system of equations. This allows the variables to be stationary and the system to be stable, as confirmed by the results of the unit root and augmented Dickey-Fuller tests applied to the series.

Then, through an exercise of historical decomposition of shocks (Burbidge and Harrison, 1985), in which the Cholesky factorization is used as an identification strategy, series of structural errors in the system of equations were obtained. . With these series, the CCI can be decomposed as the accumulated sum of shocks to its fundamental factors (Chart B1.3). For more details on the econometric methodology used in this case, see, for example, Amisano and Giannini (1997); and Bernanke et al. (2005).

The results of the historical decomposition of CCI shocks are robust and consistent with what was observed for the Colombian economy in the most recent decade. For example, one sees how household confidence was battered by deterioration in the fundamentals of the "external context" between 2009 and 2011, as a result of the international financial crisis at the end of 2008. During that period, a negative contribution from the fundamentals

Chart B1.3
Historical Decomposition of Structural Shocks to the Consumer Confidence Index



Sources: Fedesarrollo; authors' calculations

of "financial conditions" and "domestic context" was recorded as well, in an environment marked by a slowdown in the Colombian economy.

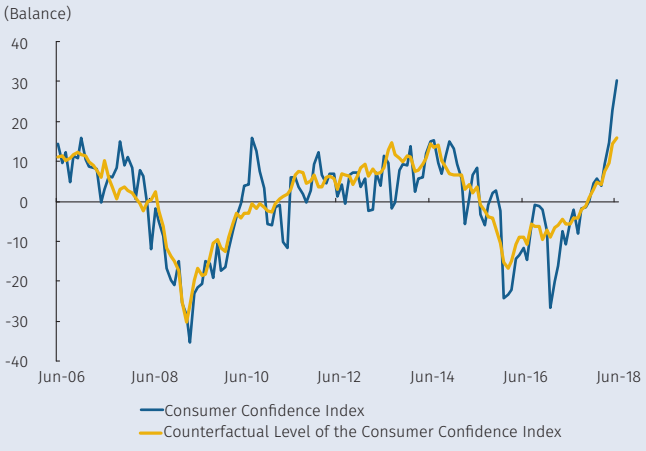
The five years after the financial crisis were a time when good performance by the fundamentals of the "external context" helped to consolidate the CCI on positive ground, particularly due to high international prices for the raw materials Colombia exports. The "domestic context" and "working conditions" also contributed during that period.

The decomposition of shocks also shows how the CCI was affected between 2015 and 2016 by the behavior of the determinants of the "external context", given the strong shock to terms of trade in mid-2014 and its second-round effects on the economy. In this sense, the shocks to the "domestic context" also contributed to the deterioration in household confidence during that period. Moreover, the shocks to the prices in the consumer basket of goods and services derived from the effects of El Niño weather and accumulated depreciation caused the "cost of living" group to affect household confidence levels between the start of 2016 and the middle of 2017. Added to this are the declines related to the shocks that are not explained by the behavior of the CCI fundamentals. The slumps in confidence during the early months of 2016 and 2017 are a particular case in point. These shocks could have been related to the announcement and subsequent entry into force of the latest tax reform. In this respect, one sees how the fundamentals of the "taxes" group negatively affected consumer confidence throughout 2017. During that period, there was an increase in VAT and direct taxes.

So far in 2018, most of the fundamentals of household confidence have performed positively in a context where the contribution to the increase in the CCI from the shocks associated with isolated events, unrelated to the performance of its determinants, has been especially high. This reflects the fact that consumers have been especially influenced in recent months by news or events that are not related to the behavior of the fundamental variables of the CCI. It should be noted that better conditions for the fundamentals of the "external context" since the beginning of 2017 enabled the CCI to register favorable performance, as did those of the "internal context" since the end of last year, the assimilation of the VAT shock by Colombian households in 2018, and the convergence of inflation at stable levels near the long term target of 3.0% set by *Banco de la República*. This occurred even when discounting the effect of the shocks not explained by the CCI determinants (Chart B1.4).

These results allow for the presumption that the recent increases in the CCI are the result of a combination of better performance from its fundamentals, on the one hand, and positive contributions from shocks associated with events unrelated to the determinants of confidence, on the other. Furthermore, the evidence derived from the empirical exercise suggests that, even without the positive shock that is not explained by its fundamentals, the CCI would have recovered and would have registered high levels anyway.

Chart B1.4
Consumer Confidence Index: Observed and Counterfactual Levels in Absence of Shocks Not Explained by their Fundamentals
(Series with no quadratic trend)



Source: Fedesarrollo; authors' calculations

Reference List

Alsem, K. J.; Brakman, S.; Hoogduin, L.; Kuper, G. (2008). "The Impact of Newspapers on Consumer Confidence: Does Spin Bias Exist?" *Applied Economics*, vol. 40, no. 5, 531-539.

Amisano, G.; Giannini, C. (1997). *Topics in Structural VAR Econometrics*. Springer-Verlag, Berlin, 2nd edition.

Bernanke, B. S.; Boivin, J.; Eliaz, P. (2005). "Measuring the Effects of Monetary Policy: A Factor-Augmented Vector Autoregressive (FAVAR) Approach," *The Quarterly Journal of Economics*, vol. 120, no. 1, 387-422.

Burbidge, J.; Harrison, A. (1985). "A Historical Decomposition of the Great Depression to Determine the Role of Money," *Journal of Monetary Economics*, vol. 16, no. 1, 45-54.

Carroll, C. D.; Fuhrer, J. C.; Wilcox, D. W. (1994). "Does Consumer Sentiment Forecast Household Spending? If So, Why?" *The American Economic Review*, vol. 84(5):1397-1408.

De Boef, S.; Kellstedt, P. M. (2004). "The Political (and Economic) Origins of Consumer Confidence," *American Journal of Political Science*, vol. 48, no. 4, 633-649.

Julio, J. M.; Grajales, A. (2011). "¿Qué nos dicen los índices de confianza?" *Borradores de Economía*, no. 659, *Banco de la República*.

Lahiri, K.; Zhao, Y. (2016). "Determinants of Consumer Sentiment over the Business Cycle: Evidence from the U.S Surveys of Consumers," *Journal of Business Cycle Research*, vol. 14, no. 2, 187-215.

Ludvingson, S. C. (2004). "Consumer Confidence and Consumer Spending," *The Journal of Economic Perspectives*, vol. 18, no. 2, 29-50.

Mueller, E. (1966). "The Impact of Unemployment on Consumer Confidence," *The Public Opinion Quarterly*, vol. 30, no. 1, 19-32.

Özerkek, Y.; Çelik, S. (2010). "The Link between Government Spending, Consumer Confidence and Consumption Expenditures in Emerging Market Countries," *Panoeconomicus*, vol. 4, 471-485.

Ramalho, E. A.; Caleiro, A.; Dionfsio, A. (2011). "Explaining Consumer Confidence in Portugal," *Journal of Economic Psychology*, vol. 32, no. 1, 25-32.

Souleles, N. S. (2004). "Expectations, Heterogeneous Forecast Errors, and Consumption: Micro Evidence from the Michigan Consumer Sentiment Survey," *Journal of Money, Credit and Banking*, vol. 36, no. 1, 39-72.

Throop, A. W. (1992). "Consumer Sentiment: Its Causes and Effects," *Economic Review, Federal Reserve Bank of San Francisco*, 35-59.

03

Recent Developments in Inflation

Annual consumer inflation approached its target and stabilized at around 3.2% during the second quarter, a slightly higher level than expected.

Something similar was observed in the average for the core inflation indicators; its level showed no significant changes between April and June.

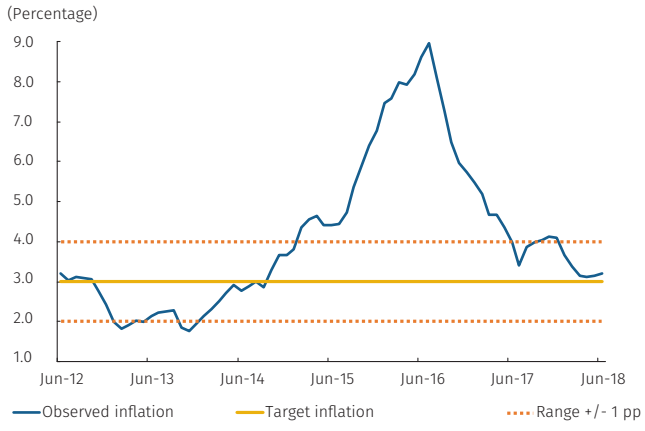
So far this year, the decline and stabilization in annual consumer inflation reflects the absence of pressure from domestic demand and the exchange rate.

As expected, foodstuffs brought upward pressures on inflation during the second quarter. These were largely offset by declines in other baskets in the consumer price index.

Annual consumer inflation behaved two ways throughout the first half of 2018. It dropped significantly in the first quarter, having gone from 4.09% in December 2017 to 3.14% in March, which was the lowest level on record since September 2014. Then, in the second quarter, it showed no significant changes, ending at 3.20% in June (Figure 3.1 and Table 3.1). This figure is somewhat higher than was expected last quarter.

Annual inflation has been within a range of 2% to 4% since last January and has only slightly exceeded the 3.0% target set by the Board of Directors of *Banco de la República* (BDBR). In the future, this proximity to the long-term target for annual inflation should help to keep expectations anchored to the target and reduce inflationary inertia, all of which facilitates managing monetary policy.

Chart 3.1
Consumer Price Index



Sources: DANE and *Banco de la República*

As mentioned in the previous edition of this *Report*, the decline in annual inflation during the first three months of 2018 was associated with the disappearance of the upward pressures exerted on the CPI by the higher indirect taxes decreed in early 2017 as part of the most recent tax reform. So far this year, what little pressure there was to depreciate the exchange rate favored the stability of inflation at levels close to its target, particularly by allowing the annual change in the tradable CPI to remain at low levels during the second quarter. Depreciation of the peso between April and June may have had repercussions on some price hikes for food and regulated items, as indicated below, but these have been rather limited.

Table 3.1
Consumer Inflation Indicators
(At June 2018)

Description	Weigh	Jun-17	Sep-17	Dec-17	Mar-18	Apr-18	May-18	Jun-18
Total	100.00	3.99	3.97	4.09	3.14	3.13	3.16	3.20
Non-food	71.79	5.12	4.71	5.01	4.05	3.80	3.85	3.81
Tradables	26.00	4.41	3.41	3.79	1.80	1.51	1.58	1.83
Non-tradables	30.52	5.21	5.21	5.49	4.76	4.59	4.57	4.27
Regulated items	15.26	6.01	5.68	5.86	6.01	5.65	5.79	5.82
Food	28.21	1.37	2.22	1.92	0.98	1.52	1.50	1.74
Perishables	3.88	-14.72	-0.32	5.84	7.13	8.98	7.75	8.47
Processed	16.26	3.29	0.84	-0.91	-2.01	-1.59	-1.15	-0.91
Eating-out	8.07	7.62	6.01	5.21	3.32	3.40	3.12	3.13
Core inflation indicators								
Non-food		5.12	4.71	5.01	4.05	3.80	3.85	3.81
Core 20		5.31	4.87	4.87	4.04	3.72	3.79	3.58
CPI excluding perishable foods, fuel and public utilities		5.07	4.31	4.02	2.99	2.77	2.80	2.71
CPI excluding food and regulated items		4.87	4.44	4.76	3.49	3.27	3.29	3.23
Average of all the indicators		5.09	4.58	4.66	3.64	3.39	3.43	3.33

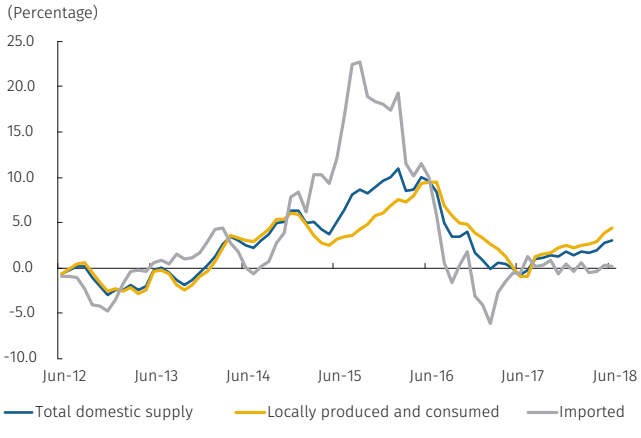
Source: DANE; calculations by *Banco de la República*

In addition, recent months have seen the persistence of weak demand and growth below its potential. This has tempered increases in a wide range of prices, including those in the non-tradable segment of the basic basket of goods and services. Regulated prices exerted some downward pressure during the second quarter, although it was less than expected and could be reversed in the coming months, as indicated in Chapter 4 of this *Report*.

In the last few months, food has been the only item to bring upward pressure to bear on annual consumer inflation. This effect has more to do with a very low statistical base of comparison in the same period the year before than with restrictions on the agricultural supply. In fact, the indicator of food supply was high during the second quarter, favored by good rainfall.

Non-labor costs could have exerted some upward pressure on consumer inflation during the last few months, mainly because of the increase in international fuel prices. However, this pressure was limited, as suggested by the behavior of the producer price index (PPI) for domestic supply (imported PPI, plus the PPI for items produced and consumed domestically). This indicator displayed increasing degree of stability during the first three months of 2018 and, although there were increases during the second quarter, they were moderate: its annual change went from 1.65% in March to 3.08% in June (Chart 3.2). The rise in annual producer inflation during the second quarter is explained by the added adjustment in both the local component (from 2.60% in March to 4.37% in June) and the imported one (from -0.56% to 0.11%).

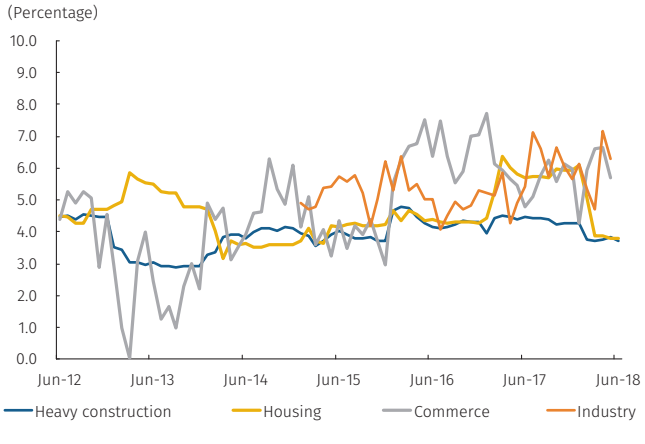
Chart 3.2
PPI by Origin
(Annual change)



Source: DANE.

With respect to labor costs, although several wage indicators remained stable or tended to decline in recent months, some continued to show adjustments above the inflation target. The information up to June indicates there were no major changes in the salaries in home construction (3.8%) and heavy construction (3.7%) during the last four months. The figures up to May point to some contraction in wages of commerce sector (from 6.6% in March to 5.7% in May), while those in industry registered an increase during the same period (from 4.7% to 6.3%). No additional upward pressure on wages is anticipated for the remainder of the year, given the current slack in the job market (Chart 3.3).

Chart 3.3
Nominal Wages
(Annual change)



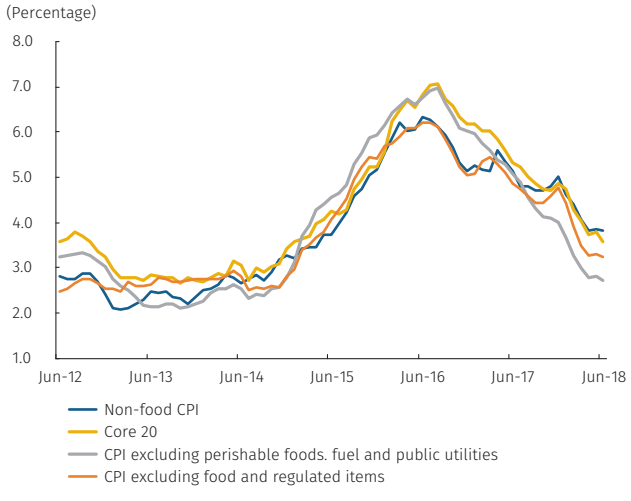
Source: DANE; calculations by *Banco de la República*

3.1 Core Inflation

Core inflation continued to decline during the second quarter, although to a lesser extent than was observed during the first three months of this year. In fact, the average of the four core inflation indicators monitored regularly by *Banco de la República* fell in June (3.33%) compared to March (3.64%) and December (4.66%). The figure for June was the lowest since January 2015 and was near the long-term target for inflation (3.0%) (Table 3.1).

When analyzing the various indicators of core inflation, one sees all of them were down with respect to the level observed three months ago. Likewise, as of April, they were all within the range of 2% to 4% (Chart 3.4). The CPI excluding food (3.81%) declined by 24 basis points (bp) with respect to the March figure, although at the end of the second quarter it was still the highest of the four indicators. On the other hand, the CPI excluding staple foods, fuel and public utilities fell between March (2.99%) and June (2.71%), being the only indicator that was below the long-term target during those months. Core 20 was the indicator that declined the most between March (4.04%) and June (3.58%), while the CPI excluding food and regulated items went from 3.49% in March to 3.23% in June.

Chart 3.4
Core Inflation Indicators



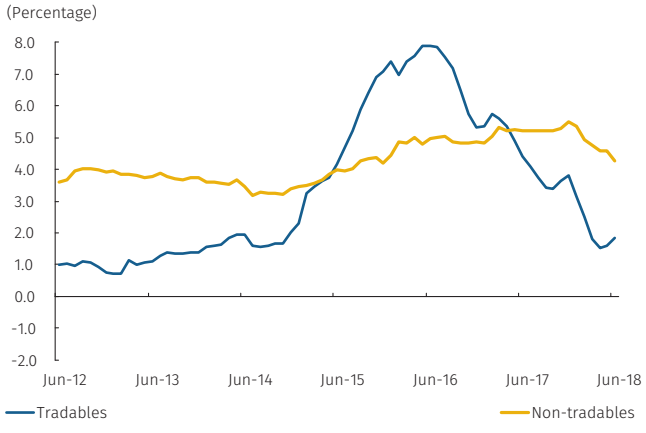
Source: DANE; calculations by *Banco de la República*

The drop in the non-food CPI during the first half of the year was led by the tradable and non-tradable components. However, more recently, between April and June, its decline is explained by the non-tradable component and by regulated prices.

After falling during the first quarter, the annual change in tradables excluding food and regulated items remained stable in the second quarter at levels below 3.0%. As explained in the previous edition of this *Report*, the sharp decline at the beginning of the year was caused by the disappearance of the upward effect generated by the increase in the value added tax, which was part of the latest tax reform. This was coupled with weak demand and appreciation of the peso in those months, particularly during the second half of 2017. Consequently, this variable went from 3.79% in December to 1.51% in April, then rose slightly in June (1.83%) (Table 3.1, Chart 3.5)

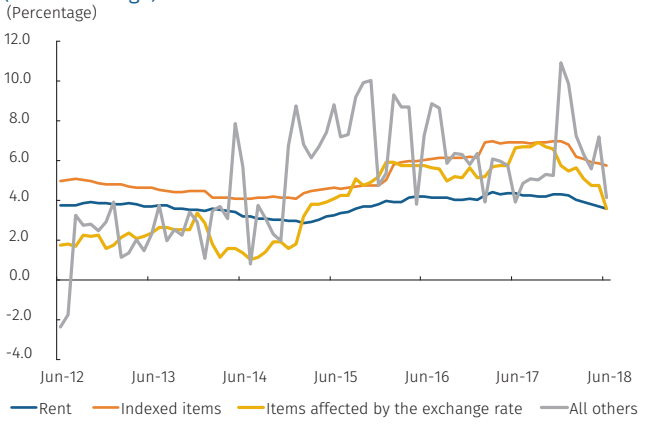
The increase in tradables during the last two months was concentrated in a few items, such as air fares and telephone service. It is possible these increases were affected by the moderate depreciation of the peso observed in April and May. However, other factors could have played an equally relevant role. Such is the case with the increase in international

Chart 3.5
CPI for Tradables and Non-tradables Excluding Food and Regulated Items (annual variation)



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

Chart 3.6
CPI for Tradables and Non-tradables Excluding Food and Regulated Items
(Annual change)



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

prices for certain raw materials and especially for oil and its derivatives. Also, the impact the strike had on airline passenger transportation services at the end of last year might have continued to be felt during 2018.

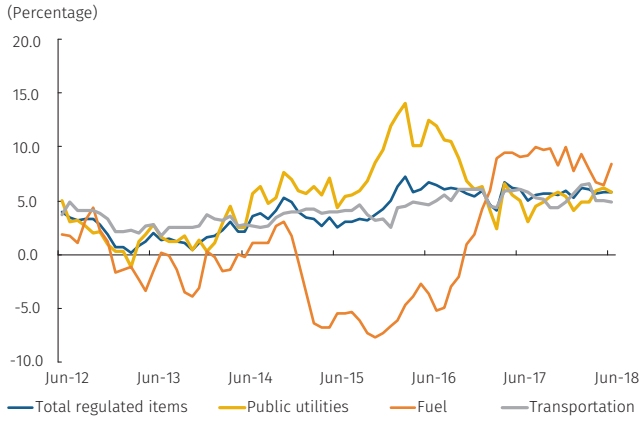
On the other hand, the annual change in the non-tradable CPI excluding food and regulated items, which remained above 5.0% throughout most of 2017, has gradually decreased so far this year, even in the second quarter (Table 3.1, Chart 3.5). It went from 5.49% in December 2017 to 4.76% in March and 4.27% in June. This downward trend has been generalized in the different items and sub-baskets that are part of this group. Indexed items are a case in point (comprised principally by education and health services), which went from 6.96% in December to 6.10% in March and 5.76% in June. Yet, despite the decline, their levels remain high in relation to the target, suggesting the persistence of indexing at rates well above 3.0% and, ultimately, the existence of significant inflationary inertia (Figure 3.6).

Among the non-tradables, the CPI for rentals also continued to post annual downward adjustments in the second quarter, although they were more moderate than those observed during early 2018, having gone from 4.28% in December to 3.91% in March, and 3.61% at the close of the first half of the year. This behavior comes at a time when there is a plentiful supply of real estate for rent, especially in the upper income strata, which tends to have an impact on the rate of adjustments in rental prices.

The limited price increases in this item and in the other non-tradables also can be attributed to weak domestic demand and the disappearance, in the first months of the year, of the upward pressure from indirect taxes. In every case, the increase was lower than that observed in the tradable segment of the CPI. Also, the sharp rise in the price of soccer tickets at the start of the year was reversed by the end of 2018. The hike in this item helped to put annual inflation above the ceiling of the target range (2% to 4%) (See Box 2, pg.57).

The influence the regulated CPI had on the behavior of inflation so far this year has been less clear than it was for previous baskets of goods and services, because its annual change during this period was marked by a high degree of volatility (Table 3.1 and Chart 3.7). According, it went from 5.86% in December to 6.01% in March, and then declined to 5.82%

Chart 3.7
CPI for Regulated Items and Components Thereof
(Annual change)



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

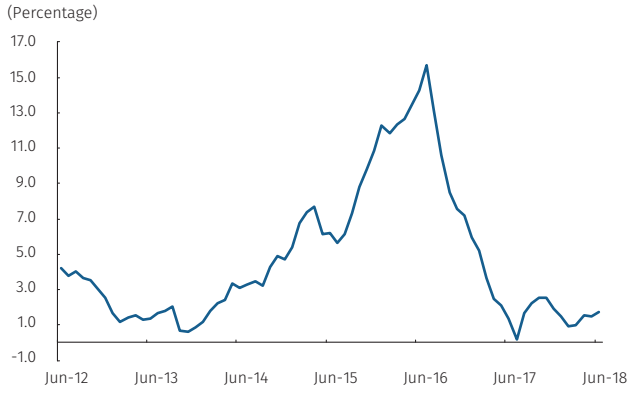
in June. At any rate, the adjustments are still high, preventing a sharper decline in annual consumer inflation.

An analysis of the main regulated components shows no clear trend in any of them during the first half of 2018 (Chart 3.7). The transport segment is a case in point; its annual adjustment went from 4.92% in December to 6.63% in March, before falling to 4.93% in June. It should be noted that the full increase in the price of taxi service has yet to affect this subgroup, since implementation of the new technology for charging fares is still pending. The same happened with public utilities (5.39% in December, 4.88% in March and 5.73% in June) and fuels (9.94%, 7.86% and 8.47% in the same periods).

Sanitation fees in Bogota are expected to increase in the coming months, as mentioned in Chapter 4. This is according to announcements by the Mayor's Office, and it could impact the CPI. In addition, the upward pressures on water rates continue, given the added investment made to expand the geographic coverage of this services throughout the country. There was a similar situation in the case of electricity rates, due to the new regulatory framework for this service, which implies adjustments in the distribution charge, some of which would already have begun to take effect.

In any case, what happened with domestic fuel prices is the factor that can have the greatest direct and indirect impact on consumer inflation. At the beginning of the year, the annual change in this item decreased, thanks to disappearance of the upward shock from the green carbon tax (135 pesos per gallon of gasoline) that was levied as part of the tax reform at the beginning of 2017. However, increases were observed in this indicator as of May (6.49% in May and 8.47% in June), thanks to rising international oil prices and an upward, although slight, adjustment in the dollar price since April. Going forward, there is a great deal uncertainty about how domestic fuel prices will evolve, as discussed in Chapter 4 of this *Report*

Chart 3.8
Food CPI
(Annual change)



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

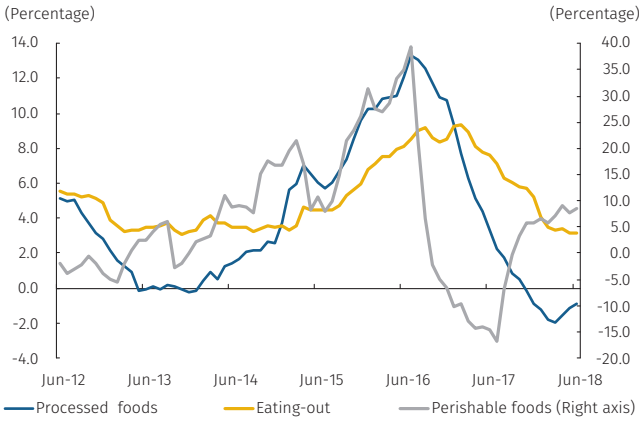
3.2 Food Inflation

Annual food inflation fell between December (1.92%) and March (0.98%), then rose during the second quarter of the year and ended June at 1.74% (Table 3.1 and Chart 3.8). The increase in annual food inflation was anticipated in previous

edition of this *Report*, although the level observed in June was somewhat higher than what was forecast.

After the upward pressure from the last bout of El Niño weather was overcome, having pushed the annual adjustment in food prices to its highest figure in mid-2016 (15.71%), the food supply behaved very favorably, even in the first two quarters of 2018. Good weather conditions and institutional policies have allowed for an expansion in the amount of area sown with crops and for good performance in terms of supply.

Chart 3.9
Food CPI by Groups
(Annual change)



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

Even so, the CPI for perishable foods tended to rise during the second quarter (from 7.13% in March to 8.47% in June). This is explained, in most instances, by a very low statistical base of comparison in the first half of 2017. For some products, such as fruits, the annual adjustment has increased. This may be the effect of very low prices in previous quarters that discouraged the supply in those instances, which would be part of the normal production cycle. However, for the bulk of products, there are no signs of supply problems, as suggested by the high indicators of food supply at the supply centers in the last three months.

The annual change in prices for processed foods also rose in the second quarter, after falling during the first three months of the year (Figure 3.9). This sub-basket would have been affected in recent months by the increase in international prices for some imported foods. Added to this was the depreciation of the peso between April and June. Finally, away-from-home meals have exerted downward pressure on food inflation so far this year, falling from 5.21% in December to 3.32% in March and to 3.13% in June. It is possible these prices are incorporating, to some extent, the reduction in inflationary inertia and the weak demand.

Box 2
Soccer and Inflation

Edgar Caicedo García
Andrea Salazar Díaz*

The playoffs of the Colombian soccer championship last year in December[1] generated an unexpected increase in the entertainment component of the Consumer Price Index (CPI), which includes soccer tickets, among other items.[2] In this short analysis, we will assess the inflationary impact of soccer and then discuss its measurement in the CPI, taking advantage of the fact that the National Bureau of Statistics (DANE) is scheduled to implement a new CPI methodology as of next year.

Annual consumer inflation was 4.09% at the end of 2017, exceeding the long-term target of 3.0%, set by the Board of Directors of *Banco de la República* (BDR). Several factors brought upward pressures to bear on inflation last year, the most prominent ones being the increase in indirect taxes (VAT and carbon tax), as a result of the latest tax reform, and the rebound in annual food inflation, which was due more to an unfavorable base of statistical comparison than to a limited food supply. The airline strike at the end of 2017, plus price increases for several regulated goods and services (fuels and transportation), also contributed to the rise in inflation. Ultimately, at the end of the year, soccer proved to be the protagonist, generating upward pressure on the CPI.

Market expectations several quarters ago with respect to inflation was not met because of the aforementioned inflationary pressures. Analysts had forecast inflation under 4.0% for 2017. In the end, annual inflation was 4.09% by the end of that year, exceeding the long-term inflation target (3.0%).

Without going into a deep analysis as to which of the aforementioned factors contributed most to the failure to meet the target for inflation, we only want to point out how the boost the CPI received from entertainment-related related services (including soccer) at the end of last year led to a rise in inflation above 4.0%.

The Colombian professional soccer playoffs in mid-December of 2017, which were part of the closing tournament that year and involved two teams with the most important fan base in the nation's capital, generated a monthly increase of 18.13% in the CPI for entertainment-related services (the component that includes soccer). This adjustment is much higher than the one observed a year ago (1.34%). The increase in the price of tickets for the playoffs in the 2017 closing tournament led to an annual change of 23.4% in this item, which is much higher than what was observed twelve months earlier (6.86%), when the final playoffs in Colombia soccer featured a team from the nation's capital and a team from the city of Ibagué [3](Table B2.1).

1. What was the inflationary impact of the final Colombian soccer playoffs in 2017?

To answer this question, one must assume the 18.13% monthly increase in December 2017 in spending on "entertainment-related services" was due entirely to soccer. The statistical evidence shows a great deal of volatility in the CPI for entertainment-related services, which include soccer, during the months when there are soccer playoffs. Also, it is important to point out that the largest monthly adjustments in the CPI for entertainment-related services occurred when teams from the major cities faced each other in the final playoffs (Table B2.1, Column 3).

There are three ways to estimate the bullish impact of soccer on annual consumer inflation. The first is to calculate headline inflation excluding soccer. The second is to work out its contribution to annual inflation. The third is to calculate annual inflation for 2017 with a regular rise in ticket prices for the national playoffs. The following are the results of these estimates.[4]

Headline inflation excluding soccer. This calculation is obtained by subtracting the CPI for entertainment-related services (soccer) from the total CPI. The new index

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* The authors are, respectively, lead professional and a student intern within the Programming and Inflation Department at *Banco de la República* de Colombia. The opinions and results presented in this section are not binding on *Banco de la República* or its Board of Directors.

1 Since 2002, the Colombian soccer tournament has been divided into two segments: the open tournament and the closing tournament. The open tournament is played during the first half of the year, while the closing tournament is played in the second half of each calendar year.

2 In this respect, see DANE (2017). "Metodología general del "Índice de precios al consumidor (IPC)"; available at: www.dane.gov.co/files/investigaciones/fichas/precios-y-costos/DSO-IPC-MET-001-V5.pdf, p. 21.

3 Bogota is the city that carries the most weight in the CPI (42.47%). Consequently, a soccer final featuring two teams from the nation's capital implies a major change in the total CPI.

4 Due to limited space, the formulas for calculating the three estimates of the inflationary impact of soccer are not included herein. For more information in this respect, see Section 2.2.3 entitled "Metodologìa de cálculo del IPC" (pp. 31-37) in *Metodología del indice de precios al consumidor*, DANE (2009).

Table B2.1
Final Playoffs in Colombian Professional Soccer and Inflation

Date	Final Playoffs	Monthly change in services related to entertainment in the final playoffs of the final tournament	Annual inflation (1)	Inflation excluding services related to entertainment (2)	Inflation range and target		Dif. (1 - 2)
2001	América de Cali vs. Independiente de Medellín	0.87	7.65	7.64	8.00	8.00	0.01
2002	Independiente de Medellín vs. Deportivo Pasto	0.78	6.99	6.97	6.00	6.00	0.02
2003	Deportes Tolima vs. Deportivo Cali	0.10	6.49	6.47	5.00-6.00	5.50	0.02
2004	Junior vs. Atlético Nacional	1.69	5.50	5.46	5.00-6.00	5.50	0.04
2005	Deportivo Cali vs. Real Cartagena	1.30	4.86	4.83	4.50-5.50	5.00	0.03
2006	Cúcuta Deportivo vs. Deportes Tolima	0.51	4.48	4.54	4.00-5.00	4.50	-0.06
2007	Atlético Nacional vs. La Equidad	0.39	5.69	5.67	3.50-4.50	4.00	0.02
2008	América de Cali vs. Independiente Medellín	1.33	7.67	7.76	3.50-4.50	4.00	-0.09
2009	Independiente Medellín vs. Atlético Huila	1.40	2.00	1.99	4.50-5.50	5.00	0.01
2010	Once Caldas vs. Deportes Tolima	6.15	3.17	3.12	2.00-4.00	3.00	0.05
2011	Junior vs. Once Caldas	6.74	3.73	3.70	2.00-4.00	3.00	0.03
2012	Millonarios vs. Independiente Medellín	10.03	2.44	2.36	2.00-4.00	3.00	0.08
2013	Atlético Nacional vs. Deportivo Cali	4.28	1.94	1.92	2.00-4.00	3.00	0.02
2014	Santa Fe vs. Independiente Medellín	20.38	3.66	3.59	2.00-4.00	3.00	0.07
2015	Atlético Nacional vs. Junior	3.22	6.77	6.79	2.00-4.00	3.00	-0.02
2016	Santa Fe vs. Deportes Tolima	1.34	5.75	5.74	2.00-4.00	3.00	0.01
2017	Millonarios vs. Santa Fe	18.13	4.09	3.98	2.00-4.00	3.00	0.11

Sources: DANE and *Banco de la República*

resulting from this exercise allows us to estimate total annual inflation without soccer. As illustrated in Column 5 of Table 1, annual inflation without soccer in 2017 would have been 3.98%; that is, 11 basis points (bp) less than the official figure for inflation published by DANE (4.09%). Therefore, having two teams from the capital classify for the final soccer playoffs at the end of last year led to an increase in total annual inflation from 3.98% to 4.09%.

The contribution of soccer to inflation. This calculation is obtained by multiplying three components: the annual change in the CPI for entertainment-related services (soccer) at December 2017, the weight of soccer in the CPI, and the proportion of the soccer CPI with respect to the total CPI twelve months ago. Hence, soccer's contribution to annual consumer inflation in 2017 was 13 bp. As a result, due to soccer, inflation last year did not end at 3.96%, but at 4.09%.

Inflation in 2017 with different teams in the final playoffs. An alternative is to assume the increase in the component for entertainment, culture and leisure (which includes soccer) in December 2017 was equal to what it was in December 2016 (6.86%) and not the one actually on record (23.4%). In other words, it is suggested the final tournament in December 2017 would have been less inflationary without one of the two teams from the nation's capital. The playoffs between Santa Fe and Tolima in December 2016 are an example. The result shows

consumer inflation would have been 4.00% at the end of the year and not 4.09%.

The conclusion derived from these estimates is that annual consumer inflation was above 4.0% at the end of 2017, partly because of the way soccer ticket prices are captured in the CPI. As *Banco de la República* has emphasized, any deviation in inflation from its target can have macroeconomic costs. One example is the cost in terms of controlling inflation by the central bank due to a loss of credibility, whose functional mission is to maintain the purchasing power of domestic currency. The rise in inflation also worsens inflation expectations and leads to higher indexing because many items in the economy adjust to past inflation, either directly or indirectly. Such is the case with wages, public utilities, real estate leases, transportation rates, educational services, taxes and commercial contracts, among others. Inflationary inertia also is accentuated and makes this phenomenon more persistent.

2. Some Methodological Considerations for Calculating Soccer in the CPI

As noted, the CPI for entertainment-related services (affected by soccer) is highly seasonal at mid-year and at the end, when the finals of the Colombian soccer championship are played. This effect can be either less or quite pronounced, depending on the teams that reach the finals. In particular, the price of soccer tickets lends an upward bias (of at least 7.0 bp) to consumer inflation when the teams from the major cities reach the final, as verified in 2012 (Millonarios- Medellín), 2014 (Santa Fe-Medellín) and 2017 (Millonarios-Santa Fe).

To reduce this bias and its effects, soccer should be treated the same as goods and services that change in quality. Any final playoff, in any sport, is a differentiated product, with added intrinsic value. In this case, the recommendation of the IMF (2006) is very clear: "[...] it is important to ensure that the quality of goods and services for which prices are collected does not change during the process [...]."[5] This recommendation is intended to encourage national bureaus of statistics to collect prices of identical products and to avoid heterogeneous products. In this sense, a soccer final is a differentiated product with a significant increase in quality. The CPI manual published by the IMF outlines several techniques that can be used to correct price hikes that stem from an increase in quality, [6] one of which should be considered so that an unforeseen event such as soccer does not have the inflationary impact described in this box.

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5 See the International Monetary Fund (2006). *Manual del índice de precios al consumidor, teoría y práctica*, 31-35.

6 In this respect, see Chapter 7, *ibidem*.

Box 3

The CPI for Upper Income School Tuition and Admission Fees: Biases and an Alternative Calculation

Carlos A. Huertas
Isleny J. Carranza*

In February 2018, the annual change in the CPI for school tuition and admission fees was 8.4% and 7.4%, respectively. These figures exceeded annual inflation on the same month (3.4%) and surpassed the average increase in wages in the Colombian economy.[1] It is difficult to explain such a large increase, especially in the absence of inflationary pressures, as illustrated by the slack in the job market and the excess amount of installed capacity in the economy throughout 2017 and during 2018 to date. Also, according to DANE, about 44% of the sample is comprised of public schools, where education is free of charge. Therefore, if the increase in tuition at public schools was zero (or very low), the average increase in tuition at private schools could have reached double digits.

The annual rise in the CPI for tuition also is inconsistent with the regulation that limits increases in fees for private education. For 2018, the National Ministry of Education set the base increase at 4% for private schools that offer preschool, basic and secondary education. Those with better results in terms of quality may make additional hikes, but the total increase may not exceed 7.8% (the base and maximum increases for 2017 were 6.77% and 8.97%, respectively). The only exception to this upper limit is the first course offered by a school; it is classified as subject to regulated or supervised freedom,[2] a grade level for which the institution can set the price freely. This adjustment in the fee for that first year will be called an "admission cost", since the school can increase the value of the fee or tuition by much more than what is allowed for the other grades.[3] Therefore, at a school classified in this group, one feasibly can find major differences between the costs of tuition for students who are only one year apart in school.

Therefore, it will be argued in this box that increases in admission costs are a possible source of bias when calculating the CPI for school tuition, because the DANE methodology allows adjustments in admission costs from several years back to be included in the current calculation of the CPI for school tuition. As this bias would be found in highly rated and more expensive schools, only the CPI calculation for high-income fees will be referred to this box. The respective methodology is described in Point 1. The origin of the measurement bias is explained in the following section, and an alternative method is proposed that could reduce it. Moreover, the two methods are compared to a sample that contains the value of school tuition and admission fees for the children of *Banco de la República*'s employees in Bogotá. It is important to clarify that, because it uses a small and non-representative sample, this work does not intend to measure the extent of the bias in the calculation of the CPI associated with the cost of admission. It simply is intended to identify it. The conclusions are presented in the last section.

1. Methodology for calculating the CPI for High Income School Tuition

To calculate this index,[4] DANE takes four groups into account: 1) preschool, 2) primary, 3) middle school and 4) high school. Then, for each one $(j = 1,\ldots,4)$, it surveys a broad sample of schools, asking what they charge in tuition for a particular course or grade level, so as to compare it to the price of the tuition paid for the same course or grade level the year before $(P_t^{i/P\,i}{}_{t-1})$[5]. In the next step, the geometric average of these annual changes is calculated for each group $(\bar{\pi}_t^j)$[6] and, finally, a weighted arithmetic average of the geometric averages for all the groups is calculated $(\bar{\pi}_t)$[7]. This last variation is what DANE uses to index the tuition index.[8]

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* The authors are, respectively, Director of the Programming and Inflation Department and Professional in the Statistics Section. The opinions and results presented in this section are not binding on *Banco de la República* or its Board of Directors.

1 In that month, the increase in the minimum wage was 5.9%., as opposed to 5.3% in industry, 6% in commerce and 5.1% in housing.

2 As per Article 202, Law 115 of 1994, schools may be classified in one of three regimes: regulated freedom, supervised freedom or the controlled regime, according to the scores they obtain in quality assessments. See Ministry of Education Resolution 18066 of 2017.

3 Schools do it, for example, to finance investments, increase profits, improve quality, etc.

4 The CPI for enrollment fees is calculated the same way.

5 For example, the value of tuition for the sixth grade in February 2018 versus the value for the same grade in February 2017.

6 This paper does not contain these weighted averages, since they are flexible and DANE does not publish them.

7 $\bar{\pi}_t = \sum_{j=1}^{4} w_j\,(\pi_t^j - 1)$ *donde* $\bar{\pi}_t^j = \sqrt[nxm]{\prod_{k=1}^{n}\prod_{i=1}^{m}\frac{P_t^{j,k,i}}{P_{t-1}^{j,k,i}}}$ With w_j = weighted average for group *j*, *n*= number of schools, *m* = number of courses or grade levels in the group *j*, $P_t^{j,k,i}$ = tuition for course or grade level *i* offered by school *K*, and what is in group *j*.

8 $IPC_t^{pensión} = IPC_{t-1}^{pensión} \times (1+\bar{\pi}_t)$

The reason for calculating the annual increase in the tuition for the same course is to elude changes in the quality of the service. This is because the CPI must measure the increase in consumer spending to maintain the same level of utility and, therefore, changes in quality could imply greater utility. However, as will be explained, this variation could be overestimating the increase in tuition because, for a school with "regulated or supervised freedom," increases in admission costs several years back may be included when calculating the CPI for current tuition.

2. Average Annual Change in Fees at a School with "Regulated or Supervised Freedom"

To indicate the price level of tuition at each school for a current year (t), we assume a typical school with regulated freedom that offers twelve grade levels: kindergarten ($i=0$), first ($i=1$), ..., tenth ($i=10$), eleventh ($i=11$). For the grade levels other than kindergarten, the school will adjust the tuition annually, up to a maximum percentage (δ_t) set by the Ministry of Education. In these cases, when a student passes from one grade level ($i-1$) to the next one (i), the new tuition (P_t^i) will be the value of the previous tuition (P_{t-1}^{i-1}) adjusted by two rates of increase: changes in costs (π_t) and change in the quality of service (a^i), where $(1+\pi_t)(1+a^i) \leq \delta_t$. As inferred from the notation, it will be assumed the adjustment in tuition due to changes in quality (a^i) would not vary with time.

Kindergarten is the exception to the foregoing. At this level, the school is free to set tuition (P_t^0) and may increase its value annually by a percentage beyond what is allowed for other grade levels. Consequently, the variation in tuition between P_t^0 and P_{t-1}^0 will be $(1+\pi_t)(1+e_t^0)$, where e_t^0 is the increase due to the "*cost of admission*" to school in year t. Since e_t^0 is set freely by the school and there are parents who accept it, there may be a case where $(1+\pi_t) \times (1+e_t) \geq \delta_t$. The general formula will be the following.

$$P_t^i = \begin{cases} P_{t-1}^0 \times (1+\pi_t) \times (1+e_t^0), \; i=0 \\ P_{t-1}^{i-1} \times (1+\pi_t) \times (1+a_i), \; i=1,2,\ldots,11 \end{cases} \quad (1)$$

Where P_t^i = the value of tuition for grade level i in year t, ($i=1,2,\ldots,11$), π_t = the annual increase in school costs in year t; e_t^0 = the increase in tuition for kindergarten (0) in year t due to the cost of school admission, and a^i = the increase due to changes in the quality of instruction in grade i.

It should be noted that the value of tuition P_t^i also can be expressed as the tuition the student began to pay when enrolling in the school, P_{t-i}^0, adjusted by all the changes in costs and in quality that were accumulated until the student reached grade level i, as follows.

$$P_t^i = P_{t-i}^0 \times \prod_{j=1}^{i} (1+\pi_{t-j+1})(1+a^{i-j+1}) \;\; i=1,2,\ldots,11 \quad (2)$$

2.1 Annual Change in the Tuition CPI for a School, according to DANE

To calculate the CPI for tuition, DANE compares the value of the tuition paid by a "representative student" for grade level (i) to the amount another "representative student" paid for the same grade (i) the year before, both at the same school.[9] Since it is the same grade level that is being compared, this annual change should be free of biases originating with a change in quality. This is verified when calculating the annual change using (2) and (1):

$$\frac{P_t^i}{P_{t-1}^i} = \frac{P_{t-i}^0 \times \prod_{j=1}^{i} (1+\pi_{t-j+1})(1+a^{i-j+1})}{P_{t-i-1}^0 \times \prod_{j=1}^{i} (1+\pi_{t-j})(1+a^{i-j+1})} = (1+\pi_t) \times (1+e_{t-i}^0) \quad (3)$$

Indeed, as shown in (3), the annual change in DANE's methodology does not depend on a^i. Rather, it depends on the change in the cost of admission (e_{t-i}^0) that existed between the two "representative student" years ago. As illustrated in Chart B3.1, this annual change compares two students who will always have a difference of one year in seniority and, consequently, there will always be a difference in the cost of tuition, which is equal to the increase in the cost of admission (e_{t-i}^0). Accordingly, the methodology has two types of bias: 1) the bias from an annual change (t–i) that will be present when the change in tuition for the current year is being calculated; and 2) the extent of a delayed or lagging admission cost, which – as indicated – can be so high that it can go beyond the increases permitted for the current year $(1+\pi_t) \times (1+e_t) \geq \delta$.

As shown in equation (4), when calculating the annual average (geometric) variation in all courses for year t ($\bar{\pi}_t^D$) using the DANE methodology, the aforementioned biases are also averaged:

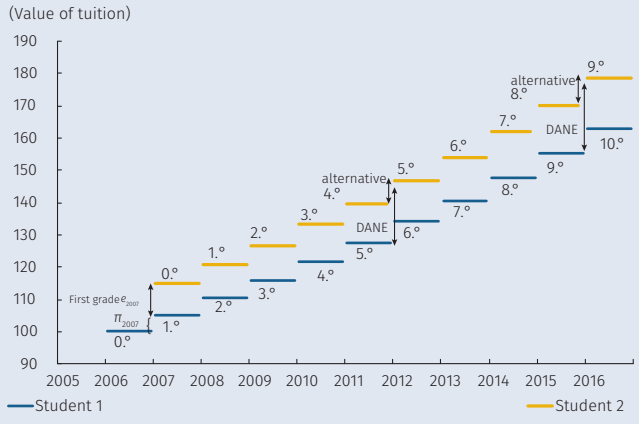
$$(\bar{\pi}_t^D) = \prod_{i=0}^{11} \left[\frac{P_t^i}{P_{t-1}^i} \right]^{1/12} = (1+\pi_t) \times \prod_{i=0}^{11} [(1+e_{t-i}^0)]^{1/12} \quad 4)$$

2.2 Alternative Methodology for Calculating the Annual Change

The alternative methodology consists of calculating the annual change in the value of tuition when a student moves from one grade (or course level) *(i–1)* to the next *(i)*. This proposal is argued as follows:

9 As an example, note the annual increase in tuition paid for the ninth grade between 2017 and 2018. For this comparison, one student is identified who is in the ninth grade in 2018, and another with similar characteristics, who attended the same grade in 2017. This last student should be in the tenth grade in 2018.

Chart B3.1
Example of Calculating the Annual Change in Tuition without Changes in Quality



Sources: DANE and *Banco de la República*

- There may be parents for whom the utility function does not change if their child remains in the school they have chosen. In other words, they know and accept the fact that the tuition can change considerably as their child progresses in school from one grade to another, since the quality of the service can improve.[10] If this assumption is valid, to keep the family's satisfaction constant, the variation in the CPI for tuition would have to take into account all the items; that is, it also would have to include the costs associated with changes in the quality of service within the same school.
- Even if there are major changes in quality from one course or grade level to another, so as to imply a variation in the utility function for the parents, these courses could be detected and could be excluded from the sample, or the value of tuition without the costs associated with this change in quality could be requested.[11] In fact, as will be illustrated, by segmenting the sample between preschool, primary, middle school and high school, most of these changes in quality would be controlled already.
- The same student can be tracked for several years. If the student fails a year or leaves school, it would be easy to change the student for another one in the same course.
- As will be seen, this annual change does not depend on the cost of admission and has no lags.

Even so, one must accept that this alternative methodology may still have a bias, which is not easy to measure, given the change in the quality of education offered when a student progresses to the next course or grade level, which may produce even a higher result than the one obtained with the DANE methodology (Chart B3.2). As shown in equation (5), this change in quality is present when the annual change is calculated with (1). Similarly, the (geometric) average of the annual changes in tuition with this alternative methodology $(\overline{\pi}_t^A)$ also averages quality changes (equation 6).

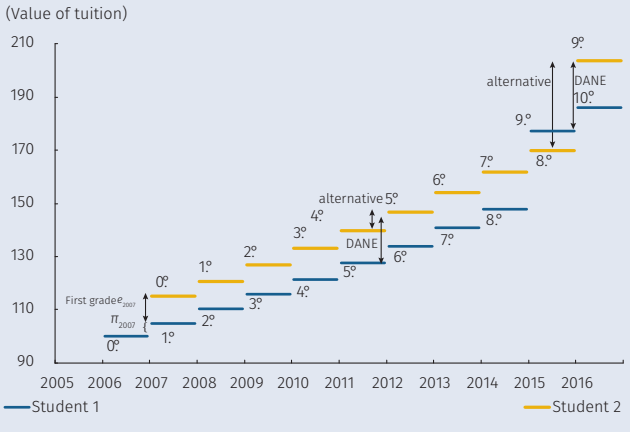
$$\frac{P_t^i}{P_{t-1}^{i-1}} = (1+\pi_t)\times(1+a^i), \quad i=1,2,\ldots,11 \tag{5}$$

$$(\overline{\pi}_t^A) = \prod_{i=1}^{11}\left[\frac{P_t^i}{P_{t-1}^i}\right]^{1/11} = (1+\pi_t)\times\prod_{i=1}^{11}[(1+a^i)]^{1/11} \tag{6}$$

2.3 Calculation of the Annual Change according to the DANE Methodology and the Alternative

In this box, we used a database that contains the name of the school and the values of the tuition and other educational costs charged to the children of *Banco de la República*'s employees. The information is annual, in terms of its frequency, and it is available for the years between 2004 and 2018. With this base, it was possible to extract information on six schools in Bogotá that offer preschool, elementary, and middle and high school education, and where it was possible to find continuous information on students who stayed throughout the period covered by the sample. According to the Colombian Institute for the Evaluation of Education (ICFES), these schools have decidedly superior rankings. They are classified as "regulated or supervised," and could be part of the CPI for high-income tuition or enrollment fees in the city of Bogotá.

Chart B3.2
Example of Calculating the Annual Change in Tuition When the Only Change in Quality is between the Eighth and the Ninth Grade



Sources: DANE and *Banco de la República*; authors' calculations

Given the aforementioned sample, the results of the annual changes were the following.

10 For example, due to the right to use laboratories or have access to exchange courses, international baccalaureate programs, etc.

11 For instance, at some schools that offer an international baccalaureate degree, the costs associated with this certification are charged when a student progresses from the tenth to the eleventh grade. Therefore, one possibility is to exclude the step from the tenth to the eleventh grade from the sample, or to request information on the value of the tuition (or enrollment) without the international baccalaureate costs.

a. In all the schools, there was evidence of a change in quality when proceeding from one course or grade level to another. The first change is when the student goes from preschool to primary education, where the tuition and admission fees are less. The second change occurs when the student progresses from middle school to high school (from the ninth to the tenth grade), a time where there is a sizeable increase in tuition (and registration), more so than the one registered in the other courses and surpassed only by the increases in the admission costs. In this context, the classification done by DANE when calculating the CPI for education would help to control this bias.
b. If we exclude the courses or grade levels when the change in quality was significant, the increase in the average cost for admission surpasses or equals the increases in the other courses. As shown in Table B3.1, the most relevant differences occurred in 2008 and 2009 (the results are consistent with the calculation for tuition or registration).
c. As shown in charts B3.3 and R3.4 and in Table B3.1, with information from the sample, the alternative methodology always shows lower average annual changes than the DANE ($\overline{\pi}_t^D > \overline{\pi}_t^A$) methodology. This provides indications that the bias for admission costs far exceeds the biases for changes in quality.[12] The same charts show the annual changes with the alternate methodology (done with the sample) also are lower than the annual changes in the CPI for high-income tuition and fees for the city of Bogota.

3. Conclusions

This box shows evidence of upward biases in the calculation of the CPI for high-income school fees and tuition. The reason for this bias is the so-called cost of admission, defined as the increase by a school (with regulated or supervised freedom) in the tuition charged for the first grade of preschool education. Generally, this registration or admission cost is much higher than the increase applied to the tuition charged for the other courses. When calculating the average annual change in a school's tuition, it was found the DANE methodology gives too much weight to these admission costs, by allowing all such costs that were applied several years back to be included. An alternative method proposed in this box could help reduce that bias.

It is important to clarify that the empirical exercises shown in this box are not representative in sample terms and, accordingly, they cannot be used to assess the size of the measurement bias due to the cost of admission. They simply serve as evidence to illustrate the existence of that bias and to explain the difference between the two methodologies: that of DANE and the alternative proposal.

Table B3.1
Average of the Annual Changes in the First Grade Compared to the All Other Grades

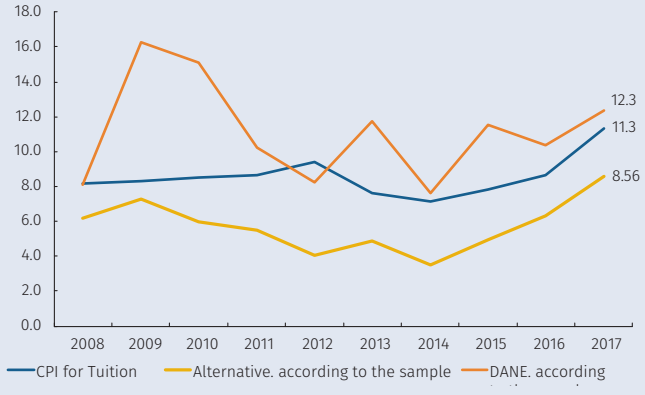
Year	Annual Increase in Admission Fees			Annual Increase in Tuition		
	First grade[a/]	All other grades (alternative method)[b,c/]	All other grades (DANE method)[b/]	First grade[a/]	All other grades (alternative method)[b,c/]	All other grades (DANE method)[b/]
2008	23.9	6.3	8.1	23.9	6.2	8.1
2009	43.4	7.4	16.2	25.0	7.3	16.3
2010	13.0	6.1	16.8	13.0	6.0	15.1
2011	5.5	5.6	10.0	5.5	5.5	10.2
2012	12.1	5.2	9.4	12.1	4.1	8.2
2013	9.9	4.7	10.5	10.0	4.9	11.7
2014	3.5	3.5	8.9	3.5	3.5	7.6
2017	9.6	8.6	16.7	9.6	8.6	12.3

a / Its value is a function of the adjustment for entry or admission costs and inflation (1 + πt) × (1 + et). A simple arithmetic average is used to estimate it.
b / The calculation of the annual changes in the other courses is that described in section 1 of this box.
c / In the alternative method, a correction is made for changes in quality.
Sources: *Banco de la República*; authors' calculations

12 As expected, this difference is greater when the possible quality changes found in point a. are excluded in the alternative methodology.

Chart B3.3
Annual Changes in the CPI for Upper-income Tuition in Bogota and Comparison to the Two Methods (DANE and the Alternative Method), According to the Sample[a/]

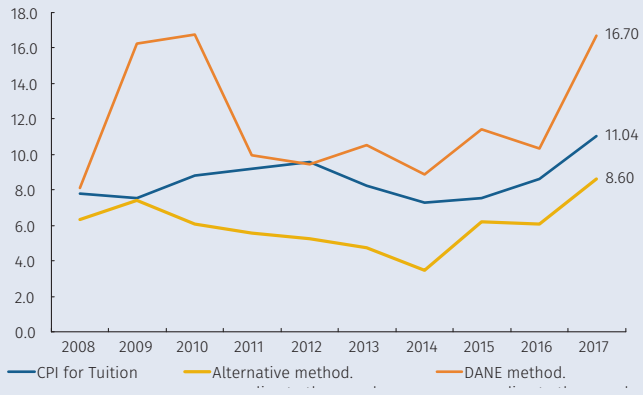
(Annual percentage)



a/ The calculations using the alternative method and the DANE method are based on the sample comprised of the children of *Banco de la República*'s employees. The CPI for tuition is the published
monthly by DANE.
Sources: DANE and *Banco de la República*; authors' calculations

Chart B3.4
Annual Changes in the CPI for Upper-income Admissions in Bogota and Comparison to the Two Methods (DANE and the Alternative Method), According to the Sample[a/]

(Annual percentage)



a/ The calculations using the alternative method and the DANE method are based on the sample comprised of the children of *Banco de la República*'s employees. The CPI for admissions is published
monthly by the DANE.
Sources: DANE and *Banco de la República*; authors' calculations

04

Medium-term Forecasts

The technical staff maintained the growth forecast for 2018. However, this expansion is expected to be less balanced than what was anticipated in the previous edition of this *Report*.

A slight increase in annual consumer inflation during the second half of 2018 is still foreseen in this *Report*.

Inflation will fall again towards 2019, converging at 3% by the end of that year.

4.1 Economic Growth for 2018

Given the data available at June, *Banco de la República*'s technical staff still expects higher GDP growth in 2018 compared to what was observed in 2017. However, it would be less balanced than was anticipated in the March edition of the *Inflation Report*, which means external demand would play a more relevant role in economic activity, while domestic demand would contribute less than expected. This forecast assumes the demand shocks observed in the first quarter would have some effect on the momentum in absorption (particularly with respect to investment) during the remainder of 2018.

Accordingly, in this *Report*, the technical staff kept the GDP growth forecast for 2018 at 2.7% (as opposed to 1.8% in 2017), which is still below what could be the economy's long-term potential growth (3.3%), with low and high growth scenarios (2.0% and 3.2%, respectively). This range is somewhat narrower than the 2.0% to 3.5% range outlined a quarter ago. As usual, the floor and ceiling of the forecast range are consistent with the balance of payments scenarios

The forecast for growth during 2018 was kept at 2.7% in this *Report*.

presented in Chapter 1 of this *Report*. The forecast is concentrated slightly towards the upper part of the range, reflecting the fact that some upward risks have occurred throughout the year, as will be explained in detail later. However, there is still a great deal of uncertainty concerning the downside risks, and the possibility that some of them could materialize in the second half of the year cannot be ruled out.

The medium-term forecast outlined in this *Report* contemplates an external context that will continue to be favorable for GDP growth in 2018. As discussed in Chapter 1, the global economy would grow more in 2018 than during the previous year, as is evident in the case of the United States and several of the Latin American economies. This suggests there will be more of a contribution from external demand, compared to what was observed last year.

Also, given the recent performance of international prices for Colombia's commodity exports, the technical staff raised its forecasts for the average level of terms of trade in 2018. In addition to the positive effects of the second round on the momentum in national income, the increase in oil prices would give a further boost to exploration and development activities in the sector, which could contribute to the production and export of crude oil.

All of this points to a positive contribution to GDP growth in 2018 from real exports. Higher international prices and more external demand should improve the performance of sales abroad, for both basic and non-traditional goods. In the case of exports of services, particularly in the tourism sector, the forecast also is for better performance than in previous periods.

The increase in growth worldwide and the process to normalize the monetary policy stance in the advanced economies allow for the presumption that there will be a moderate increase in foreign interest rates relevant to Colombia. This is important to point out. However, the balance of payments forecasts outlined in Chapter 1 assume the Colombian economy would continue to enjoy relatively ample sources of foreign financing during 2018, and the rate of capital inflows would remain stable throughout the year. These resources would be destined for the expansion in the demand.

External demand is expected to make more of a contribution to growth by 2018, compared to what was observed last year.

With regard to the domestic context, the technical staff foresees a boost in absorption stemming from the recent recovery in confidence on the part of consumers and local entrepreneurs, as well as consolidation of the transmission of the expansive monetary policy in recent quarters to interest rates in the market. Moreover, the positive effects of the last tax reform in terms of stimulus to corporate investment should begin to be felt, especially during the second half of the year. On the other hand, controlled inflation and a path of convergence towards levels near its long-term target of 3.0% should contribute to

the purchasing power of household income and, consequently, to the growth in private consumption.

Private consumption would continue to recover.

The combination of all these factors lends confidence to the expectation that domestic demand will accelerate compared to 2017. However, given the investment shock observed in the first three months of the year (associated, as mentioned already, with the performance of civil works and building construction), the growth in domestic demand would be somewhat less than was contemplated by the technical staff in the previous edition of the *Inflation Report*.

As for the different components of expenditure, the forecast for GDP growth assumes a slowdown in government consumption compared to what was registered in the first three months of the year. This meant the expansion predicted for this item in 2018, compared to what the technical staff expected a quarter ago, had to be revised downward. The new assumption is similar to the one outlined in the Medium-term Fiscal Framework (MFMP), and would be in line with the anticipated adjustment in the NCG fiscal accounts to comply with the deficit permitted under the fiscal rule. In this sense, further budget spending by regional and local governments would be more than offset by the adjustment in NCG expenditure (as a percentage of GDP) in the areas of operation and investment.

On the other hand, private consumption in 2018 as a whole would continue the trend toward recovery that began last year. As mentioned, the increase in confidence and expectations of an improvement in the country's economic conditions, coupled with controlled inflation in an environment of low interest rates, will help this GDP item to grow more during the remainder of 2018 than it did in the first three months of the year. Added to this is the fact that overcoming the negative shock derived from the increase in VAT at the beginning of 2017 should favor the momentum in private consumption. However, private consumption would end the year with growth still below its historical average, since the high financial burden of households and the recent stagnation in the job market could limit the possibilities for growth in this item.

Gross fixed capital formation would experience slight setbacks in the aggregate for 2018. This forecast contemplates no growth in the civil-works component and a decline in investment in the construction of buildings. In the case of civil works, the shock witnessed during the first three months of the year would only dissipate fully as of the second half of 2018, provided the delays in financial closures that have affected investments in a number of infrastructure projects, such as the Ruta del Sol and several fourth generation highways (4G), are overcome. As for building construction, the technical staff expects the slow momentum in demand to continue and anticipates that a large

The expectation is for no growth in civil works during in all of 2018, and a contraction in building construction.

External demand will contribute positively to the country's economic growth.

part of the supply surplus in non-residential buildings will be maintained, which would delay the recovery of this sector.

Consequently, the poor performance of GCF in the construction sector would not be offset entirely by the performance anticipated for investment in capital goods. Growth in this subcomponent of GDP would slowly gain momentum during the second half of the year, as higher international prices for oil encourage investment in the oil sector and the reduction in the corporate tax, contemplated in the tax reform (via elimination of the wealth tax, the reduction in income tax, and the VAT refund on machinery purchases, among others), stimulates expenditure on goods of this type.

With regard to the foreign trade accounts, and as mentioned already, external demand is expected to contribute positively to GDP growth. The improvement in international conditions suggests external sales would be marked by better performances for exports of non-traditional goods and services. Imports, on the other hand, would see positive but low growth. This would be mainly the result of less-than-expected performance for a large part of the investment.

From a sectoral standpoint, despite the uncertainty about how domestic demand will perform during 2018, the tradable productive apparatus is expected to be stimulated by added growth for our trading partners and the competitive level of the exchange rate. This would help to consolidate the gradual adjustment in growth the Colombian economy has experienced in recent years

As for agricultural production, growth during the current year is expected to be positive, but not as much as it was in 2017. This estimate is based on less growth in crops, with harvests that could be affected by less favorable climate conditions during the rest of the year, as some international agencies are forecasting. At the same time, the manufacturing industry would begin to grow again in 2018, thanks to the improvement in momentum forecast for our trading partners that buy goods of industrial origin, in an environment marked by a favorable exchange rate for the sector.

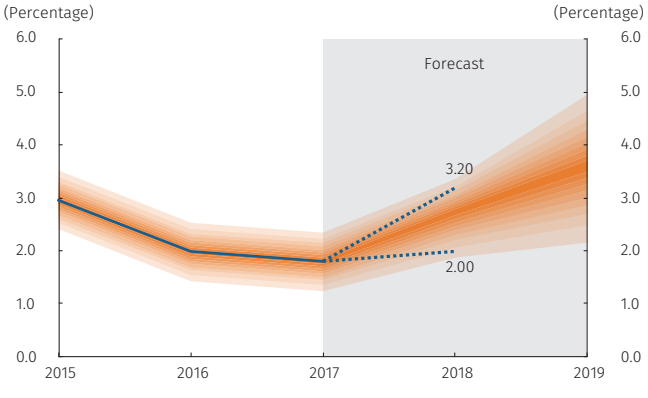
Mining production will recover in 2018 and 2019, mainly due to the oil sector.

Gross domestic product in mining is expected to contract during 2018, although less so than in the two previous years. The decline in this sector would be explained, largely, by the moderate reduction anticipated for coal production during 2018 as a whole, even though the second quarter is expected to see better results. A modest upswing in oil production is expected; this would be a consequence of the low growth observed during the first two quarters of the year. By 2019, somewhat higher oil prices and the development of more investment projects in the mining and energy sector would allow mining to expand.

Finally, although civil works are expected to recover considerably during the second half of the year, this sector is not expected to see major growth during 2018, given the delays caused by the lack of financial closure in the case of several G4 highway projects. Completion of these closures during the remainder of the current year should allow for positive growth in the construction of civil works during 2019.

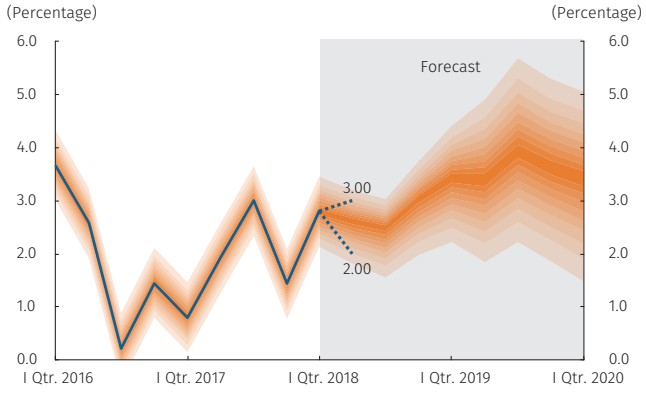
The most feasible baseline forecast for GDP expansion in 2018 (2.7%) and the forecast range, which includes low and high scenarios, are within the bands of the fan chart for economic growth derived from the medium and long- term model used by the Technical Management Office. On this occasion, the intervals remain wide and, as illustrated in charts 4.1 and 4.2, the biases are on the down side. Table 4.1 shows the probability of economic growth falling between 2.0% and 3.0% in 2018 is near 70%.

Chart 4.1
Fan Chart of Annual GDP Growth



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

Chart 4.2
Fan Chart of Annual Growth in Quarterly GDP



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

Table 4.1
Probability Ranges in the Fan Chart of Annual GDP Growth (Percentage)

Range	2018	2019
<-1.0	0.00	0.00
-1.0 - 0.0	0.00	0.00
0.0 -1.0	0.06	0.15
1.0 - 2.0	9.24	3.33
2.0 - 3.0	70.03	21.90
3.0 - 4.0	20.64	44.11
> 4.0	0.04	30.49
Between 3 & 5	20.68	70.23
Between 2 & 4	90.67	66.02
Between 1.5 & 3	78.24	24.54

Source: Calculations by *Banco de la República*

In the domestic context, the most important downside risk is that domestic demand will be weaker than anticipated, thanks to less-than-expected performance on the part of civil works and government expenditure, and a slowdown in building construction that would be more than predicted. It is important to point out that construction has significant productive ties to other branches of economic activity and is a major generator of employment. So, any weakening in this sector that is beyond what is anticipated has indirect effects that could be important, but are not considered in the baseline forecast. As for the international context, the main downside risk deals with higher costs for external financing than those contemplated in the baseline scenario. The main upward risk is associated with the recovery in consumer confidence observed recently. Its effect on the central path of GDP growth (via preferences) might be underestimated. Furthermore, the possibility that international oil prices might remain at current levels and the average for the year might be higher than that contemplated in the baseline scenario cannot be ruled out.

Another no less important aspect of uncertainty concerns the revision of the GDP series, given the new base year for the national accounts, which is 2015. Although this risk was not incorporated into the fan chart and does not affect the forecasts presented here by the technical staff, either upward or downward, it can become an additional source of forecast error (see the shaded section in Chapter 2, page 44).

4.2 Inflation

The medium and long-term outlook for consumer inflation described in this *Report* is much the same as it was last quarter. The forecast path for the remainder of this year rose slightly compared to the one outlined in March, both for annual inflation and core inflation. However, by 2019, the opposite is anticipated.

A slight increase in headline inflation is expected during the rest of the year and up to the beginning of 2019, which would reverse slowly in the following quarters, ending that year at the 3.0% long-term target set by the BDBR. Core inflation also would converge toward this figure in the second half of 2019, although it would exhibit a more stable path near current levels during the next three quarters.

A slight increase in annual headline inflation is anticipated up to the start of 2019. However, at the close of that year, it is expected to be near the long-term target, which is 3.0%.

According to the new forecast exercise, inflation as forecast in the baseline scenario would continue to be influenced by some moderate pressures, both upwards and downwards, which tend to offset each other and become diluted over time. This would ensure inflation does not stray far from the target and ends up converging fully with it in the medium term. However, as will be mentioned, this scenario faces risks (especially on the up side), some of which are increasingly likely to occur and, if so, can divert inflation from the current central path.

In general, the factors that determine long-term inflation showed little change on this occasion. Perhaps the most important one concerns the increase in the forecast for the price of oil for the remainder of this year and in 2019 (see Chapter 1). This modification has both upward and downward effects on inflation forecasts. In the first case, it may imply higher regulated prices, particularly for fuel. By the same token, it can have an impact on production and transport costs. This ends up influencing a wide range of prices in the consumer basket of goods and services. However, on the other hand, it generates disinflationary pressures, insofar as it favors appreciation of the peso.

The higher external interest rate contemplated in this *Report* affects consumer inflation.

This *Report* also anticipates a somewhat more pronounced normalization of monetary policy in the advanced economies than previously expected, which translates into an external interest rate path that increases a bit faster, although still from very low levels. In the current baseline forecast path, this higher rate generates pressure to depreciate the peso, thereby affecting consumer inflation. It should be noted that low foreign interest rates in recent years have provided access to cheap and ample sources of external financing. Since mid-2016, this has had an impact on the stability of the exchange rate and has meant, in turn, low pressure on inflation, allowing particularly for a substantial reduction in tradable inflation.

In the current forecast exercise, the tendency towards peso depreciation due to a higher external interest rate is more than offset by the opposite pressure caused by higher oil prices. Accordingly, the new central path is accompanied by a less depreciated exchange rate in the forecast horizon, compared to the one in the March edition of this *Report*. In principle, this translates into lower pressure on inflation during the next eight quarters. However, the increase in the oil-price forecast also implies upward pressures on costs and regulated prices that are offsetting the downward effects of less depreciation. Consequently, in this *Report*, the change in the assumption for the price of oil, coupled with the forecast for the external interest rate, is having a predominantly neutral effect on consumer inflation throughout most of the forecast horizon.

In the current forecast path, demand-pulled pressures on consumer prices should remain low for the next eight quarters. As outlined in the previous section of this chapter, the GDP forecast for this year remained unchanged, with a growth rate that was higher than in 2017, but still would remain below the economy's potential or non-inflationary rate. The recovery in growth is expected to continue during 2019 and, although the expectation is for an expansion rate that is somewhat above the potential growth rate, it would not be enough to eliminate surplus productive capacity. One indication of these surpluses at present is the existence of important inventories of new housing that is still unoccupied. This should limit rent hikes for several quarters and, hence, increases in the non-tradable CPI.

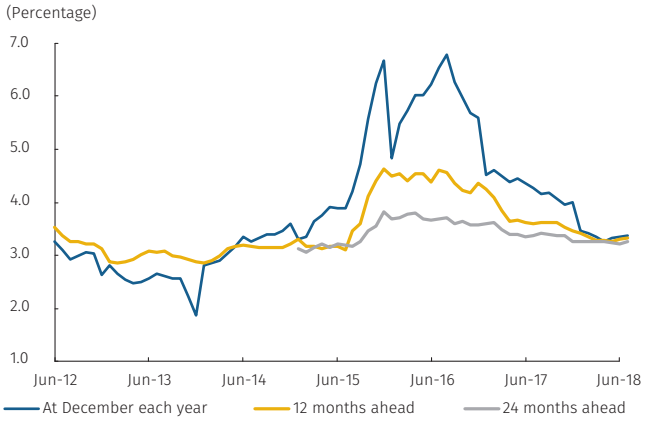
Demand-pulled pressures on consumer prices will continue to be scarce throughout the next eight quarters.

The forecasts for growth on the job front also ensure a comfortable labor market in the next six quarters, which should lead to moderate wage hikes that are more consistent with the target than in the recent past, especially considering that inflation will not deviate much from 3.0%. Accordingly, labor-cost price pressures in the central path of the current forecast are ruled out for the medium term.

The decline in inflation in recent quarters to levels near the target should go hand in hand with a lesser role for the country's indexing mechanisms and a reduction in inflationary inertia. This will be evident especially at the beginning of 2019, when major price revisions for traditionally indexed services are carried out. Education and health are two examples.

Along with the above, the path of the baseline forecast also assumes inflation expectations would remain anchored at around 3.0%, as has happened already, according to the various indicators at hand. This is the case of *Banco de la República*'s *Monthly Survey of Expectations among Financial Market Operators*. According to the version of the survey conducted at the beginning of July, the anticipated rate of inflation for December 2018 is 3.37%, a figure very similar to the one obtained three months ago. Expectations for December 2019 and at twelve and twenty-four months did not change either, all being very close to 3.3% (Chart 4.3).

Chart 4.3
Annual Headline Inflation Forecasts by Banks and Brokerage Firms

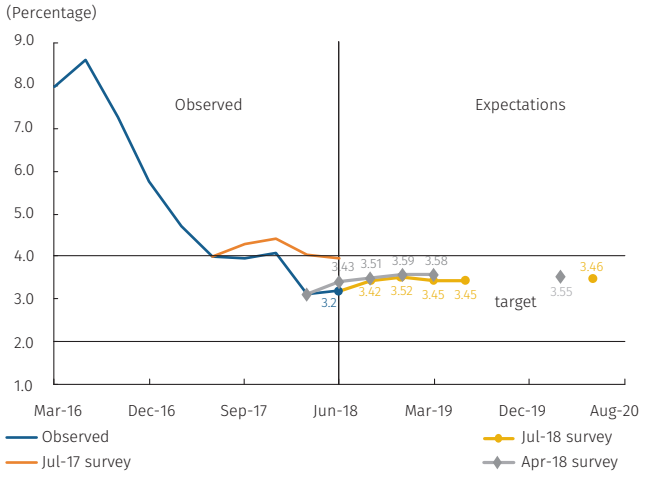


Source: *Banco de la República*

The quarterly survey conducted by *Banco de la República* at the beginning of July, which targeted employers, unions and academics, did not vary significantly compared to the one in April. In this instance, the expectation for inflation in December of this year was 3.52% (Chart 4.4). On the other hand, the most recent expectations derived from TES (break even inflation) were 3.0%, 3.2% and 3.4% at horizons of two, three and five years, respectively. These values are marginally higher than the measurements taken three months ago and, so far this year, they have fluctuated in a range between 3.0% and 3.5% (Figure 4.5).

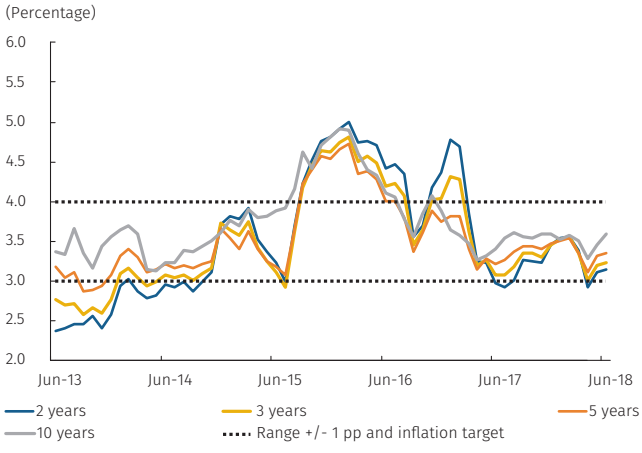
The regulated CPI is one element that will drive inflation for the remainder of 2018 and all of 2019. In addition to the forecast for larger hikes in domestic fuel prices, due to higher oil prices(as explained already), several public utilities also are expected to see adjustments above those considered three months ago. Water rates are a case in point, with larger increases now being foreseen to support the expansion in coverage. The rise in electricity rates will be due to the recent change in the regulatory framework for this public utility. As for waste collection and sanitation services, rate hikes are anticipated for

Chart 4.4
Observed Annual Headline Inflation and Inflation Expectations (at three, six, nine, twelve and twenty-four months)



Sources: DANE and *Banco de la República* (Quarterly Survey of Expectations)

Chart 4.5
Annual Headline Inflation Expectations Derived from TES (At two, three, five and ten years) (Monthly average)[a/]



a/ Nelson & Siegel Method
Sources: *Banco de la República*

Bogotá, as mentioned earlier, which is something that was not included in the March forecast.

In the end, consumer inflation during the next three quarters would be subject to upward pressures from food prices. These increases, which were anticipated in earlier editions of this *Report*, would conform to the cyclical behavior of agricultural supply, the growth of which should tend to become more moderate towards the end of the year and at the beginning of 2019 in response to the relatively low price levels for agricultural goods at present. The recent hikes in the prices of agricultural products imported by Colombia also would contribute to these increases.

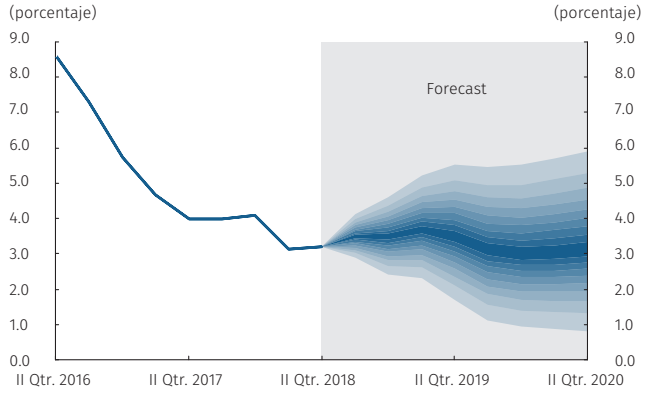
Given all these considerations, the forecast in the *Report* is for a rise in total annual consumer inflation during the remainder of the year, mainly due to increases in the annual change in food prices. However, this hike, which would extend up to the beginning of 2019, would be moderate and would imply a figure near around 3.5% by the end of the year. As for the rest of 2019, inflation should decline gradually, thanks largely to lower food prices, ending the year at a rate very near 3.0%.

Core inflation (measured as the CPI without food or regulated items) during the rest of this year and in early 2019 would stay at a level similar to the current one, and then fall to 3.0% in the second half of the year as well. Core inflation and headline inflation are not converging on the target faster, because the annual change in the regulated CPI would continue to be relatively high during most of the forecast period, for the aforementioned reasons.

4.3 Balance of Risks

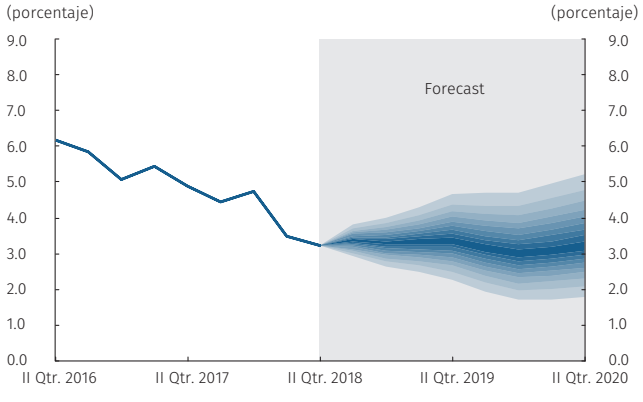
The balance of risks for total consumer inflation and inflation excluding food and regulated items is shown in fan charts 4.6 and 4.7. In the case of this *Report*, a fan chart was estimated for headline inflation with upward biases that are slightly more pronounced than those identified in the biases outlined in the March 2018 *Inflation Report*. As usual, the balance of risks was constructed based on the central path of the forecast for total annual inflation and inflation in food and regulated items, both derived from the PATACON model. The risks taken into account when constructing the fan chart are discussed below.

Chart 4.6
Fan Chart of Annual Headline Inflation



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

Chart 4.7
Fan Chart of Annual Inflation Excluding Food and Regulated Items



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

The following are the main upside risks:

Higher-than-expected external financing costs: The encouraging figures related to economic growth and the relatively expansive monetary policy rates in many of the advanced economies, coupled with the high and sustained level of international oil prices, have begun generate some inflationary pressures in these economies. Given this situation, the baseline forecast scenario outlined in this *Report* incorporates the normalization of monetary policy in these countries, particularly in the United States. However, the pressures could be greater than initially expected, which could prompt the Fed to raise interest rates faster than is anticipated in the path of the baseline forecast. This would have an impact on prices of the currencies of emerging economies, including Colombia, which possibly would lead to depreciation and affect consumer inflation via pass-through of the exchange rate to prices.

Variations in food prices above those projected in the path of the baseline forecast: As mentioned in the inflation reports since the

The main upward biases with respect to inflation come from higher financing costs and higher prices for food and regulated items prices than those contemplated in the central forecast path.

third quarter of 2017, following the decline in food price adjustments observed since mid-2016, the changes in food prices during several quarters have been less than usual and lower than expected.

In this edition of the *Inflation Report*, the baseline forecast path for the price of these goods incorporates a sustained but moderate increase in its annual change up to the first quarter of 2019, which assumes weather conditions in the next year and a half will be adequate. However, lately several weather agencies have detected an increased likelihood that the coming months could see a drier climate than normal or even a bout of El Niño weather. Although these warnings are no guarantee these phenomena will materialize, their eventual occurrence could reduce the amount of area sown and lower productivity, resulting in a higher consumer price increase than is forecast. Moreover, the exchange rate, which appreciated, on average, in 2017 and throughout 2018, reducing the cost of imported food and input, could depreciate at a faster rate than is contemplated in the baseline forecast path. This would be due to the reasons explained above.

In addition, food supplies are now at historically high levels and prices are relatively low. This could lead to a reduction in the food supply that is typical of the usual cycle of agricultural production, where producers decide to reduce the amount of area sown with crops when there is an abundance of produce and prices are low.

In this scenario, the annual changes in the CPI basket of foods can produce larger increases than those anticipated in the baseline forecast path. In the past, there have been sharper breaks in the trends in these prices than is implicit in the current forecast path, and it is important to keep this in mind. Accordingly, food and headline inflation could be higher than anticipated in this *Report*, especially during the remainder of this year and in the first half of 2019.

A regulated price path that exceeds the estimate: The path of the current forecast contemplates a slowdown in regulated prices for next year. This would be due, mainly, to current developments in headline inflation and the fact that the international price of oil is not expected to exert additional upward pressure on gasoline.

However, regulations were recently put in place that will affect the consumer prices of electricity and water. In the first case, this is because the regulatory framework applicable to electricity rates was modified, leading to an increase in distribution costs. In the case of water, it is because of the expansion ordered in the coverage of this service. Nevertheless, there is no rule or regulation on when these additional costs are to be passed on to the consumer. Consequently, although this situation has been incorporated into the baseline scenario already, and given the current uncertain scenario for oil prices, the price increases for regulated goods and services may be

underestimated at some points in the baseline forecast path. If so, larger future adjustments in regulated prices could lend an upward bias to headline inflation.

If any of the upward risks mentioned so far were to materialize, the performance of headline inflation would be affected not only directly, but also indirectly and permanently, through the impact these events can have on expectations and the activation of indexing mechanisms.

The main downside risk considered in this *Report* is *less growth in domestic demand than what is assumed by the baseline forecast path*. After the drop observed in civil works so far in 2018, the remainder of the year is expected to see a recovery in this demand. However, given the delays and financing problems these projects have encountered, especially the highway projects, there is a risk of performance being less than forecast. On the other hand, the momentum in building construction could remain poor throughout the year, considering the large inventories of unsold homes (for medium and high income buyers), offices and commercial premises. Given this scenario, worse than expected performance in these sectors would seriously affect domestic demand, placing it below what was estimated in the baseline forecast outlined in this *Report*, particularly considering the productive chains and the role these activities have in generating employment throughout the economy.

Less growth in domestic demand is the main downward bias with respect to inflation.

In line with the set of risks discussed above, the fan chart suggests the probability of headline inflation falling below 4.0% in 2018 remained at 77.0%. This figure was reduced to 71.9% for 2019 (tables 4.2 and 4.3). The balance of risks for the end of 2018 maintains most of the risks outlined in the previous edition of this *Report*. Moreover, it is relevant to note that a specific bias associated with the price of oil was not applied when plotting the fan chart in this *Report,* as it was in the previous edition. However, the range of uncertainty associated with oil prices has widened.

The extent of the forecast density function shown in Figure 4.8, according to the shaded area, only includes 90% of it. The results, like the baseline forecast, suppose an active monetary policy in which the policy interest rate set by *Banco de la República* is adjusted to guarantee the target is met.

Table 4.2
Estimated Probability of Annual Headline Inflation between 2.0% and 4.0% by December 2018
(Percentage)

Report	Probability
September 2017 Report	47.6
December 2017 Report	53.3
March 2018 Report	71.4
June 2018 Report	76.0

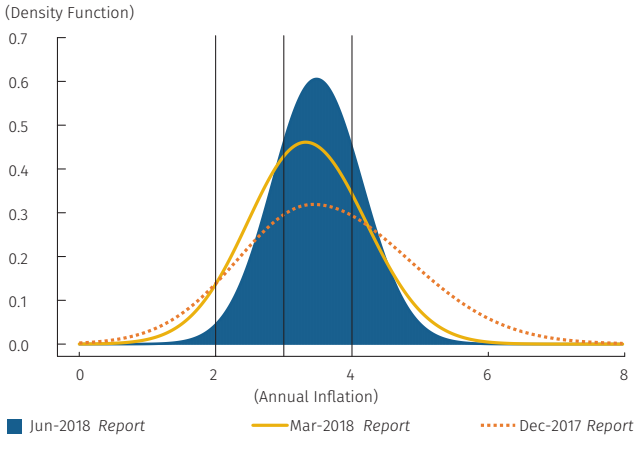
Source: Calculations by *Banco de la República*

Table 4.3
Probability Ranges in the Fan Chart of Annual Headline Inflation
(Percentage)

Range	2018	2019
<2.0	1.0	19.1
2.0 - 2.5	5.0	12.0
2.5 - 3.0	15.8	14.0
3.0 - 3.5	27.7	14.1
3.5 - 4.0	27.4	12.7
>4.0	23.0	28.2
Between 2 & 4	76.0	52.8

Source: Calculations by *Banco de la República*

Chart 4.8
Cross-section of the Fan Chart of Annual Headline Inflation for December 2018



Source: *Banco de la República*

Annex
Macroeconomic forecasts by local and external analysts

This annex contains a summary of the latest forecasts by local and external analysts on the main economic variables for 2018 and 2019. At the time they were consulted, the analysts had access to data up to 23 June 2018.

Forecasts for 2018

On average, the local analysts expect 2.6% of GDP growth, which is higher than the estimate in the *Inflation Report* for last quarter (2.4%). On the other hand, the external institutions that were consulted forecast 2.7% average GDP growth, which is equal to what was estimated in the *Inflation Report* for the previous quarter.

As for prices, the local analysts estimate 3.3% inflation, which is higher than the rate noted in the previous *Report*, while the external analysts expect inflation to be 3.4% by the end of the year.

Table A1
Forecasts for 2018

	Real GDP Growth (Percentage)	CPI Inflation (Percentage)	Nominal exchange rate End of	Nominal TDR (Percentage)	Fiscal deficit (Percentage of GDP)	Unemployment rate in thirteen cities (Percentage)
Local analysts						
Alianza valores[a/]	3.1	3.5	3,000	4.1	3.1	9.3
ANIF	2.3	3.3	n.d.	4.2	2.2	10.0
Banco de Bogotá[a/]	2.5	3.3	2,850	4.4	3.1	n.d.
Bancolombia[a/]	2.6	3.4	2,960	4.7	3.1	9.9
BBVA Colombia[a/]	2.6	3.3	2,880	4.6	3.1	10.0
BTG Pactual[a/]	2.5	3.4	3,020	n.d.	3.1	9.4
Corficolombiana	2.6	3.3	2,900	4.5	2.4	9.5
Corredores Davivienda[a, c/]	2.7	3.5	2,920	4.5	3.1	10.2
Credicorp Capital[d/]	2.3	3.1	2,900	4.4	2.2	10.8
Davivienda[a/]	2.7	3.5	2,920	4.5	3.1	10.2
Fedesarrollo[a/]	2.4	3.4	n.d.	n.d.	3.1	n.d.
Itaú[a, b/]	2.5	3.2	2,890	4.2	3.1	9.4
Ultraserfinco[a, e/]	2.5	3.4	2,890	4.5	3.2	9.5
Average	2.6	3.3	2,921	4.4	2.9	9.8
External analysts						
Citibank-Colombia[a/]	2.5	3.3	2,835	4.4	3.6	9.6
Deutsche Bank	2.8	3.4	n.d.	n.d.	2.5	9.4
Goldman Sachs	2.7	3.1	2,700	n.d.	3.1	n.d.
JP Morgan	2.9	3.6	2,925	n.d.	3.1	n.d.
Average	2.7	3.4	2,820	4.4	3.1	9.5

a/ The deficit forecast is for the national government (CNG).
b/ Formerly Corpbanca, up to June 2017.
c/ Formerly Corredores Asociados
d/ Formerly Correval
e/ Formerly Ultrabursatiles
n.a.: No available
Source: *Banco de la República* (electronic survey)

Table A2
Forecasts for 2019

	Real GDP growth	CPI inflation	Nominal exchange rate End of
	(Percentage)		
Local analysts			
Alianza Valores		4.0	3,200
ANIF	3.0	3.5	n.d.
Banco de Bogotá	3.0	3.0	2,875
Bancolombia	3.2	3.1	2,970
BBVA Colombia	3.3	3.0	2,900
BGT Pactual	3.0	3.2	3,070
Corficolombiana	3.3	3.5	2,900
Corredores Davivienda[b/]	3.2	3.6	n.d.
Credicorp Capital[c/]	3.3	3.3	2,800
Davivienda	3.2	3.6	n.d.
Fedesarrollo	2.8	3.2	n.d.
Itaú[a/]	3.2	3.0	2,930
Ultraserfinco[d/]	2.8	3.2	2,900
Average		3.3	2,949
External analysts			
Citibank-Colombia	3.1	3.0	2,850
Deutsche Bank	3.6	3.4	n.d.
Goldman Sachs	3.3	3.0	2,650
JP Morgan	3.4	3.5	n.d.
Average		3.2	2,750

a/ Formerly Corpbanca, up to June 2017.
b/ Formerly Corredores Asociados
c/ Formerly Correval
d/ Formerly Ultrabursatiles
n.a.: not available.
Source: *Banco de la República* (electronic survey).

Both forecasts are within the 2.0% to 4.0% range around the target set for 2018 by the Board of Directors of *Banco de la República* (BDBR), but they are above the long-term target for inflation (3.0%).

In terms of the exchange rate, the local analysts expect the market exchange rate (MEM) to end the year at an average value of COP 2,921. The estimate in the survey for the previous *Report* was COP 2,929. The external analysts forecast a MEM near COP 2,820 by the end of the year.

The local analysts are forecasting 4.4%, on average, for the rate on fixed-term deposits (DTF). They also anticipate unemployment at 9.8%.

Forecasts for 2019

For 2019, the local analysts expect 3.1% economic growth, while the external analysts are forecasting 3.4%. With respect to inflation, the local analysts expect it to be 3.3%; the external analysts anticipate 3.2%. As for the nominal exchange rate, the local analysts expect COP 2,949, on average, while the average forecast by the external analysts is COP 2,750 .

This report was coordinated, edited, and designed by the Publishing Section of the Administrative Services Department, in font type Fira Sans 10.5.

Printed by Nomos

August 2018