INFLATION REPORT

September 2017

ISSN - 2145 - 6526

Inflation Report

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

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

ISSN - 2145 - 6526

The Inflation-Targeting Strategy in Colombia

OBJECTIVES

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

HORIZON AND IMPLEMENTATION

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

THE DECISION-MAKING PROCESS

Monetary-policy decisions are adopted based on an analysis of the current state of the economy and its prospects for the future, and on an assessment of the forecast for inflation in light of the predefined targets. If that assessment suggests, with enough certainty, that inflation will deviate from its target under current monetary-policy conditions and within the time horizon in which the policy operates, and that such deviation is not due to temporary shocks, the BDBR modifies The Inflation-Targeting Strategy in Colombia its policy stance by changing its benchmark interest rates (those charged by *Banco de la República* on short-term liquidity operations).

COMMUNICATION AND TRANSPARENCY

Monetary policy decisions are announced after the Board of Directors meetings. This is done in a press bulletin posted immediately on *Banco de la República*'s website (www.banrep.gov.co). The Inflation Report is a quarterly publication that is intended to lend transparency to the Board's decisions. It also contributes to a better understanding of monetary policy and helps to enhance its credibility. Specifically, the report: i) lets the public know how the Board of Directors and the Technical Governor of the Bank view recent and anticipated developments in inflation and its short- and mid-term determinants; ii) explains the implications of those determinants for monetary-policy management within the scope of inflation targeting; iii) describes the situation and analysis justifying the monetary- policy decisions made during the quarter; and iv) provides information that helps agents in the economy to form their own expectations about future developments with respect to inflation and output growth.

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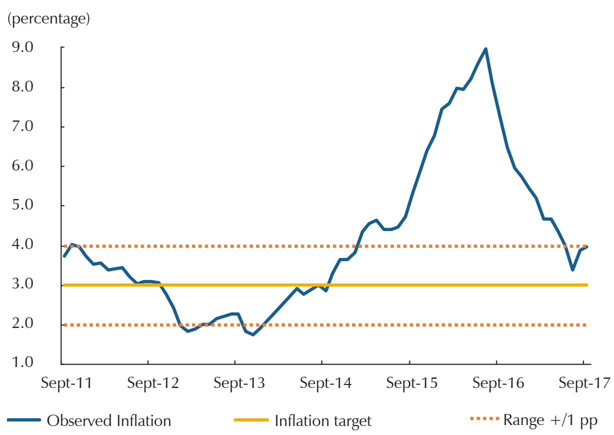
Headline Consumer Inflation



Sources: DANE and *Banco de la República*.

After a year of continuous decline, inflation reached its lowest, (most recent) level in July (3.4%), and increased to 3.97% in September. Despite this, the figure was lower than expected by the market average and by the technical staff at *Banco de la República* (Graph A). The forecast error was mainly due to the favorable behavior of food prices and the rapid slowdown in the consumer price index (CPI) for tradable goods excluding food and regulated items. The yearly variation in prices of non-tradable goods excluding food and regulated items remained stable, although above the target. On the other hand, the CPI for regulated items accelerated due to the behavior of energy prices. Core inflation indicators, which do not incorporate the prices that respond to supply shocks or very volatile prices, continued to decline, reaching an average of 4.58% in September. The indexation of prices, the persistence of inflation, and the temporary effect of indirect taxes since the beginning of the year have slowed the convergence of these indicators to the target.

The short-term forecast by the technical staff of the Central Bank suggests that by the end of the year inflation will have reached a level close to the one recorded last September, and that in March 2018 it will fall to levels close to 3.4%. This forecast assumes that the effect of the value added tax (VAT) will have faded completely by March, and that the food supply will continue to be broad. It also implies that the prices of the most rigid goods and services (*i.e.*, education, leases, etc.) will be indexed to a much lower level than in the past two years. Inflation expectations also suggest that inflation would continue relatively stable in the remainder of the year, and that it will fall in 2018, although reaching levels above the 3.0% target. The October survey to financial analysts suggests that, to December 2017 and December 2018, inflation will stand at 4.07% and 3.58%, respectively. Inflation expectations embedded in public debt bonds to one and more years fluctuate between 3.5% and 3.6%. It is important that the negotiations on the minimum wage consider that favorable future behavior.

The behavior of the CPI as well as that of inflation expectations and forecasts takes place amidst a weak economic activity, which we believe will recover in the remainder of 2017 and (mainly) throughout 2018. The growth figures projected for the near future are, nevertheless, lower than potential GDP; therefore, the underused capacity of the economy (i.e., the output gap) is likely to continue expanding. The indicators for the third quarter suggest an acceleration of the pace of GDP growth, mainly driven by investment and, to a lesser extent, by public consumption, as well as by a low basis for comparison for the same period last year. With this, the technical staff at the Central Bank maintained its growth forecast for 2017 at 1.6%, within a range between 1.3% and 1.9%.

Several factors should affect the output in 2018. The reductions in policy interest rates carried out so far and a lower inflation should bring about a greater dynamics in household spending. Additionally, in 2018, investment would be driven by a larger execution of civil works. Foreign Direct Investment (FDI) in the oil sector would continue if the current levels of oil prices were to persist. Also, external demand will continue showing good signs, mainly driven by developed economies.

Some variables favor the external adjustment, but others will act in the opposite direction. In all, the estimates for the balance of payments in 2018 suggest a slight widening of the deficit in US dollars. As a proportion of GDP, it would reduce from 3.7% to 3.6%. On the one hand, external financing is expected to continue being ample in 2018, albeit more expensive, due to a less expansionary monetary stance in developed economies. The likely increase in global interest rates will possibly discourage the use of external savings as a source of financing. This, and the expected recovery of exports of goods and services, will contribute to narrow the current deficit. On the other hand, should investment in civil works and oil continue increasing, the demand for imported goods and services would increment, requiring more foreign financing. The latter and the higher payment of debt interest with non-residents would pressure to widen the current account deficit.

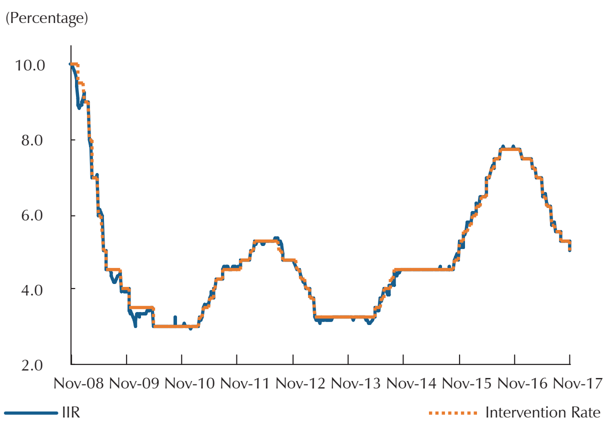
Considering the above-mentioned performance of domestic and international variables, the technical staff increased its growth forecast for 2018 from 2.4% to 2.7% (within a range between 1.5% and 3.5%). Downward risks in this projection remain significant. Again, as mentioned above, these forecasts will lead to a more negative output gap.

In all, forecasts for the second half of 2017 and 2018 suggest an acceleration of growth dynamics, although with rates lower than its potential. The excess capacity in the economy will expand, and would contribute to a fall of inflation. The short-term forecasts and inflation expectations suggest that inflation will continue falling, although at levels still over the target. The more rigid prices as well as wages are expected to be indexed to a lower inflation than in the previous years.

Based on this information, the Board considered the following factors for its recent decisions:

- The lower results of inflation versus the forecast from the last quarter, and the lower projections of the technical staff in the policy horizon. This behavior has been registered in several of the sub-groups of the CPI, particularly food and tradable goods excluding food and regulated items. These results suggest that convergence of inflation to its 3.0% target could be faster, although uncertainty in this regard remains high.
- Weakness in economic activity and the risk of a slowdown beyond what is compatible with the deterioration in the income dynamics due to the fall in oil prices. Despite the fact that the forecast of the technical staff for GDP growth increased for the coming year, the output gap would continue to expand.
- Although the orderly adjustment of the current account deficit is expected to continue, there are risks in the international environment that may affect such adjustment.

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



a/ The figures correspond to data from working days; the last figure corresponds to 3 November 2017.
Sources: Office of the Financial Superintendent of Colombia and *Banco de la República*.

Upon assessing the risk balance and using the space associated with the best inflation forecasts for 2018, the Board of Directors considered it appropriate to reduce the benchmark interest rate 25 bp in each of its meetings in August and October, placing it at 5.0% (Graph B). The Board also pointed out that there are risks in the international environment that limit the countercyclical capacity of monetary policy in the future. Accordingly, the most recent reduction should not be understood as part of a continuous path of cuts.

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Inflation Report

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I. Foreign Situation and Balance of Payments

The forecast for the average growth of Colombia's trading partners has been revised upward for this report. A recovery in foreign demand, although at lower rates than those seen in previous years, is still anticipated on average.

A petroleum price that is slightly higher on average than the one in 2017 is expected in the central scenario for 2018, as well as one that is higher than previously predicted.

During the first half of the year, the country's current deficit as a share of GDP stood at 4.1%, which is below the one registered last year. The foreign imbalance should continue to adjust during what remains of 2017.

A. INTERNATIONAL CONTEXT

The foreign context that Colombia faces has shown a tendency to improve with respect to the previous *Report*. The information available as of the third quarter of 2017 indicates that some emerging economies have joined the recovery that was concentrated in the advanced ones. China, in particular, continued growing more than expected. For its part, the rate of expansion in Latin America is beginning to show an upswing.

The normalization of monetary policy in advanced economies is not likely to affect the country's foreign financing conditions since it will probably be gradual.

In spite of the changes in the monetary policies of the United States and the Euro zone towards a tighter stance, global financial conditions, supported by a better economy, remain favorable for emerging economies. As a result, we are still seeing capital inflows to these economies in a context of low risk premia and lower volatility indicators.

The normalization of monetary policy in advanced economies will probably continue to be gradual and, therefore, it is not expected to affect the foreign financing conditions for Colombia and other emerging economies. Thus, the main change in the foreign context consists of the upward revision of the growth expectations for our country's trading partners, which are greater than those presented in the previous report. The forecast for the price of oil also rose as a consequence.

1. Productive Activity, Inflation, and Monetary Policy

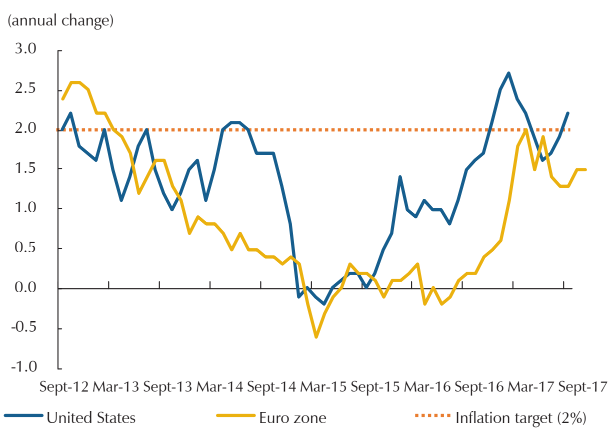
The economic growth of the United States continued its positive trend. At the statistical close of this Report, the GDP of the United States for the second quarter was revised upward and, as a result, a growth of 3.1% annualized quarterly (a.q.) was reported. This figure represents a considerable upswing with respect to the first quarter (1.2% a.q.). This performance would continue being based on consumption and investment.

During the third quarter, positive performance for investment will probably still be seen in line with the business confidence indicators. However, although several demand indicators maintained a positive trend in recent months, others showed a significant negative effect due to the recent climatic conditions. This will probably reduce growth for the third quarter temporarily, but in the fourth a surge is expected thanks to the reconstruction efforts.

The information available for the Euro zone suggests that economic activity is continuing to recover and that this is occurring at a somewhat higher than expected rate. This fact could contribute to maintaining the positive growth results for the remainder of 2017 and into 2018.

Even though there are still pockets of political uncertainty in some countries, in general terms there is a perceived greater stability that has allowed consumer confidence to be sustained at the highest levels of the last sixteen years. This fact suggests that the positive results of growth are likely to continue in the coming quarters.

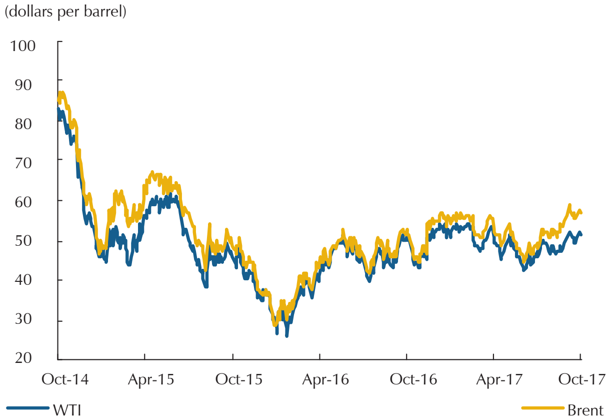
Graph 1
Indicators of Total Annual Inflation in the United States and the Euro zone



Source: Bloomberg.

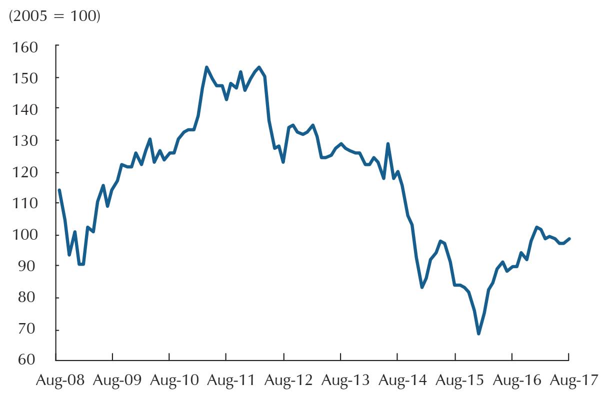
As was seen in the previous report, inflation remains very low in the advanced economies. Although inflation in the United States rose in September, thus registering 2.2% annually, the various measures of core inflation remained below 2.0%. The Federal Reserve's (Fed) preferred measure, the implicit consumption deflator, stood at 1.3% in August. Likewise, core inflation in the Euro zone remains well below 2.0% despite having risen slightly in the last few months. Their total inflation in September was 1.3% annually, while core inflation registered 1.1% annually during the same month (Graph 1).

Graph 2
International Oil Prices (Brent and WTI)



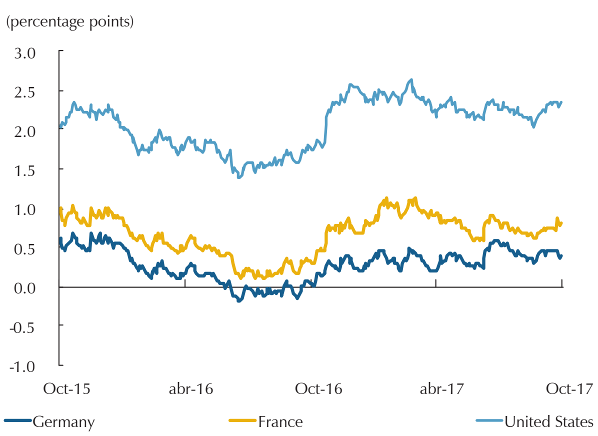
Source: Bloomberg.

Graph 3
Terms of Trade Index
(foreign trade methodology)



Source: *Banco de la República*.

Graph 4
Interest Rates for 10-year Sovereign Bonds for Some Advanced Economies



Source: Bloomberg.

2. Prices of Commodities

With respect to the previous report, the only significant change in the prices of the goods exported by Colombia was in the price of oil. In the last three months, several factors contributed to an increase in the international prices for crude oil (Graph 2). First of all, the agreements made by the Organization of Petroleum Exporting Countries (OPEC) saw a compliance that was greater than what had been stipulated and what analysts had expected. Furthermore, given the higher registered global growth, demand increased significantly. Nevertheless, even though production has increased, it has done so at a lower rate than what had been predicted previously.

Therefore, during the second quarter, the country's terms of trade continued to show a recovery with respect to 2015 and 2016. As of August 2017, a limited increase was seen with respect to the low point reached in June (Graph 3).

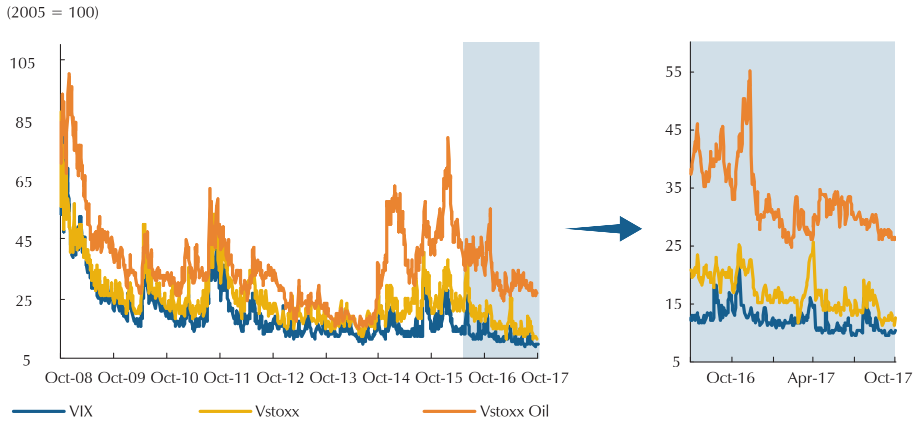
3. Financial Markets

During the third quarter, the long-term interest rates in the advanced economies remained relatively stable. In the last few weeks, a slight upward trend has appeared associated with the expectation of a less expansionary monetary policy in the United States and the Euro zone. However, these are still at historically low levels (Graph 4).

Thus, in the last few months a notable stability in the global financial markets is still being seen, reflected in the low levels of the volatility indexes (Graph 5). Therefore, a strong appetite for risk continues to be seen, which keeps the risk premia at low levels.

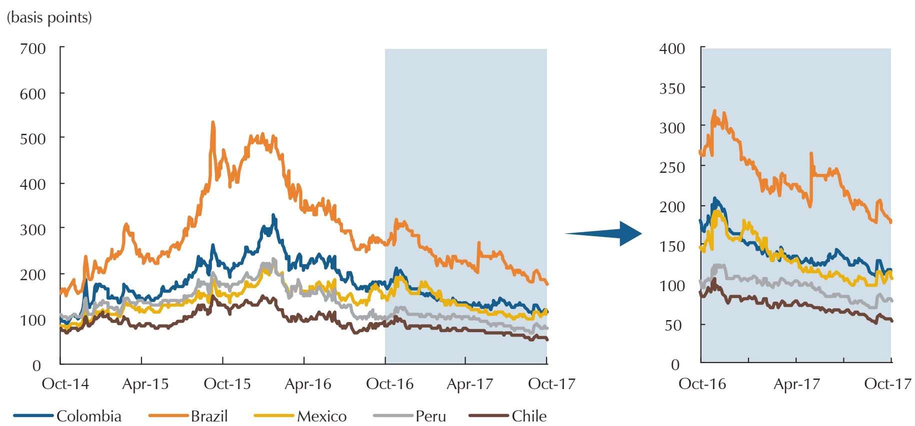
In Latin America, these risk premia, measured by credit default swaps (CDS), have shown a slight downward trend in recent months (Graph 6). This has been reflected in continuous capital flows into economies in the region.

Graph 5
Financial Volatility Indexes



Source: Bloomberg.

Graph 6
Five-year Credit Default Swaps (CDS) for Some Latin American Countries



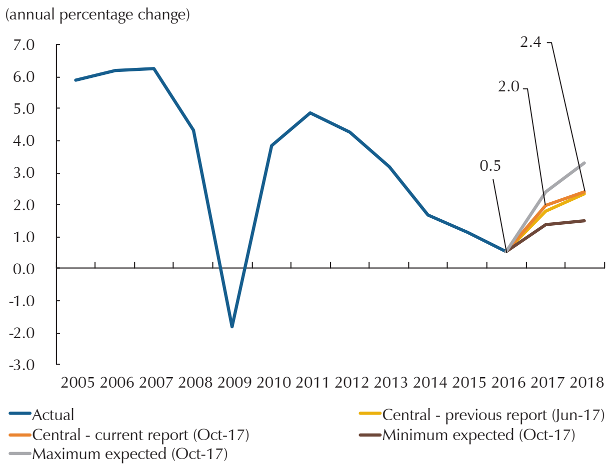
Source: Bloomberg.

4. Forecasts of Banco de la República´s Technical Staff

Considering the information available as of October, the economic growth forecast for Colombia's trading partners for the entirety of 2017 and 2018 rose slightly with respect to the July report. Domestic demand is expected to continue to be the engine of growth in the advanced economies at least during the forecast horizon. A modest recovery is anticipated in the emerging economies supported, by greater global demand and better prices for commodities. Thus, compared to what was seen in 2016, a recovery in the growth of our trading partners is projected for 2017, and would continue into 2018.

Although there were some specific, downward revisions for the growth of some countries, these were more than offset by increases in others. An average economic expansion (weighted by non-traditional trade) is projected for Colombia's trading partners of 2.0% annually for 2017, and 2.4% for 2018

Graph 7
Average Growth of Trading Partners
(weighted by non-traditional trade)



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

(Graph 7). The following were the revisions to the individual forecasts of the central scenario with respect to the previous report (Table 1):

- In spite of the positive data from the second quarter, growth for the United States in 2017 was revised slightly downward. The above takes into consideration the negative effect of the climate events in the third quarter. Consumption will probably continue driving the economy supported by the continuous improvement in the labor market.
- For the Euro zone, growth for 2017 and 2018 was revised upward again due to the positive results in the second quarter and the high levels of consumer and business owner confidence.
- Growth for China in 2017 was revised upwards, especially due to the third quarter performance that was higher than previously anticipated. Looking ahead, this economy could be favored by the greater demand projected for the advanced economies. In addition, an orderly process of converting this economy into one that is more dependent on domestic consumption is expected to continue unfolding. The latter would imply a continuing slowdown of growth that goes beyond the forecast horizon.
- With regards to the previous report, growth for Latin America in 2017 was revised upwards for two of the countries monitored by the technical

Table 1
Growth Forecasts for Trading Partners

Growth Forecasts for Trading Partners	2016	Forecasts for 2017 Scenario			Forecasts for 2018 Scenario		
		Minimum expected	Baseline	Maximum expected	Minimum expected	Baseline	Maximum expected
Main trading partners							
United States		1.9	2.1	2.3	1.2	2.2	3.2
Euro zone		1.9	2.1	2.3	1.0	1.9	2.5
Venezuela a/		(10.0)	(8.0)	(6.0)	(5.0)	(2.0)	0.0
Ecuador		0.0	2.0	2.5	0.0	1.0	2.0
China	6.8	6.2	6.6	6.8	5.2	6.2	6.8
Other trading partners							
Brazil		0.2	0.6	1.0	0.6	2.2	3.2
Peru		2.3	2.8	3.3	3.0	4.2	5.0
Mexico		1.5	2.0	2.5	1.3	2.3	3.0
Chile		1.0	1.4	1.8	1.4	2.7	3.4
Total trading partners (weighted by non-traditional trade)	0.5	1.4	2.0	2.4	1.5	2.4	3.3

a/ The 2016 data for Venezuela is an estimate.
Source: Bloomberg, calculations and projections by *Banco de la República*.

A modest recovery in the emerging economies, supported by greater global demand and better prices for commodities, is anticipated.

staff: Brazil and Ecuador. It remained unaltered for Mexico and Chile and declined for Peru and Venezuela. Regarding 2018, the growth forecasts for Brazil, Ecuador, Peru, Mexico, and Chile rose. For that year, only the expectations for Venezuela would have been revised downward.

- The forecast for Ecuador rose because of its growth recovery between the third quarter of 2016 (when GDP fell 1.5% annually) and the second quarter of 2017 (when it grew 3.3% annually). This is attributed to an inflow of liquidity from abroad, which spurred the increase in public credit and consumption. Nevertheless, although the revision for 2018 was also high, it was much more modest.
- In Brazil, the forecasts for 2017 and 2018 rose. The most recent information indicates that the gradual improvement of the Brazilian economy has continued during the third quarter. This recovery process is expected to continue over the next few years.
- The growth forecasts for 2017 and 2018 were again revised downward for Venezuela due to the deterioration of the political and social situation.
- Growth for Peru in 2017 was revised downwards because the supply shocks (flooding caused by El Niño and the Odebrecht scandal) that affected this economy seem to have had a greater effect than predicted. The growth forecast for 2018 rose slightly, which could be explained by a mining sector that will probably continue to be strengthened and by an increased investment in infrastructure.
- The expected growth for Chile in 2017 did not show changes. It rose slightly for 2018 because investments that have been made recently in mining should begin to bear fruit due to the more expansionary monetary policy and to private consumption that will probably be stronger.
- Finally, the forecast for Mexico for 2018 was revised slightly upwards. Previously, the path for growth was more limited since the uncertainty associated with the United States´ new government was expected to have a greater impact. However, the recent data suggest that this has not materialized, and that the Mexican economy has shown notable Besilience.

The central scenario for growth presented here includes an inflation in the advanced economies that has a slight upward trend. This expectation implies an increase in prices that is slightly higher than the one in the July report.

The above would result in an increase in the Fed's policy rate in December of this year and two more in 2018. Thus, its expected path is now greater than what had been forecast in the previous report. Towards the end of 2018 its upper limit will likely be 2.0%. In spite of this, the interest rate will probably remain at historically low levels (Graph 7). The Fed's program for reducing its balance sheet is unlikely to have any serious effect on the financing conditions that Colombia faces.

The baseline scenario does not consider any significant effects from the Fed's program for reducing its balance sheet.

Furthermore, increases in the policy rate of the European Central Bank are not expected. Nevertheless, given the announced reductions in the asset purchase program, the monetary policy is expected to be somewhat less expansionary going into 2018 than what was considered in the previous report.

Decisive effects derived from recent geopolitical events are not considered in the baseline scenario. First of all, the government of the United States is not expected to implement policies that could have positive or negative effects on growth within, at least, the period covered by the forecast. The Brexit negotiations are not expected to have any effects on the growth of the Euro zone. Finally, no negative effect has been incorporated resulting from the crisis associated with the independence of Catalonia.

Regarding the forecast for prices of raw materials, the most important revision in the baseline scenario was for crude oil (Table 2), which was revised upward for both 2017 and 2018. This occurred in view of the higher level of their international prices seen in the last few months. This forecast assumes full compliance with the OPEC agreements, greater global economic growth that will stimulate demand, and production that is likely to grow less than what was expected a quarter ago.

Table 2
Benchmark Price Forecasts for Colombian Commodity Exports

	2016	Forecasts for 2017			Forecasts for 2018		
		Scenario			Scenario		
		Minimum expected	Baseline	Maximum expected	Minimum expected	Baseline	Maximum expected
Brent Crude (dollars per barrel)	45.14	51	53	55	43	55	63
Coal (dollars per ton)	54.30	64	68	72	54	65	81
Colombian coffee (ex dock) (dollars per pound)	1.55	1.50	1.54	1.60	1.30	1.60	1.90
Nickel on the London stock market (dollars per ton)	9,638	9,800	10,100	10,300	9,000	10,500	13,000
Gold [a/] (dollars per troy ounce)	1,248	1,300	1,250	1,150	1,500	1,260	1,100

a/ This is considered a haven value, because the price of gold rises when there is more uncertainty (pessimistic scenario).
Source: Bloomberg, calculations by *Banco de la República*

Naturally, the baseline scenario considered in this Report involves upward and downward risks. In spite of the fact that the context faced by Colombia abroad is more favorable now with respect to the previous report, the balance of risks is still showing a negative bias.

The main downward risks considered in this report are:

- *A less expansionary monetary policy than had been expected*: if the Fed's policy rate rises well above what had been expected by the market, it could jeopardize the recovery of economic activity, especially that of emerging economies since it would make their financing more expensive. This risk could materialize if the United States´ economy grows faster or reports a higher inflation than expected.

The chance that the monetary policy of advanced economies might contract faster than expected represents a downward risk for the growth of Colombia´s trading partners.

- *High levels of indebtedness in the global context*: the increasing levels of leverage continue to represent a risk for global financial stability. As has been said, this trend is particularly concerning in China. The possibility that this phenomenon could lead to lower than expected growth cannot be ruled out.
- *Less investment in the United States than in the baseline scenario*: a large part of the expectations of greater U.S. growth rest on the assumption that the new government will implement fiscal stimulus policies or tax reductions. This would have significantly boosted investment in fixed assets during the first quarter. Nevertheless, it is possible that investment will be affected for the rest of the year if these policies do not materialize and this would adversely affect growth.
- *Adverse geopolitical events*: several events could have a negative effect on the growth of the country's trading partners. Although others have not been ruled out, the main ones could be the implementation of policies resulting from the failed renegotiation of the North American Free Trade Agreement (NAFTA), adverse news in relation to the negotiation of Brexit, higher tensions on the Korean peninsula, and a deterioration of the situation between Spain and Catalonia.

The main upward risks considered are:

- *Structurally low inflation in advanced economies*: it is possible that the low inflation seen in the last few months could persist for structural reasons (for example, new technologies that reduce the mark ups in various markets). If this risk materializes, it would allow for a more expansionary monetary policy in the United States or in the Euro zone than what was considered in the baseline scenario.
- *A cyclical recovery of the worldwide economy that is larger than expected*: recently the data on economic activity have turned out to be better than expected by the market, and than what had been presented in the July report. These surprises have been associated with a global economic recovery that could be greater than what had been considered in the baseline scenario described above.

B. BALANCE OF PAYMENTS

If the data on economic activity continue to be better than expected, it is possible that the growth of our trading partners will be better than what is presented in the baseline scenario.

1. Results for the first six months of 2017

During the first half of 2017, the country's current account in the balance of payments registered a USD 6,119 b deficit which is USD 127 m higher than what it was a year ago. As a share of Gross Domestic Product (GDP), the deficit stood at 4.1%, which meant a reduction of 0.5 percentage points (pp) compared to the 4.6% seen during the same period in 2016. Note that part of the reduction of the deficit as a percentage of GDP is the result of the effect of

The lower trade deficit was the main influence in the decrease of the current account deficit as a share of GDP, due, mainly, to the improvement in export prices.

the appreciation of the peso with respect to the dollar in the measurement of the nominal GDP in dollars.

The dollar-denominated rise in the current deficit was explained by the higher net outflows due to factor income (USD 1,248 b) and, to a lesser degree, to non-factor services (USD 125 m). In contrast, the lower trade deficit in goods (USD 996 m) and the higher current transfers (USD 249 m) contributed to the reduction in the foreign deficit. As a result of the improvement in the country's terms of trade due to the increase in export prices, current income registered a growth of 12.2%, a rate that is similar to the one observed in the expenditures. Note that the change in the current account deficit as of June 2017, was consistent with the expected trend and what was presented in the previous report, in which a deficit of 3.5% of GDP for the second quarter was estimated.

The decline in the trade deficit in merchandise was because of the USD 2,194 b (14%) growth in exports, which more than offset the increase in imports (USD 1,198 b, 5.8%). The increase in foreign sales occurred in an environment of higher prices for the main commodities, especially crude oil and coal. Meanwhile, sales of industrial products registered levels that were slightly higher than the ones seen a year ago (+1.7%). Furthermore, the increase in the country's purchases from abroad was consistent with the appreciation of the exchange rate during the first half of the year as well as with the slight recovery in consumption of durables and greater imports of transportation equipment (particularly aircraft) and of goods for industry (both raw materials and capital goods including goods for the mining sector).

With respect to the deficit in the services account, this rose USD 125 m during the same period. In the area of imports, the higher expenditures associated with payments for insurance, financial services and freight as well as the higher outlays caused by Colombians' trips abroad are notable. In exports, the increase in the revenue arising from the sale of business services (advisory and consulting, call centers) stands out as does the income from the increase in the number of non-resident travelers and their spending in this country.

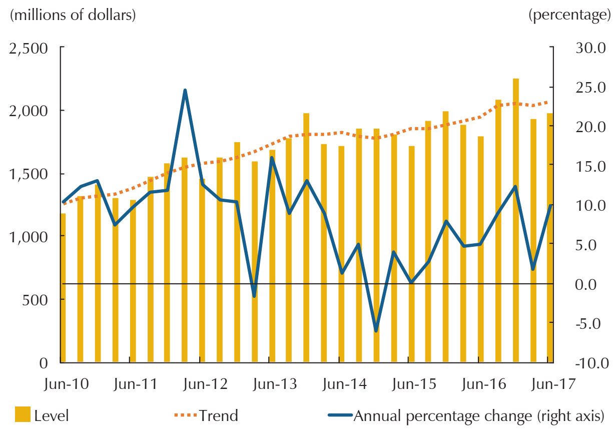
The higher prices for the main commodities, especially crude oil and coal, have also been reflected in an increase in the profits of the firms with FDI. This, added to the interest payments on foreign debt, has put upward pressure on the external debt.

The above reflects a higher growth in imports than in exports of services for the period; however, it should be noted that the latter have shown a positive performance in recent years since they have grown at positive annual rates since the first quarter of 2015 (Graph 8, panel A). Imports of services, in turn, began to grow again starting in the last quarter of last year after nearly two years of continuous declines in annual terms (Graph 8, panel B).

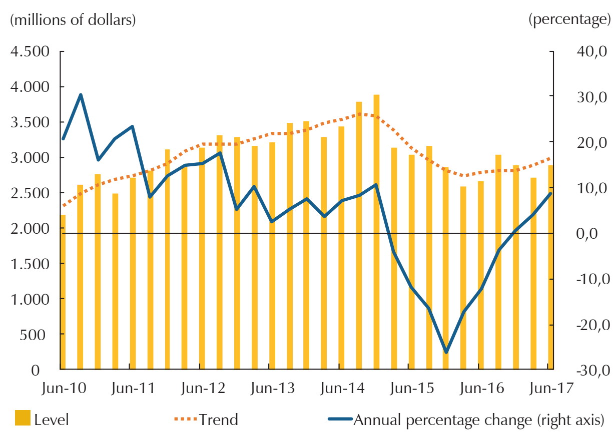
In the first half of 2017, in turn, there was an increase of USD 1,248 b in net outlays for factor income which is attributed, on the one hand, to the higher profits of the petroleum and mining firms in this country with foreign investment and, on the other, to the higher interest payments associated with foreign loans and debt securities.

Graph 8
Exports and Imports of Services
(quarterly)

A. Exports of Services



B. Imports of Services



Source: *Banco de la República.*

With respect to the net current transfers, these rose 9.0% yearly due, above all, to the growth of workers' remittances (9.5% annually). For the last item, the most significant rises were seen in the remittances sent from the United States and some Latin American countries such as Chile, Argentina, and Brazil.

With respect to financing from abroad, net inflows of USD 5,760 b in capital were seen from the beginning of the year to June 2017. These were lower than those from a year ago when they stood at USD 6,413 b. During this period net direct investment (USD 3,208 b) decreased USD 3,107 b mainly because of the lower inflows of foreign direct investment (FDI) as a result of the base effect from the sale of Isagén in the first half of 2016. The inflows received by companies belonging to the manufacturing and mining-energy sectors were the ones that contributed the most to the increase in FDI.

The country received inflows of USD 3,258 b in foreign portfolio investment at the same time as it set up USD 1,516 b in financial assets abroad. The funds received during the first half of the year came mostly from the purchase of government bonds TES by foreign investors and, to a lesser extent, from the placement of long-term debt securities, the majority of which were issued by the government, on the international markets.

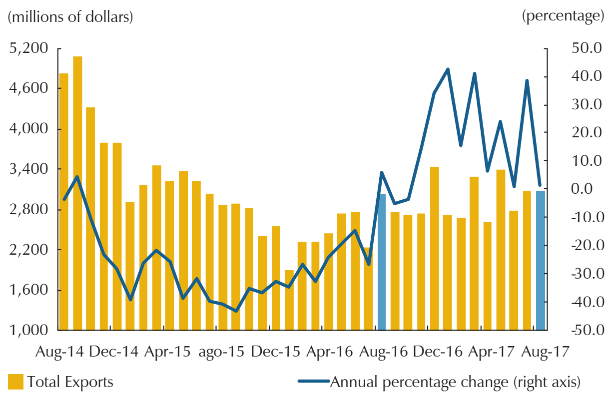
With regards to other capital flows, the country registered net outflows of USD 1,058 b mainly as a consequence of the high debt payments. During the period under analysis, the international reserves rose USD 247 m through balance of payment transactions largely due to the revenue from the net yield on the portfolio. As of June 2017, the balance of Colombia's net international reserves increased to USD 47,234 b.

2. Forecasts

a. Estimates for the Third Quarter of 2017

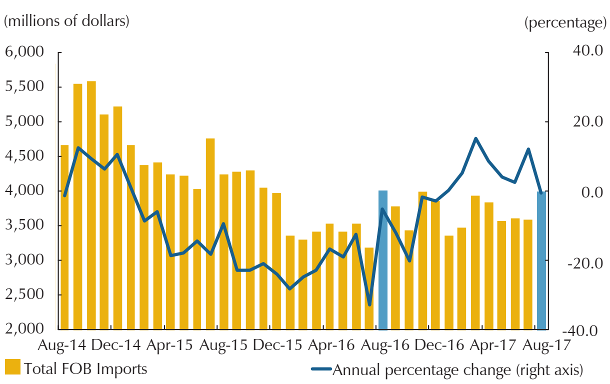
According to the information available, a reduction of the current account deficit in both dollars and share of GDP is projected for the third quarter of 2017 compared to the same period in 2016. As a share of GDP, this would be close

Graph 9
Total Exports of goods (FOB)
(monthly)



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

Graph 10
Total Imports FOB
(monthly)



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

to 2.9%, which is lower than the 5.0% from a year ago. With respect to foreign trade in goods, the data available show that, in the July-August 2-month period, the total exports in dollars rose USD 898 m (17.1%) in comparison to the previous year (Graph 9) mainly due to the higher exported value of industrial products, coal, crude oil, and coffee. Regarding free on board (FOB) imports,[1] these rose USD 373 m (5.2% in annual terms) during that period because of, to a large extent, the increased acquisition of transportation equipment most of which was aircraft. The purchase of supplies for industry and of non-durable consumer products from abroad also contributed positively to the growth of total imports (Graph 10) (see the shaded portion on pg. 26).

The deficit of non-factor services for the third quarter, in turn, is expected to be lower than what was registered for the same period a year ago, and net outflows for factor income will probably rise. This last point is due to the increase in the profits of the firms with FDI which work in the mining-energy sector. The payment of interest on loans and debt securities is also anticipated to continue to be a significant source of pressure on the current account deficit just as was seen in 2016 and the first half of 2017.

Regarding capital flows, during the third quarter of 2017 FDI funds are estimated to have been higher than those seen during the same period a year ago, due to the funds received by companies in the communications sector because of the capitalization of Coltel and the arbitrated award in favor of the nation. Furthermore, the information available on capital flows from the foreign exchange balance shows that between July and September there was an annual reduction in funds from private sector foreign portfolio investment.[2] Funds from the placement of bonds on the part of banks and companies in the private sector and, to a lesser extent, external credit with multilateral banks (obtained especially by the government and other public sector entities) could be added to the above.

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1 Unlike the measurement of the balance of payments, which takes into account the FOB value of imports, the calculation of GDP based on national accounts considers the cost, insurance and freight (CIF) of imports which include the value of the freight and insurance. During the July-August 2-month period, CIF imports totaled USD 7,941 b, which represents a growth of 4.9% annually.

2 Although the capital inflows registered in the foreign exchange balance do not correspond exactly to what is recorded in the balance of payments, given that the former refers to the entry and exit of foreign currency, they offer some idea of the trend.

DOLLAR-DENOMINATED EXPORTS AND IMPORTS OF GOODS FOR THE SECOND QUARTER OF 2017 AND TO DATE IN THE THIRD QUARTER

In order to provide context and offer a broader perspective on the figures presented in this section, we begin by mentioning the trend in international trade in goods up to this point in 2017.

Total US dollar-denominated exports of goods has grown 19.5% annually so far this year supported mainly by the increase in foreign sales of products from the mining group (29.7% yearly), which contributed 15.7 pp (of the 19.5 pp of the total increase). This overall growth is due to a price effect in particular, the majority of which also comes from the mining group.[1]

Agricultural goods rose at an annual 13.7% rate during this period, while non-traditional exports rose at a rate of 5.5% This latter group of goods has been surging over the course of the year thus showing a significant recovery (the group varied annually as it went from -1.4% in the first quarter of the year, 4.2% in the second, and 17.0% so far in the third quarter).

With respect to imports, these have grown 5.7% annually so far this year with positive contributions from the three groups, among which capital goods and intermediate goods stand out. The increase is largely due to an effect of quantities concentrated especially in capital goods (with the significant contribution of aircrafts).

Second quarter of 2017:

During the second quarter of 2017, the total exports of US dollar-denominated goods registered a growth of 10.5% *vis-à-vis* the same period the previous year mainly due to higher sales abroad of mining products, of which the 35.7% increase in exports of coal stands out (Table A).

This trend is consistent with the surge in the price indexes for the exports of three groups of goods,[2] which stimulated the quantities exported and led to an increase for the mining and the "rest of the exports" groups.

In the 4.2% yearly growth of exports of non-traditional goods (the majority of which were manufactured goods), in turn, the segment of food, beverages, and tobacco (excluding coffee) registered the most significant increase: 26.5% yearly. Based on destination, the most relevant growth of these types of exports was to Ecuador and the rest of ALADI,[3] which registered annual changes of 30.5% and 16.5% respectively. Sales of this group of goods to Venezuela and Mexico, in turn, fell 46.3% and 9.9% respectively. There was a slight growth, 3.7%, (Graph A) of this group of goods to the United States, which is our main trading partner.

The group of agricultural goods was the only one that presented an annual decline during this period (-5.4%) due to the decreases in the sales of coffee and bananas abroad. This was caused by very special figures in terms of the quantities exported: the high basis of comparison resulting from the positive performance that was registered in April of 2016 had a significant influence on coffee, while in the case of bananas the data from April 2017 was quite low in comparison to months with which it is being compared.

Regarding dollar-denominated FOB imports, an annual increase of 5.1% was seen in the second quarter due to growth in purchases of capital goods (11.5%) and intermediate goods (5.4%) from abroad. Of these, aircraft and fuel, respectively, were the items that contributed the most in each group (Graph B). Moreover, the growth of imports for industry (these include goods for the mining sector) stands out in these two branches.

The consumer goods group, in turn, was the only one that shrank. Durable goods fell 4.5% yearly thus reflecting the decrease in imports of private transportation vehicles (-13.3%). With respect to the 2.2% decline for non-durable goods, food products were the ones that had the greatest influence.

July-August 2-month period 2017:

During the July-August 2-month period in 2017, exports continued spurred by better international prices for petroleum and coal; however, the price for coffee showed a slightly lower level, on average, compared to the same period in 2016.[4]

1 The 23.1% and 61.1% annual increases in the international price of Brent crude oil and coal respectively are highlighted.

2 In addition, in terms of international prices, an increase of 57.9%, 8.6%, 1.7% for coal, Brent crude oil, and Colombian coffee respectively was registered during the quarter.

3 Latin American Integration Association (ALADI) excluding Venezuela, Ecuador, Peru, and Mexico.

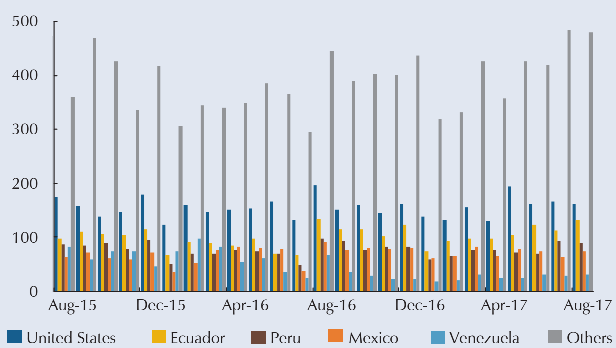
4 During the 2-month period, the international prices for coal and Brent crude grew 43.6% and 8.0% per annum respectively. The one for Colombian coffee fell 5.4%.

Table A
Exports and Imports of Goods in Dollars for the Second Quarter of 2017(FOB)
(percentage)

Group	Annual percentage change	Items with important contributions to the annual change	
		Item	Annual percentage change of the item
Total exports	**10.50**		
Mining products	19.10	Coal, lignite and peat	35.70
		Crude oil	8.00
Remaining exports [a] (non-traditional)	4.20	Food, beverages, and tobacco (excluding coffee)	26.50
		Non-metallic minerals and base metals	22.90
		To Ecuador	30.50
		To the rest of ALADI[b]	16.50
		To the European Union	(46.30)
Agricultural products	(5.40)	Coffee	(11.60)
		Bananas	(12.00)
		Flowers	10.10
Total imports	**5.10**		
Capital goods	11.50	Transport equipment	33.00
		Capital goods for industry	4.00
Intermediate goods	5.40	Fuel	16.70
		Raw materials for industry	2.60
Consumer goods	(3.30)	Durable Goods	(4.50)
		Non-durable Goods	(2.20)

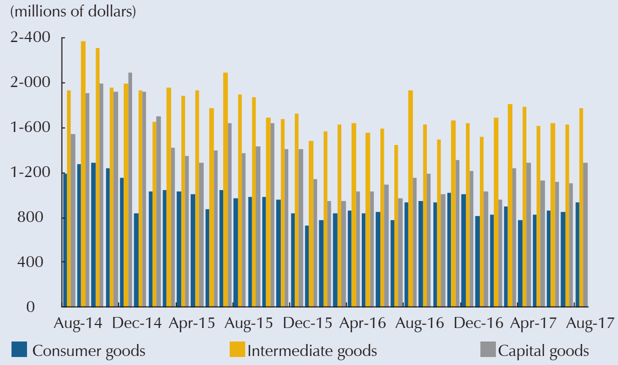
a/ This group does not include petroleum nor its derivatives, coal, nickel-iron, gold, coffee, bananas, nor flowers. It includes other mining and agricultural products. The majority are manufacturing exports.
b/ ALADI excluding Venezuela, Ecuador, Peru, and Mexico
Source: DANE, calculations by *Banco de la República*.

Graph A
Non-traditional FOB Exports by destinations: United States, Ecuador, Peru, Venezuela, and others [a]
(monthly)



a/ Excluding petroleum and its derivatives, 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*.

Graph B
Imports by type of goods (FOB)
(monthly)



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

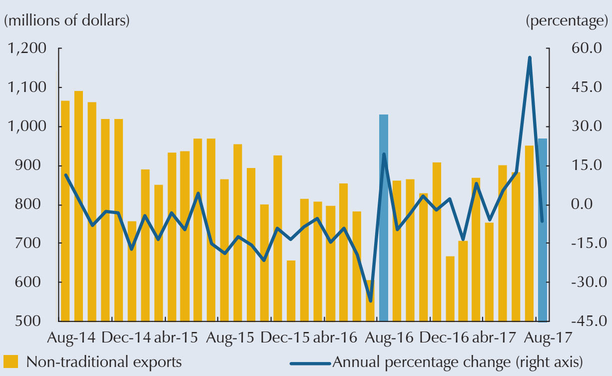
Total exports in dollars grew 17.1% annually during the 2-month period spurred by the three groups of goods (Table B). The main contribution to this growth came from mining products (due to their high participation); however, the growth of agricultural groups and the remainder of the exports, which recorded significant levels during the 2-month period, stands out.

Table B
Exports and Imports of Goods Denominated in Dollars to Date in the Third Quarter of 2017(FOB)
(percentage)

Group	Annual percentage change	Items with important contributions to the annual change	
		Item	Annual percentage change of the item
Total exports	**17.10**		
Mining products	13.50	Coal, lignite and peat	24.70
		Crude oil	13.40
Remaining exports [a/] (non-traditional)	17.00	Food, beverages, and tobacco excluding coffee	38.60
		Non-metallic minerals and base metals	28.90
		To the rest of ALADI [b/]	24.90
		To Ecuador	21.70
		To Peru	24.70
Agricultural products	36.40	Coffee	46.90
		Flowers	11.90
		Bananas	59.00
Total imports	**5.20**		
Capital goods	12.10	Transport equipment	30.20
		Capital goods for industry	3.90
Intermediate goods	1.00	Raw materials for industry	2.70
		Raw materials for agriculture	(9.30)
Consumer goods	4.00	Non-durable Goods	6.10
		Durable Goods	1.40

a/ This group does not include petroleum nor its derivatives, coal, nickel-iron, gold, coffee, bananas, nor flowers. It includes other mining and agricultural products. The majority are manufacturing exports.
b/ ALADI excluding Venezuela, Ecuador, Peru, and Mexico
Source: DANE, calculations by *Banco de la República*.

Graph C
Exports of Non-traditional Goods FOB [a/]
(monthly)



a/ Excluding petroleum and its derivatives, 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*.

In the case of non-traditional exports, the highest levels for the year were seen during the 2-month period (Graph C). The annual growth of foreign sales of these goods to the rest of ALADI, Ecuador, and Peru (Table B) is highlighted. The exports of these to the United States, in turn, barely grew 0.3% annually while those going to Venezuela fell 34.0%.[5]

With respect to FOB imports, the two-month period maintained a growth of 5.2% annually which was very similar to that of the second quarter and was supported primarily

5 As of August 2017 the cumulative exports of this group of goods for the year grew 5.5% annually of which, the growth of these exports to the rest of ALADI (22.6%) and Ecuador (20.2%) stands out. Those to the United States grew 1.0% while, with a change of -57.6 % annually, Venezuela is the only destination among the ones that are differentiated here that has negative figures (the United States, Ecuador, Peru, Mexico, Venezuela, the remainder of ALADI, the European Union, Asia and the rest).

by purchases of aircraft from abroad. One important difference with respect to that period was that in the current 2-month period, consumer goods showed positive annual changes: 6.1% for the non-durables, and 1.4% for durables where, in the case of each group, the growth in purchases from abroad of clothing and other apparel, machinery, and household appliances respectively, stands out.

Finally, the reader is warned that the annual growth of exports and imports for this 2-month period should be read cautiously due to the statistical noise present in the basis for comparison, which was generated by the trucker's strike in the month of July last year. International trade in merchandise fell sharply this month and, although there was a recovery in August, this may not have compensated for the initial shock.

b. Estimate for all of 2017 and 2018

Using the growth projections for the country's trading partners and for the terms of trade presented in the first part of this chapter, the forecasts made for this *Report* indicate that the deficit in the current account will continue to be adjusted in 2017 in both US dollars and in terms of GDP. In the most probable scenario, the current deficit for the full year will probably be around USD 11,493 b, which corresponds to 3.7% of GDP (Table 3).

For the entirety of 2017, the trade balance is anticipated to continue to show a deficit though lower than the one registered in 2016 due to some of the terms of trade which, averaged for the year, are likely to be higher than the ones registered a year ago. Just like the projection presented a quarter ago, significant growth in the value of the major mining exports is anticipated which will be

Table 3
Balance of Payments
Annual flows (millions of dollars)

	2013	2014	2015 (pr)	2016 (pr)	2017 (proj)
Current Account (A + B + C)	**(12.502)**	**(19.764)**	**(18.777)**	**(12.305)**	**(11.493)**
Percentage of GDP	(3.29)	(5.22)	(6.44)	(4.35)	(3.70)
A. Goods and Services	(3,159)	(11,861)	(18,557)	(13,016)	(11,225)
B. Primary Income (factor income)	(14,230)	(12,525)	(5,650)	(5,113)	(6,621)
C. Secondary Income (current transfers)	4,887	4,622	5,430	5,823	6,353
Financial Account (A + B + C + D)	**(11,738)**	**(19,332)**	**(18,196)**	**(12,683)**	**(11,135)**
Percentage of GDP	(3,09)	(5,11)	(6,25)	(4,49)	(3,58)
A. Direct Investment (ii i)	(8,557)	(12,265)	(7,414)	(9,210)	(9,136)
i. Foreign in Colombia (FDI)	16,209	16,164	11,632	13,726	12,881
ii. Colombian Investment Abroad	7,652	3,899	4,218	4,516	3,745
B. Portfolio Investment	(7,438)	(11,565)	(10,283)	(3,718)	(3,509)
C. Other Investments (loans, other credit and derivatives)	(2,690)	61	(914)	80	964
D. Reserve Assets	6,946	4,437	415	165	546
Errors and Omissions (E and O)	763	432	581	(377)	359

(pr): preliminary; (proj): projected
Note: the results presented follow the recommendations of the IMF in the sixth version of its Balance of Payments Manual. For further information and methodological changes consult http://www.banrep.gov.co/balanza-pagos.
Source: *Banco de la República*

The projection of the balance of payments for 2017 indicates that the current account deficit may be close to 3.7 % as a percentage of GDP. This would imply a correction with respect to the 4.4% for 2016, which could be due to the growth of external revenues, which is greater than that of expenditures.

driven more by the increase in their prices than the amount exported. In addition, the forecast of the growth of the remaining exports (other than the main mining and agricultural products) was raised as a result of the performance shown so far this year and of the higher growth rates expected for our main trading partners for the second half of the year.

As regards imports of goods, an annual growth of 3.5% is estimated for the entirety of 2017. This rise may be spurred by the expected strength of some of the investment components and, to a lesser extent, by the larger purchases of supplies and intermediate goods for industry from abroad. In view of the forecast made in the previous report, the assumed growth of imports was revised downwards, especially because of the performance that these have shown so far in the third quarter of the year. Furthermore, due to the base effect of the last few months of 2016 (expectation of the VAT and the car show) they are expected to grow at a moderate rate during the last quarter of this year.

Larger net outflows are expected in 2017 for factor income due to the increased profits earned by foreign companies operating in the mining-energy sector and consistent with the higher export prices. Larger interest payments on the foreign debt are also anticipated because of, to a great extent, the increase in foreign interest rates and their impact on the outstanding debt.

The deficit in non-factor services is expected to reach an amount in 2017 that is greater than what was seen a year ago. For one thing, growth of outflows associated with the payment of freight (given the expansion of imports and the higher price of oil on average) and of financial services to banks and foreign institutions is expected. Greater imports of services connected to the oil industry and of reinsurance payments abroad are also anticipated. With respect to exports, an increase in the income derived from tourism is anticipated due to the higher number of foreign travelers in Colombia and the spending expected from them, and, to a lesser extent, from the provision of other business services.

Finally, higher net income from transfers is expected, especially due to the increased activity seen in the economies of the United States and Europe (see section A in this chapter).

The country is expected to continue receiving significant amounts of foreign capital in 2017 with foreign direct investment being the main source of financing.

With respect to capital flows, direct investment funds are expected to be the main source of financing for 2017 followed by portfolio investment (Table 3), inasmuch as loans and other credit from abroad will probably register net amortizations. FDI flows in Colombia registered an annual slump of 6.2% resulting from the base effect of the funds from the sale of Isagen in 2016. In addition to this, net capital inflows from portfolio investments are expected, largely associated with the purchase of TES on the part of foreigners and with the placement of bonds by the government.

For 2018, a slight reduction of the deficit in the current account as a percentage of GDP is anticipated, standing around 3.6%. The contribution of commodity exports will probably be low that year as a result of the recovery in the prices for 2017 and the fact that this is unlikely to continue at the same pace in 2018.

Just as in the previous report, two alternative scenarios for 2017 were considered for the forecast of the balance of payments in addition to the baseline scenario. These were associated with different conditions and availability of foreign financing for the local economy as well as with the various price predictions for commodities and growth of our trading partners as was shown in the first part of this chapter. The different assumptions about these and other factors determine the extent of the projection range of the current account deficit. Thus, as a share of GDP, a low scenario of 3.4% and a high one of 4.0% are estimated.

For 2018, a deficit in the US dollar-denominated current account that is slightly higher than what was estimated for 2017 is projected, and this implies a slight reduction in the share of GDP since it will stand at close to 3.6%. An expansion of the merchandise trade deficit is expected in 2018 due, in large part, to the increase in imports compared to the moderate growth of exports. These last ones will probably be spurred largely by the performance of foreign sales of industrial goods based on the recovery in external demand. The contribution of commodity exports will probably be low that year as a result of the recovery in international prices forecast for 2017, and that is unlikely to continue at the same pace in 2018. With respect to foreign purchases of the country's products, these will probably continue registering positive rates of growth in line with the greater economic activity predicted for next year. In addition to this, higher income from current transfers and a similar deficit for non-factor services are expected inasmuch as net outflows due to factor income are likely to register an increase.

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

As had been predicted, the Colombian economy continued to show low growth in the second quarter. Domestic demand rose slightly and international trade accounts contributed negatively to growth. The impetus of public consumption stood out.

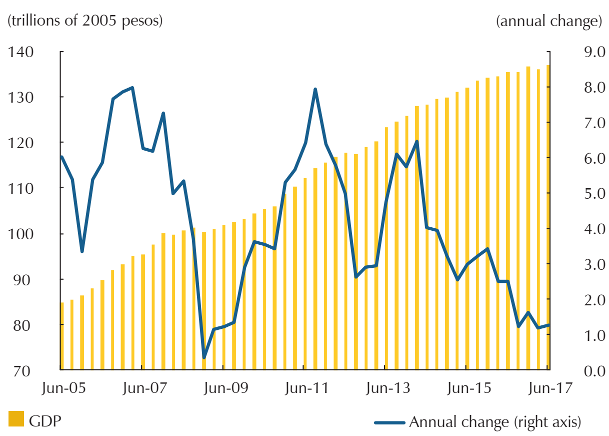
By branches of activity, the most growth was seen in agriculture and financial services. In contrast, mining and industry showed significant setbacks.

Information available for the third quarter suggests that economic activity will probably show a better performance compared to the first half of the year.

A. PERFORMANCE OF GDP DURING THE SECOND QUARTER OF 2017

According to the most recent publication of GDP figures by the National Bureau of Statistics (DANE in Spanish), the Colombian economy registered an annual increase of 1.3% in the second quarter of 2017.[3] This result was similar to the aggregate that had been registered for the first three months of last year (when GDP grew 1.2%; Graph 11) and to the midpoint of the forecast range presented in the previous Inflation Report (between 0.7% and 1.7%, with 1.2% as the most likely figure). With the above, the output level rose 0.7% between quarters, which, in annualized terms, corresponded to 3.0%.

Graph 11
Gross Domestic Product
(seasonally adjusted)



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

The result of GDP growth for the second quarter, together with the information available for the third quarter and the forecasts that will be presented below and in Chapter IV, suggest that the slowdown of economic activity may have hit bottom in the first half of 2017. Starting in the second quarter, a gradual recovery process of the economy should begin that is consistent with an orderly adjustment with

3 At the time this report was written, figures as of the second quarter of 2017 were available having been published on August 15.

Economic activity may have hit bottom in the first half of 2017.

respect to the terms of trade shock that has been affecting it since mid-2014. This perspective is shared by various market analysts.

It is notable that economic activity in the second quarter occurred in a context where different external and internal factors converged. As was explained in Chapter I of this *Report*, even though the terms of trade registered increases compared to the same period last year, the international prices for crude oil were volatile and returned to the levels they had reached at the end of March, which, to some degree, contributed to the depreciation of the exchange rate. The growth of our main trading partners improved although this was not completely reflected in the performance of foreign demand.

With respect to factors in the local community, Easter Week occurred during the April, May, June quarter instead of in the first quarter (as was the case in 2016) which in and of itself means that growth in the second quarter of 2017 already has an unfavorable basis for comparison. This irregular seasonal adjustment has been documented and its effect on production during similar events in the past has been identified.[4] In addition, this period was also characterized by an improvement in household confidence which could have led to a somewhat better performance of private consumption. In spite of the fact that consumer price inflation continued to give way, there were some factors that did not allow household consumption to show a higher rate of growth: the transmission of the reduction in the benchmark rate to the market rates was slow, while at the same time, the increase in the value added tax (VAT) included in the tax reform, continued to affect the purchasing power of family income.

That being the case, domestic demand rose slightly within the margin and expanded 1.9% (Table 4). Both investment and consumption contributed to this better performance. The foreign trade accounts, in turn, continued to have a negative impact on the growth of GDP in the second quarter of 2017. Exports showed declines (although they were lower in magnitude than those seen in previous quarters) at the same time as imports improved.

It can be seen that aggregate consumption was mainly driven by public consumption.

When we analyze in greater detail the performance of the different segments that the expenditure side of GDP is composed of, , it can be seen that the aggregate consumption was mainly driven by the public sector while progress was marginal for the private sector. The annual rates of growth were 4.2% and 1.4% respectively and both are higher than those registered over the course of the first three months of the year (2.6% and 1.3% for the public and private sectors). With respect to private consumption, the majority of the classifications registered a surge with the exception of durable goods consumption which was probably affected by the increase in the VAT going into full effect. The surge in public consumption, in turn,

4 See Parra, D.; Piraján, J. (2013) *"Efectos calendario sobre la actividad económica en colombia", Informe sobre Inflación*, ("Effects of the Calender on Economic Activity in Colombia" Inflation Report) December, Box 1, pgs. 37-40.

Table 4
Real Annual GDP Growth, by Type of Expenditure

	2016				2016	2017	
	Q1	Q2	Q3	Q4	Full year	Q1	Q2
Total Consumption	3.0	2.3	0.9	1.8	2.0	1.7	2.1
Household Consumption	2.8	2.1	1.0	2.2	2.0	1.3	1.4
Non-durable Goods	3.4	2.2	1.2	1.4	2.1	1.4	2.6
Semi-durable Goods	1.2	1.1	(1.5)	(0.8)	0.0	(4.1)	(3.6)
Durable Goods	(4.6)	(5.6)	(3.7)	11.2	(0.8)	6.0	(3.4)
Services	3.4	3.1	1.9	2.4	2.7	1.7	2.1
Final government consumption	3.8	3.0	0.2	0.4	1.8	2.6	4.2
Gross Capital Formation	(4.1)	(4.7)	(6.2)	(3.1)	(4.5)	0.0	1.4
Gross Fixed Capital Formation	(4.0)	(4.0)	(3.6)	(2.9)	(3.6)	(0.8)	1.1
Agriculture, Forestry, Hunting, and Fishing	6.1	7.4	4.2	(0.7)	4.2	3.9	3.5
Machinery and Equipment	(15.2)	(12.3)	(18.8)	(13.8)	(15.1)	(3.7)	2.8
Transport equipment	(20.6)	(7.2)	(14.6)	(4.8)	(11.9)	8.1	(1.2)
Construction and Buildings	10.7	1.2	10.6	0.7	5.6	(7.5)	(7.9)
Civil works	(1.0)	0.8	3.8	6.1	2.4	3.8	6.9
Services	2.9	(1.3)	4.4	1.3	1.8	3.7	0.5
Domestic demand	1.3	0.5	(1.1)	0.5	0.3	1.5	1.9
Total Exports	0.9	1.8	(3.5)	(2.8)	(0.9)	(4.7)	(1.7)
Total Imports	(5.9)	(3.6)	(10.8)	(4.2)	(6.2)	(0.4)	3.7
GDP	**2.5**	**2.5**	**1.2**	**1.6**	**2.0**	**1.2**	**1.3**

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

compared to what had been seen during the first three months of the year can be attributed, in particular, to the increase in implementation of the expenditures and the salary adjustments (retroactive) of government employees.

The surge was more evident for gross capital formation. After having registered no growth in the previous quarter, it expanded 1.4% during the second. During this period, the demand for tradable capital goods, in other words, the aggregate of investment other than what is going to construction of buildings and public works, stopped falling and showed positive growth, something that has not been seen since the beginning of 2015. The rest of investment remained stagnant. This latter item was the result of a marked contrast between the performance of the construction of buildings (which fell 7.9%) and that of public works (which grew 6.9%). In the first case, the poor performance could be related to signs that suggest both an accumulation of available supply and a weakening of demand, especially in the high income segments (see Chapter V in this *Report*). In the case of public works, its positive performance might have been due to the increase in different exploratory and development projects in the mining sector as well as an upswing in expenditures by regional and local governments on various infrastructure projects and the greater use of resources for the projects included within the framework of fourth generation (4G) and tertiary roads.

With respect to net foreign demand, exports fell although to a lesser degree than what had been seen over the course of the first three months of the year. This performance was the result, specifically, of the poor production and sales abroad of crude oil and coal. Imports, in turn, rose at a rate that was higher than the one at which the rest of the main segments of the GDP rose. They were concentrated in the purchase of capital goods and, to a lesser extent, of intermediate goods.

In the area of supply, the branches of activity that presented the most outstanding trends in the second quarter of 2017 were, as follows, agriculture (4.4%) and financial services (3.9%) (Table 5). In contrast, there were severe reductions in mining activity (-6.0%) and industry (-3.3%). Commerce, transportation, and construction showed slight expansions.

The positive performance in agriculture was caused by the trend of other agricultural products which offset the fall in coffee production (-14.3%). In the case of the other agricultural products, both annual crops (23.8%) and perennial crops (10.8%) showed outstanding results. It should be noted that part of this recovery corresponds to the effect of a low basis for comparison with respect to a year ago when this part of agricultural production shrank due to the impact of "El Niño." In addition, animal husbandry showed an expansion of 3.5% which is primarily due to the 5.8% growth of raw milk production and 4.1% growth in the production of fresh, in shell eggs which offset the drops in the production of beef (-6.1%) and pork (-1.7%). Furthermore, according to the Federación Nacional de Cafeteros (National Federation of

Table 5
Real Annual Growth of GDP by Branches of Economic Activity

	2016				2016	2017	
	Q1	Q2	Q3	Q4	Full year	Q1	Q2
Agriculture, Forestry, Hunting, and Fishing	(0.2)	0.8	(0.5)	1.9	0.5	7.8	4.4
Mining and Quarrying	(4.6)	(6.9)	(6.4)	(8.3)	(6.5)	(9.3)	(6.0)
Manufacturing Industry	4.2	5.5	1.3	1.0	3.0	0.3	(3.3)
Electricity, Gas, and Water	2.8	(0.6)	(1.4)	(0.6)	0.1	(0.5)	1.2
Construction	5.2	1.1	6.7	3.4	4.1	(1.4)	0.3
Buildings	11.1	2.2	10.9	0.7	6.0	(7.1)	(7.4)
Civil works	(0.5)	0.9	4.0	5.1	2.4	3.5	6.5
Retail, Repairs, Restaurants, & Hotels	2.8	1.9	0.7	1.7	1.8	(0.5)	0.9
Transport, Storage, and Communication	0.9	0.2	(1.4)	(0.3)	(0.1)	(0.3)	0.7
Financial, Real Estate, and Corporate Services	4.3	5.3	4.7	5.4	5.0	4.3	3.9
Social, Community, and Personal Services	3.5	3.6	1.0	0.9	2.2	2.9	3.0
Subtotal value added	2.6	2.3	1.3	1.5	1.9	1.1	1.1
Taxes minus subsidies	1.3	4.0	0.4	2.9	2.2	2.7	3.3
GDP	**2.5**	**2.5**	**1.2**	**1.6**	**2.0**	**1.2**	**1.3**

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

Coffee Growers), coffee bean production came to an average of 928,000 bags, which represented a drop of 17.3%, during the second quarter of the year.

Within the group of financial services, positive performance was seen in the sub-branches of financial intermediation services, services to companies, and real estate and rental of housing activities, all of which grew 6.1%, 3.2%, and 2.7% respectively. Given the sector's large share of GDP (20.7%) said activity contributed significantly to supporting the growth of the Colombian economy.

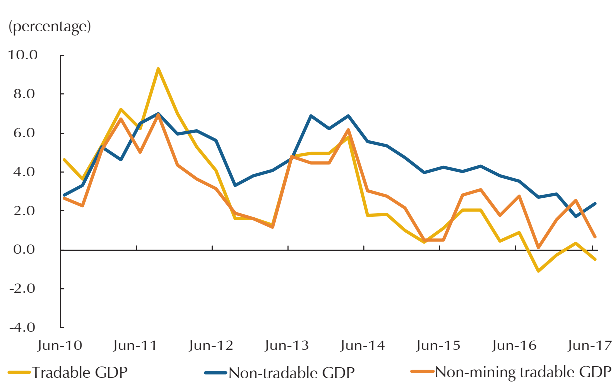
In contrast, the mining and quarrying sector showed a significant tightening which was due to the declines reported in the sub-branches of crude oil and gas (-5.4%), coal (-7.1%), and metallic minerals (-16.3%). It should be pointed out that mining has suffered a major adjustment in response to the sharp fall in the international prices for these products three years ago. Furthermore, in the case of coal, this sub-branch faces low worldwide demand.

The manufacturing industry also presented deterioration in the second quarter as it shrank 3.3% in annual terms. Note the high heterogeneity that is seen within this group; for example, while the manufacturing of basic metal products (-11.9%), textiles and garments (-11.1%), and of other non-metallic mineral products (-6.2%) show significant declines, other activities such as crude oil refining and the manufacturing of nuclear fuel products (4.2%) and of paper and cardboard (5.2%) grew at annual rates that were above those of the economy as a whole.

Last of all, within the branch of construction, the growth of public works (6.5%) was counteracted by the deterioration in building construction (-7.4%). With regards to the former, the recovery of investment in infrastructure for mining and other engineering jobs, which expanded 15.5% and 39.2% respectively, should be noted. In the case of buildings, the slump is explained by both the setback in residential construction (-9.1%) and non-residential construction (-8.3%).

In this setting, GDP for tradable goods showed a 0.5% fall which ratified the weakening suffered by this productive apparatus after it had grown 0.3% one quarter earlier. However, when mining is excluded, GDP for the remaining tradable sectors showed an expansion of close to 0.7% which likewise reflected a setback compared to what had been seen in the first three months of the year when the aggregate value of those products had grown 2.6% annually. In addition, GDP for non-tradables showed a slight recovery when it grew 2.4% for the same period, a figure that is higher than the one seen a quarter ago (1.7%). It should be mentioned that the expansions shown by GDP for both tradables and non-tradables are below the averages they have had since the year 2000 (Graph 12).

Graph 12
GDP of the Tradable, Non-mining Tradables, and Non-Tradable Sectors (annual change)



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

The economy may have surged in the third quarter; the technical staff estimates that there will be an annual expansion of around 2.3%.

B. GDP FOR THE THIRD QUARTER OF 2017

The information available on productive activity in Colombia suggests that the economy has probably registered an upswing in its annual rate of growth in the third quarter with an approximate annual expansion of 2.3%.[5] As could be expected, this better performance is probably, in part, the result of a low basis of comparison with the same period last year when several supply shocks were reported in the transportation sector that wreaked havoc on various components of the GDP. Nevertheless, when that effect is ruled out, an upsurge is also seen. Previous studies, for example, Parra et al (2016),[6] suggest that the effect of the 2016 supply shocks on growth could be quantified at around 30 basis points (bp) of the growth rate of output. If that is the case, the higher growth rate projected by the technical staff assumes an improvement in the components of GDP that goes beyond the statistical effect of the low basis for comparison and that the slowdown in economic activity, produced by the macroeconomic adjustment resulting from the terms of trade shock that started in mid-2014, may have bottomed out in the first half of the year.

The contribution to growth made by variables in the context abroad will probably be positive in the third quarter. On one hand, foreign demand continued to recover as revealed by the figures on activity in the advanced economies and in our main trading partners in the region. On the other, the international prices for crude oil and other commodities exported by Colombia rose between July and September, and this could have meant a further increase in the terms of trade. In addition to the above, the quantities exported may have responded to a positive supply shock in the production of certain raw materials. All of this may have boosted the sales abroad of locally produced goods.

With regards to the fundamentals in the domestic context, the decline in inflation stood out. This would have meant a relief to the purchasing power of household disposable income. Added to the above is a slight upturn in the levels of consumer confidence. Some progress in the transmission of the recent monetary policy actions to market rates was also registered. All of the above may have enabled a recovery of the growth rate of domestic demand in the third quarter of 2017.

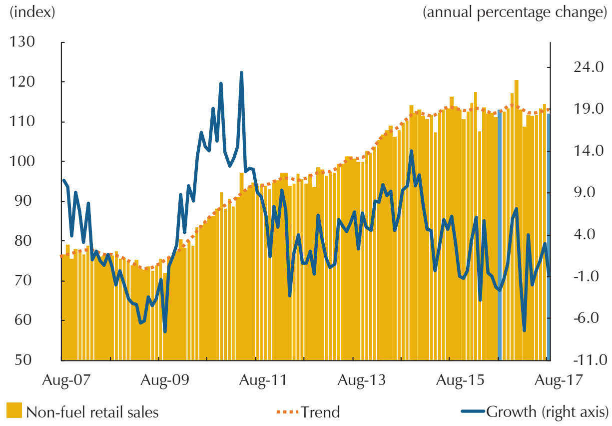
In the projected growth of GDP, a surge in absorption is anticipated driven by investment and to a lesser extent, by consumption.

That being the case, the projected growth of GDP between July and September of this year anticipates a rise in absorption driven by investment and, to a lesser extent, by consumption. The positive performance of investment, in turn, may have been determined by the growth of spending on public works. This would be consistent with the increases reported by different companies in the petroleum sector on exploration and drilling activities, as well as with the higher rate with which

5 This forecast turned out to be lower than the one officially published by DANE on November 15.

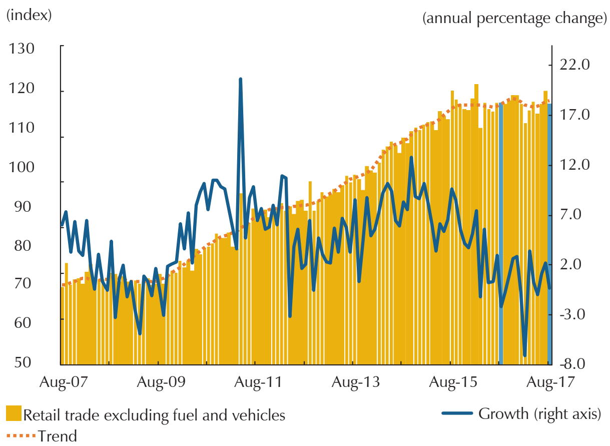
6 See Parra, D.; Escobar, M., and Rojas, C. (2016) “Supply Shocks and their Impact on Economic Activity,” Inflation Report, December, Box 1, pgs. 43-45.

Graph 13
Monthly Retail Trade Survey
(total non-fuel retail sales, seasonally adjusted)



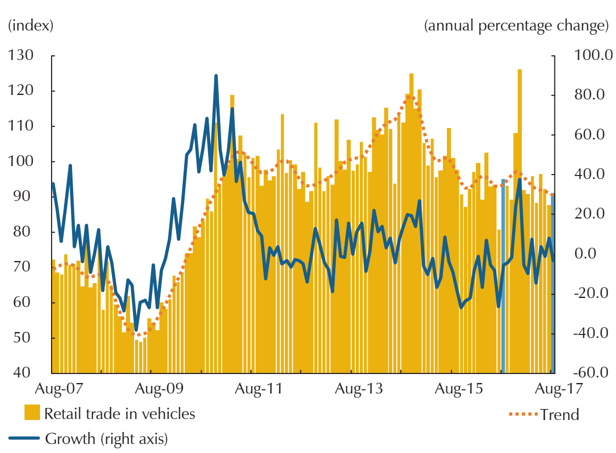
Source: DANE, calculations by *Banco de la República*.

Graph 14
Monthly Retail Trade Survey
(total retail trade excluding fuel and automotive vehicles, seasonally adjusted)



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

Graph 15
Monthly Retail Trade Survey
(retail trade in automobile sales, seasonally adjusted)



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

resources are used on regional infrastructure projects and roads in the 4G framework. Likewise, it is being predicted that investment in machinery, equipment, and transportation equipment will probably continue to register positive growth rates.

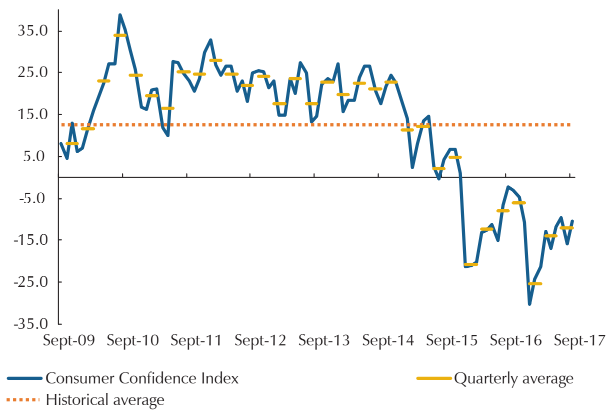
With respect to consumption, the private component would have registered a growth that is similar to the one in previous quarters while the public one would have risen a little marginally, with this being the result,in part, of a higher level of expenditure implementation on the part of regional governments this year as well as of a low basis of comparison in the same period in 2016. For the foreign trade segments, increases are projected although higher increases are expected in the case of imports than in that of exports. This is why foreign demand is expected to have contributed negatively to the expansion of economic activity.

Indeed, the short-term indicators support an outlook like the one described above. In principle, based on information as of August, the monthly survey of retail trade (EMCM in Spanish) reported a drop for the index of retail sales (excluding fuel) of 0.8% yearly (Graph 13). The aggregate from the July-August 2-month period registered a 1.1% expansion compared to the same period last year which represented an upswing in retail sales when it is compared to the -0.5% seen in the second quarter. When sales of vehicles are excluded, the remaining sales fell 0.3% with respect to the same month in 2016. In this case, the 2-month period registered a growth of 1.0% annually which also suggests something of an upswing compared to what had been registered in the second quarter (Graph 14).

In the case of sales of durable goods, the same source reported a decline of 3.5% annually in the index of vehicle sales in August (Graph 15). The aggregate for the 2-month period grew 1.9% compared to the same period last year, which would be a better performance when compared to what was seen for the second quarter (-4.0% annually). The numbers in the Report from the Automotive Sector as of September, in turn, published by the Federación Nacional de Comerciantes (National Federation of Merchants) (Fenalco) and the Asociación Nacional de Empresarios (National Association of Business Owners) (ANDI) also suggested an additional deterioration in the consumption of durables. The number of license plates issued fell 9.7% during that month in comparison to the same month last year, as a result of which the setback for the third quarter aggregate was -4.1% annually. During the second quarter the annual change was -5.9%. The declines occurred in both the specific component (consumption of durables) and the commercial vehicle component (investment in transportation equipment).

Graph 16
Consumer Confidence Index and Quarterly Average

(balance sheets)



Source: Fedesarrollo.

Other auxiliary indicators also make it possible to anticipate a household consumption performance that is similar to what it was in previous quarters. For example, the consumer confidence index (CCI) for September improved slightly compared to the levels in August, but remains below its average as calculated since November 2001 (Graph 16). Based on this figure, the average for this series aggregate for the third quarter of 2017 was barely a little higher than it was for the second. In contrast, the seasonally adjusted balance of sales for August in *Banco de la República's* Monthly Survey of Economic Expectations (EMEE in Spanish) does not suggest a dynamic trend in private consumption for that month. The labor market indicators point in a similar direction (see the shaded section on the labor market below).

PERFORMANCE OF THE LABOR MARKET DURING THE THIRD QUARTER OF 2017

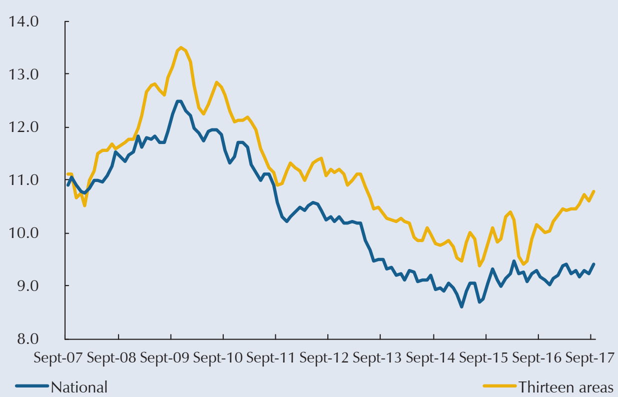
During the third quarter of 2017, the national unemployment rate (UR) remained relatively stable but its deterioration became accentuated in the thirteen most important metropolitan areas. With the seasonally adjusted series, the UR stood at 9.3% on average for the national total between July and September, while for the thirteen areas it stood at 10.7%. The average UR in these areas for the same quarter the previous year was 9.2% and 10.0% respectively (Graph A). The increase in the UR for the thirteen areas was due to a fall in the employment rate (ER) that was more pronounced than the one in the labor force participation rate (LFPR) over the past year (Graph B).

In the quarterly moving average ending in September, the UR rose in all of the geographical areas except for the rural one. In the thirteen areas, this rate presented a significant deterioration (Graph C).

With regard to employment, the seasonally adjusted figures for the last few months point to a decrease in the number of people employed at the national level. Near-zero employ-

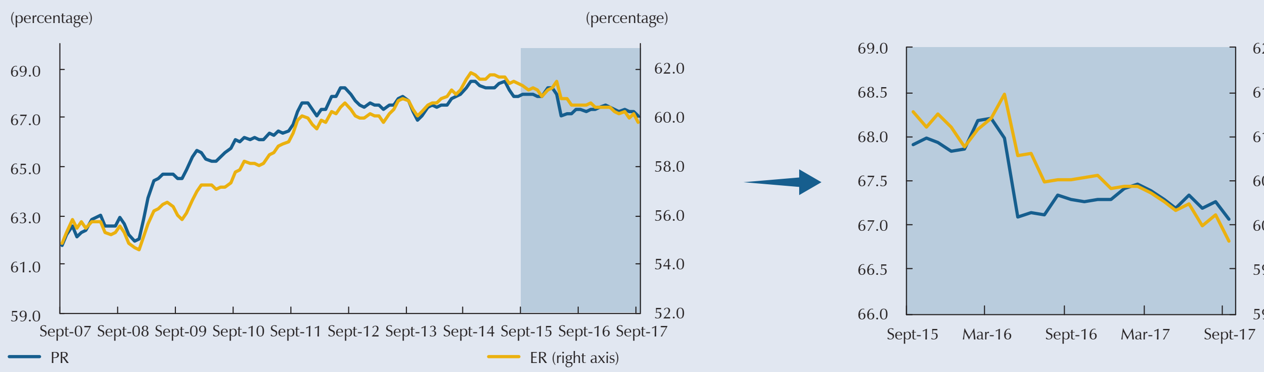
Graph A
Unemployment Rate (UR)
(seasonally adjusted quarterly moving average)

(percentage)



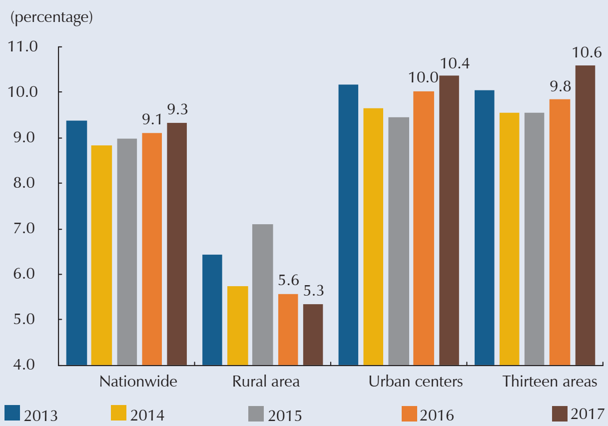
Source: DANE (GEIH).

Graph B
Participation Rate (PR) and Employment Rate (ER)
(seasonally adjusted, 13 areas)



Source: DANE (GEIH).

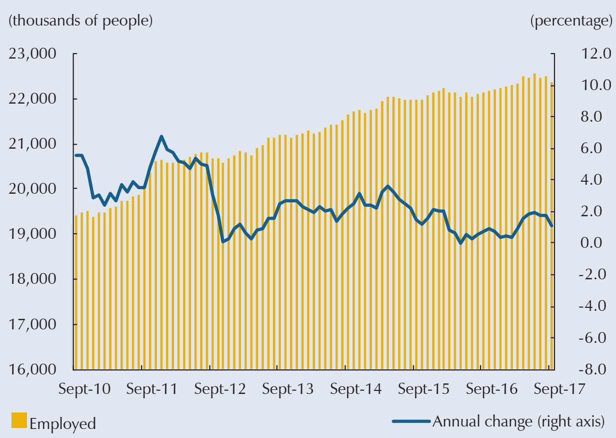
Graph C
Unemployment Rate
(quarterly moving average July-August-September)



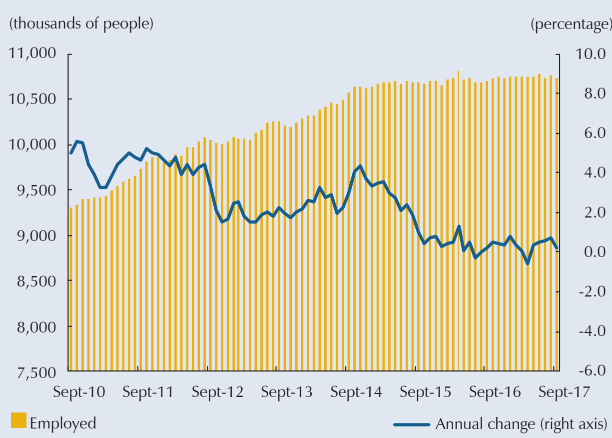
Source: DANE (GEIH).

Graph D
Number of People Employed (seasonally adjusted and annual change)

1. Nationwide



2. Thirteen Main Metropolitan Areas



Source: DANE (GELH) and calculations by *Banco de la República*.

ment growth has persisted in the thirteen areas for what is now more than a year. Even so, for the quarterly moving average that ended in September, the number of employed people grew at a rate of 1.1% in the national total and only 0.2% in the thirteen areas in annual terms (Graph D, panels A and B).

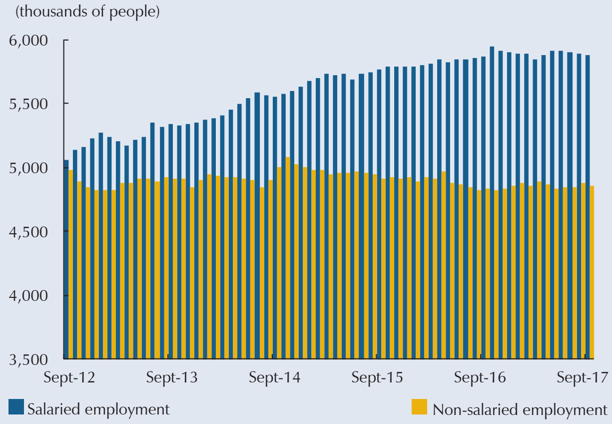
The indicators of employment quality also deteriorated in the thirteen areas during the last quarter. The number of formal, wage-earning workers[1] fell marginally during the same period in which annual growth of informal, non-wage

1 Based on DANE's definition, which is founded on the resolutions of the United Nations International Labor Organization (ILO), employers and workers in companies that have up to five workers, unpaid family workers, unpaid workers in other household companies or businesses, domestic workers, day laborers or peons, and independent workers who work in establishments that have up to five people with the exception of independent professionals are informal (DANE, 2009).

employment was also registered. On average, the annual rate of growth for wage-paying employment was 0.6% in the quarterly moving average that ended in September, while the rate for non-salaried employment was 0.4% (Graph E). For the July-August 2-month period, formal and informal employment registered average annual increases of 0.9% and 0.4% respectively (Graph F).

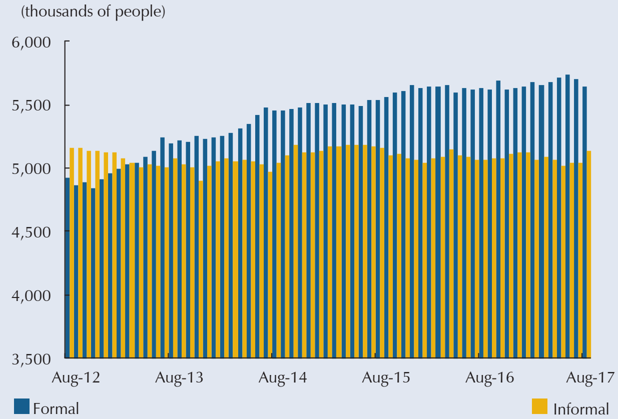
The standstill in employment and increase in the UR that have begun to be expressed in the national total, and that the thirteen areas have experienced for more than a full year, are consistent with the slowdown seen in economic activity. Nevertheless, the recovery of economic activity over the next few quarters should contribute to a better labor market.

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



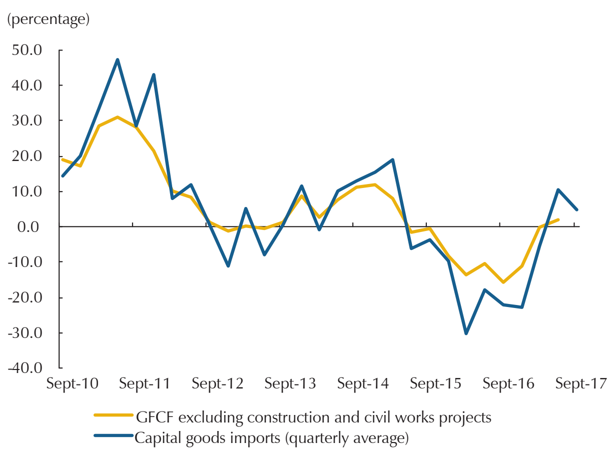
Source: DANE (GELH) and calculations by *Banco de la República*.

Graph F
Employment by Formality
(thirteen areas, seasonally adjusted quarterly moving average)



Source: DANE (GELH) and calculations by *Banco de la República*.

Graph 17
Imports of Capital Goods (real) and GFCF Excluding Construction of Buildings and Public Works Projects
(annual change)



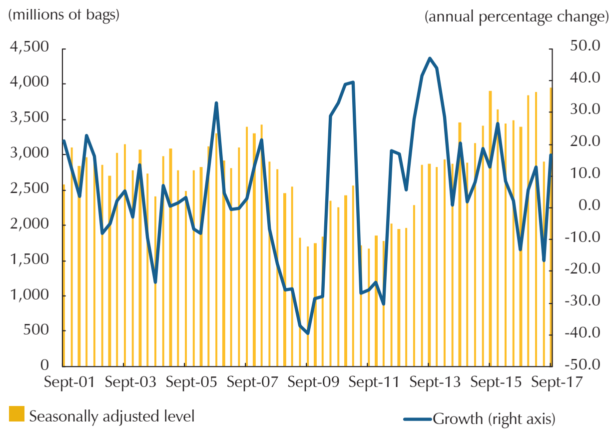
Note: figures converted to real terms. The data of September corresponds to a projection using the preliminary figures from DIAN.
Sources: DANE (national accounts and foreign trade) and DIAN, calculations by *Banco de la República*.

With respect to gross capital formation, DANE's figures on imports of capital goods as of August and the preliminary data from the National Revenue and Customs Bureau (Dirección de Impuestos y Aduanas Nacionales - DIAN) as of September make it possible to anticipate new growth of investment in machinery, equipment, and in transportation equipment when carried to constant Colombian pesos (Graph 17). In spite of the above, the seasonally adjusted series of the balance of investment expectations for the EMEE, based on figures as of August, showed a reversal.

In the area of investment in building construction, a rate of negative annual growth is expected again. This may be partially the result of the bad period reported for construction in the non-residential segment as has already been mentioned. Furthermore, historically high levels were seen over the course of 2016 for this type of expenditure, reason why there is also a high basis for comparison during the same period in 2016.

Last of all, the information published by DANE on the US dollar-denominated foreign trade accounts as of August, together with the DIAN bulletins as of September, make it possible to project a rise for both exports and imports in real terms – higher in the latter case than in the former. This performance will probably be consistent with the recovery reported for sales abroad of mining products, coffee, and non-traditional goods which, will likely have been more than offset by the boost given to the increase in real imports by the purchases of capital and intermediate goods. That being the case, foreign demand will probably have contributed negatively to the expansion of GDP during the third quarter.

Graph 18
Coffee Production
(quarterly and annual growth)

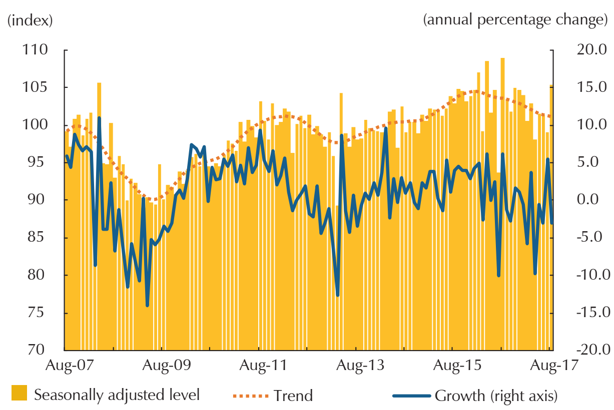


Source: National Coffee-growers Association, calculations by *Banco de la República*

By branches of activity, although the available indicators suggest that the performance of economic activity was uneven during the third quarter of 2017, the figures point to a higher growth of GDP than was registered for the first half of the year.

The Federación Nacional de Cafeteros (National Federation of Coffee Growers) reported a significant growth in coffee bean production during the third quarter of 2017 as it expanded 17.4%. So far this year, based on information available as of September, production stood at 10,267,000 bags, which represents an increase of 4.1% in comparison to the same period the previous year (Graph 18). The slaughter of cattle, in turn, is still deteriorating: it fell 3.5% during the July-August 2-month period after having contracted 10.4% during the second quarter. The performance of other agricultural products is expected to offset the weakening of this latter subsector since this is an activity that has been growing at rates that are close to or higher than 10%.

Graph 19
Real Industrial Production Excluding Oil Refining (seasonally adjusted, trend component, and annual growth)

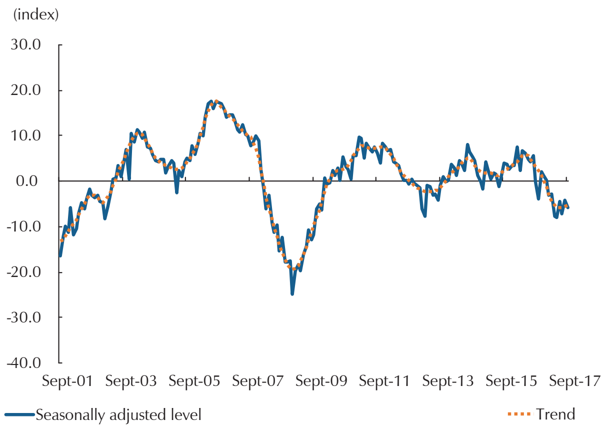


Source: DANE, calculations by *Banco de la República*.

With respect to industry, based on the DANE monthly survey of manufacturing (EMM in Spanish), the total for the sector declined 3.1% in August and if oil refining is excluded, the decrease for the rest of the manufacturing sector was 3.3%. So far this year, industry as a whole has contracted 0.7% and excluding oil refining, it has fallen 2.0%. The trend in both series shows a weakening of the sector (Graph 19).

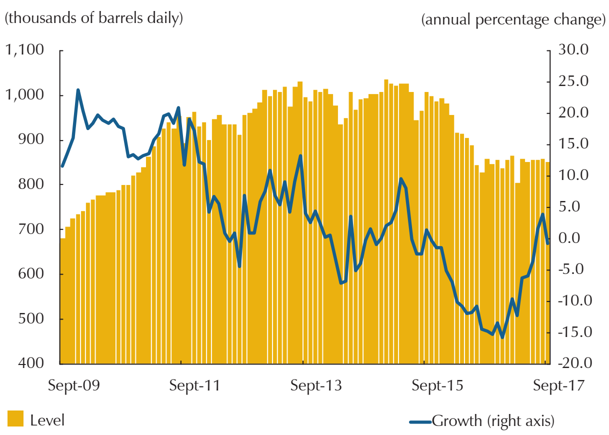
In addition, even though the Fedesarrollo business opinion survey for the industrial sector, with data

Graph 20
Industrial Confidence Index (Fedesarrollo)



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

Graph 21
Crude Oil Production
(monthly and annual growth)



Source: ANH, calculations by *Banco de la República*

as of September, showed improvements in both the indicator for orders and the one for inventory with respect to the averages for the second quarter, the results still point to sector weakening. Something similar has occurred with expectations for production three months from now. With all of that, industrial confidence during the third quarter continued to present a deterioration (Graph 20). According to the ANDI business opinion survey, the industrialists are reporting the following as the main problems they have: low demand, the exchange rate, and the cost of raw materials.

With respect to mining, a slight recovery in the sector is expected for the third quarter after eight consecutive quarters in which annual contractions have been seen. Using the figures as of September, crude oil production was at 855.7 thousand barrels per day (mbd), which meant an annual expansion of 1.5% (Graph 21). In the case of coal, the exports, measured in volumes, grew 4.3% annually in the July-August 2-month period and 12.2% so far this year. In dollars, these expansions stood at 24.7% and 45.5% respectively.

Concerning construction, the indicators show a marked deterioration. As of August, production and shipments of cement decreased 8.5% and 5.2% respectively. Furthermore, construction permits fell 0.7% during the July-August 2-month period and, as a result, are showing a decline of 6.1% so far this year. Something similar is happening with the statistics on concrete.

The technical staff considers that the central growth projection for GDP that was explained earlier (2.3% annually) is likely to have an interval of between 1.8% and 2.8%. The breadth of the forecast range is consistent with the uncertainty related to the performance of government consumption and of public works projects, as well as of the different scenarios for the balance of payments.

Box 1
CHANGES TO AND HETEROGENEITY OF THE MANUFACTURING INDUSTRY IN COLOMBIA

Daniel Parra
Johan Forero*

The output of the manufacturing industry deteriorated over the last year, and this can be attributed to two factors: the weakening of both foreign and domestic demand, and the increase in the cost of imported supplies used in manufacturing as a result of the devaluation that has been registered since mid-2014. Although the industry as a whole registered a 3.0% growth for 2016, this figure concealed the substantial slowdown that, with the exception of oil refining (0.5%), the aggregate went through. The decline was more evident during the first half of 2017 when the contraction was close to 1.5% for the total and 2.9% for the rest (Graph B1.1). It should be noted that the manufacturing industry of several economies around the world also showed a sectorial weakening when compared to the gross domestic product (GDP).[1]

When the changes and trends in the manufacturing industry over the last decade are reviewed, two other instances of stagnation in manufacturing output can be identified: one in 2008, and the other between 2012 and 2013. In general, it can be said that these periods have been characterized by deterioration in both domestic and foreign demand and some transitory supply shocks in certain industries.[2]

During 2014 and 2015, the industrial sector was also affected by the closure of the Cartagena Refinery (Reficar) for upgrading. An analysis of the figures in the Monthly Survey of Manufacturing (EMM in Spanish) shows that this shock was reversed in 2016 when oil refining increased around 23% and, as a result, the industry as a whole grew 3.0%. However, this concealed the slowdown that affected the rest of the industrial sector which experienced a low 0.6% level of growth for that year. Excluding the momentum generated by the reopening of Reficar, the total manufacturing industry showed a significant contraction that was close to 1.5% during the first half of 2017. When oil refining is excluded, the deterioration turns out to be greater since the output drop comes to 2.9%. In addition, there has also been a high degree of heterogeneity within the industrial sector that makes the analysis of sectorial trends more complex. Graph B1.2 corresponds to the aggregate of 33 branches of the industrial sector in several related groups up to August of this year. As can be seen, their level of dispersion is high.

Below are some empirical approaches used to try to analyze the trends of the different industrial subsectors. An exercise to estimate the marginal trends of each branch by breaking down the time series was done using the Monthly Manufacturing Sample (MMM in Spanish) as a basis.[3] This exercise makes it possible to estimate the trend component for each one of the 33 branches of the industrial sector and then establishes the following criteria: 1) red is assigned to that industrial branch where the monthly output trend drops for two consecutive months; 2) green when the monthly trend rises for two consecutive months, and 3) yellow in other cases (Graph B1.3). The results show that a large part of the manufacturing industry would be experiencing marginal contraction (red): the industries related to transportation equipment have been contracting for more than four years, while others, such as clothing, tanning, and chemical substances have been showing this same trend over the last year.

A weighted diffusion index is put together using the above-mentioned exercise. In this index, the red and yellow areas of the previous graph are added together while taking into account the weight of each industry. In other words, a weighted sum is calculated, which suggests an approximation to the percentage of the industry that grows or declines within the total. As a result, it can be seen that close to 60% of the industrial sector would be contracting if we only consider the trend component (Graph B1.4). Although the sectorial weakening persists, the sharpest deterioration took place towards the end of 2016 when 70% of the industrial sector went into a decline. This performance is similar to that registered during the stagnation of 2012 but is not as severe as the downturn that occurred in 2008 when around 80% of the industrial sector showed deterioration.

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* The authors are, as follows, a leading professional and an intern student in the Department of Programming and Inflation of the Economic Studies Division. We would like to express our gratitude to Adolfo Cobo for his comments. The opinions expressed here are the sole responsibility of the authors and do not imply any commitment on the part of the Bank or its Board of Directors.

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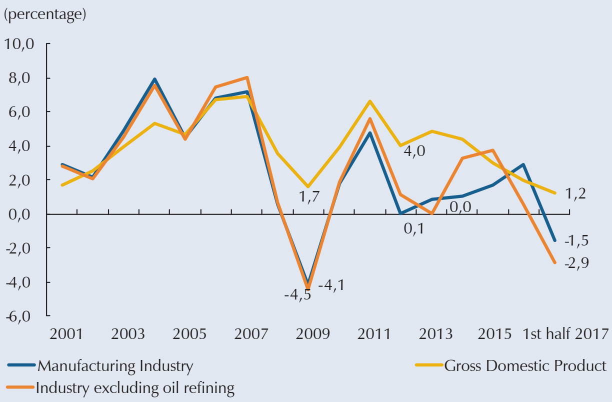
1 O. Avila, "International Trade and Industry", Box 1 of the Inflation Report, June 2012.

2 D. Parra, and J. Torres, "Recent Behavior of Colombian Industrial Production", Box 2 of the Inflation Report, December 2012.

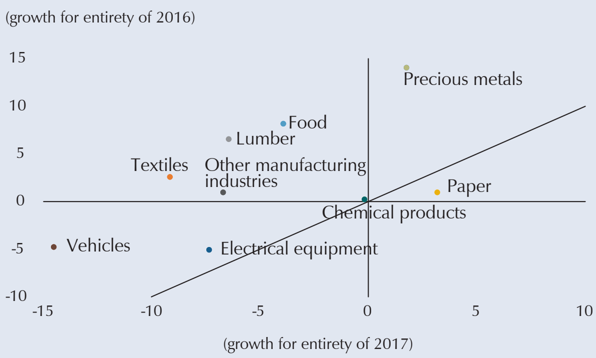
3 Using the X-12 Arima methodology.

Graph B1.1
Annual Growth of the Manufacturing Industry Including and Excluding Oil Refining



Source: DANE, authors' calculations.

Graph B1.2
Annual Growth of the Manufacturing Industry (large groups of activity)



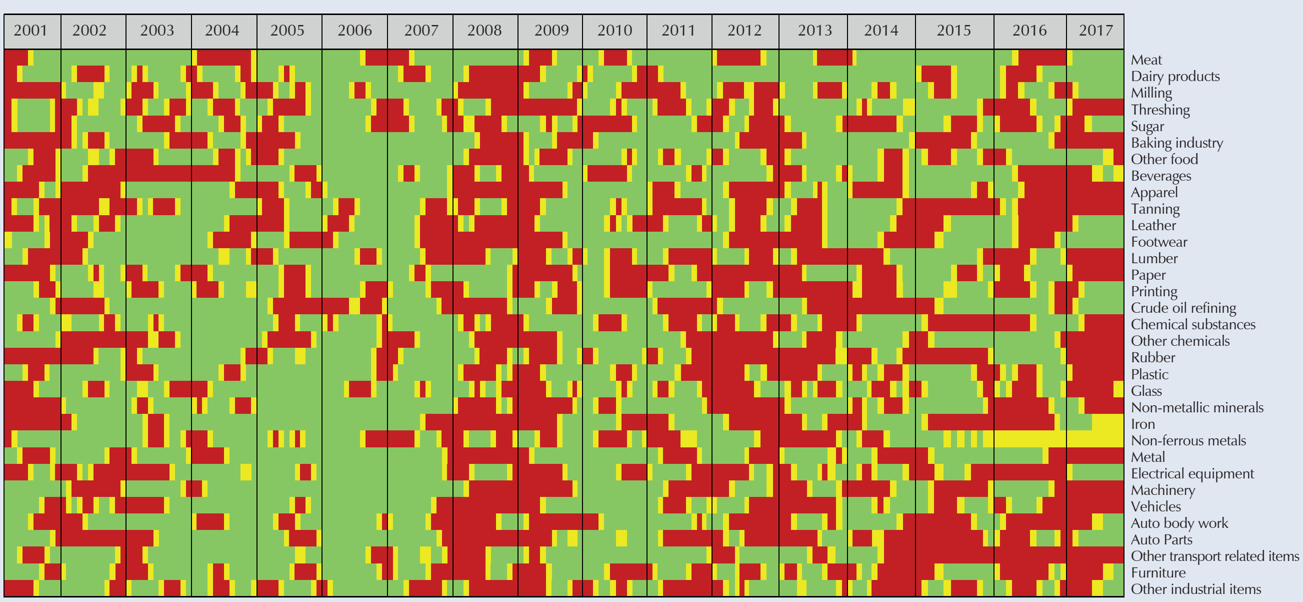
Source: DANE, authors' calculations.

Moreover, average growth and volatility for various groups in the manufacturing industry were also compared (Table B1.1). The majority of the sectors showed a lower level of volatility in the last four years in comparison to the remaining two periods. However, the average expansion rate has dropped for most sectors with the exception of the paper and printing, and precious metals branches, even though these two are the sectors with greatest variations in their trends.

In Abril et al. (2015),[4] sectorial heterogeneity is also described by using the cyclical trends of each one of the activities that the manufacturing industry in Colombia is made up of. The authors demonstrate that the economic cycle for a majority of the branches of the manufacturing industry is more strongly connected to foreign demand than to domestic demand; however, both are relevant factors in explaining the industrial cycle of the sector. In particular, the boom phases have an average duration of 36.4 months, while the duration for recession phases is 17.4 months. By type, the non-metallic mineral, electrical equipment, and chemical substance industries have full economic cycles with longer durations of approximately 90, 86.5, and 74.2 months respectively. In contrast, manufacturing related to the production of petroleum deriva-

4 D. Abril, L. Melo, and D. Parra, "*Heterogeneidad de los índices de producción sectoriales de la industria colombiana*", Borradores de Economía (Economic Drafts), No. 888, Banco de la Republica of Colombia, 2015.

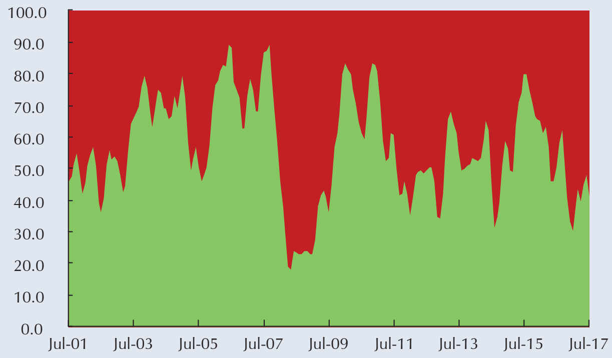
Graph B1.3
Changes in the Trend Performance of the Industrial Sector



Source: DANE, authors' calculations.

Graph B1.4
Industrial Diffusion Index Weighted by the Weight of Each Branch

(percentage)



Source: DANE, authors' calculations.

tives, apparel, and other chemical products is showing full cycles of shorter duration that are close to 42.2, 48.5, and 48.8 months respectively.

Declines in industrial exports during 2016, in both dollars and volume, were found after reviewing the figures for foreign trade. These drops were 8.7% and 7.4% respectively. However, so far this year and based on figures available as of August, the performance has been the opposite, showing an expansion of 5.5% in dollars and 13.5% in volume. Although the majority of the sub-branches registered deterioration during a large part of 2016, the figures have reflected a better performance over the last few months, and the percentage of branches that are contracting has decreased significantly.

Furthermore, using the consolidated figures from the 2015 Annual Manufacturing Survey (EAM in Spanish) and the foreign trade figures reported by DANE and EMM, the share of production going to foreign sales and the share of the total available supply represented by imports, understood as the total national output excluding exports and including imports, was estimated by branches of activity. Based on the results presented in Table B1.2, it can be seen that the sectors most exposed to international competition are those related to vehicle manufacturing, chemical substances, and production of metals. When performing a correlation exercise, it was found that there was a close relationship between the production performance in these activities and the foreign trade figures. It is difficult to extrapolate this conclusion for the rest of the industrial sector given the high heterogeneity in the results registered by sub-branches of that sector.

Table B1.1
Average and Volatility in the Growth of the Industrial Branches
(percentage)

Industrial sector	2002 to 2007		2009 to 2012		2013 to 2017	
	Average	Volatility	Average	Volatility	Average	Volatility
Food	1.67	6.32	3.46	5.90	3.20	5.36
Textiles	3.80	9.10	1.90	11.92	(1.34)	7.49
Lumber	10.20	8.17	(0.15)	9.64	(1.92)	8.87
Paper and printing	3.57	5.11	(2.21)	5.98	(0.33)	7.52
Precious metals	3.75	8.38	(0.29)	5.43	1.47	8.04
Chemical products	3.88	6.65	1.64	6.18	0.48	4.14
Electrical equipment	10.34	14.38	(0.92)	11.46	(2.13)	7.04
Vehicles	17.78	21.36	6.58	21.04	(5.54)	12.35
Other manufacturing industries	6.26	10.83	(6.68)	12.08	(0.47)	9.46

Source: DANE, authors' calculations.

Table B1.2
Performance of the Industrial Sector in Foreign Trade
Year to date
(percentage)

CIIU Code – Fourth revision	Industrial sector	Sales abroad / total production	Imports / full use of industry	Production	Exports	Imports
1010	Processing and preservation of meat, fish, crustaceans, and mollusks	3.4	12.8	(3.6)	(4.9)	8.8
1040	Production of dairy products	0.9	4.0	2.1	207.5	(18.9)

Table B1.2 (continued)
Performance of the industrial sector in foreign trade – Year to date
(percentage)

CIIU Code – Fourth revision	Industrial sector	Sales abroad / total production	Imports / full use of industry	Production	Exports	Imports
1050	Production of milling products, starches, and derivatives	1.4	8.3	4.3	39.6	(45.2)
1061	Coffee threshing	79.7	(1.5)	(2.6)	n. a.	n. a.
1070	Production of sugar and panela	27.8	5.8	(6.1)	35.1	56.6
1081	Production of bakery products	3.5	2.9	(1.1)	18.3	(7.9)
1089	Other food products	8.4	n. a.	5.9	n. a.	n. a.
1100	Production of beverages	0.8	4.7	(7.7)	21.7	3.0
1400	Spinning, weaving, and clothing	14.8	17.9	(9.4)	(1.9)	(0.2)
1511	Tanning and re-tanning of leather; re-tanning and dyeing of hides	53.6	31.2	(13.8)	(0.1)	(74.2)
1512	Manufacturing travel items, handbags, and other similar leather articles	46.6	29.3	(23.6)	(28.9)	20.9
1520	Footwear manufacturing	5.7	45.6	(0.5)	15.0	(17.2)
1600	Wood processing and its products	7.1	30.8	(4.2)	40.7	4.0
1700	Manufacturing paper, cardboard, and related products	17.9	16.2	5.9	18.0	9.6
1800	Printing	14.3	0.7	(3.6)	(3.7)	(3.8)
1900	Coking and oil refining	8.0	21.9	6.0	(11.4)	(20.0)
2010	Manufacturing basic chemicals and related products	32.3	63.2	4.9	(10.2)	15.6
2020	Manufacturing other chemical products	13.0	22.6	(1.2)	5.9	8.1
2210	Manufacturing rubber products	17.8	76.6	8.6	14.8	10.2
2220	Manufacturing plastic products	13.0	18.9	(1.6)	5.6	21.7
2310	Manufacturing glass and glass products	26.7	22.2	(2.0)	(14.5)	5.1
2390	Manufacturing non-metallic mineral products n.c.p.	5.0	10.0	(3.6)	4.1	4.5
2410	Basic iron and steel industries	22.4	45.2	(2.8)	(6.7)	37.3
2420	Basic precious and non-ferrous metal industries	89.4	82.6	(22.6)	(8.3)	(10.2)
2500	Manufacturing metal products	18.0	35.4	(3.8)	10.2	(0.1)
2700	Manufacturing electrical apparatus and equipment	26.5	48.3	(7.5)	7.7	1.1
2800	Manufacturing machinery and equipment n. c. p.	17.2	82.1	(7.1)	5.1	12.9
2910	Manufacturing motor vehicles and their engines	24.7	67.0	(19.0)	(4.6)	(9.1)
2920	Manufacturing bodies for motor vehicles, trailers	7.4	14.5	(22.1)	(65.2)	(55.2)
2930	Manufacturing parts, replacement parts and accessories (luxury) for vehicles	19.7	69.7	0.4	22.2	21.4
3000	Manufacturing other types of transportation equipment	2.5	72.6	(12.6)	90.5	(38.7)
3100	Manufacturing furniture, mattresses and box springs	7.8	15.5	(7.4)	5.6	16.5
3200	Other manufacturing industries	24.9	54.5	(6.7)	6.1	9.2

n.a. Not applicable.
Source: DANE, authors' calculations.

III. Recent Developments in Inflation

Annual consumer inflation has risen in the last two months on a scale that is somewhat lower than projected.

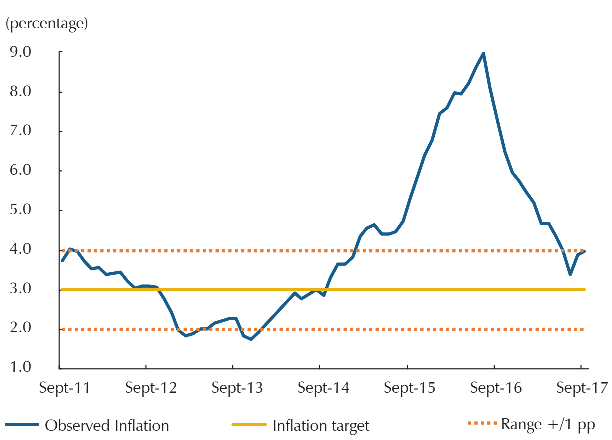
Nevertheless, the average for the four core inflation indicators continued falling although its level remained above the 3.0% target.

The recent rise in total inflation was concentrated in perishable food and is the result of a very low basis for comparison with the same period in 2016 rather than increases in the level of those prices associated with decreases in supply.

Generally, the shocks that drove inflation in previous quarters have vanished or are in the process of doing so, and currently, the excess installed capacity may be contributing to a convergence of inflation with the target.

In September, annual consumer inflation stood at 3.97%, a figure that is very similar to the one seen at the end of the second quarter. After 12 months of continuous declines, annual inflation reached a minimum recently in July of this year (3.40%) only to rise in August and September at a rate that is a little lower than had been anticipated in the previous reports (Table 6 and Graph 22).

Graph 22
Total Consumer Inflation



Sources: DANE and *Banco de la República*

The recent increase in annual inflation was mainly the result of the rise in the annual variation in the Consumer Price Index (CPI) for food and is attributable not so much to upward pressure on these prices as their normalization after the sharp declines that occurred once the shock from El Niño was overcome. This being the case, the low basis of comparison from August and September last year with absolute falls in the prices of food (perishables, especially) explains the rise in annual inflation for the same months in 2017.

The annual change in the other main components of the CPI (tradables, non-tradables, and regulated prices) remained stable or fell with respect to the levels seen last June. This suggests the absence of upward pressure on the bulk of consumer prices and even points to the presence of downward pressure.

Table 6
Consumer Inflation Indicators
(At September 2017)

Description	Weight	Jun-16	Sep-16	Dec-16	Jun-17	Jul-17	Aug-17	Sep-17
Total	**100.00**	**8.60**	**7.27**	**5.75**	**3.99**	**3.40**	**3.87**	**3.97**
Excluding food	**71.79**	**6.31**	**5.92**	**5.14**	**5.12**	**4.79**	**4.81**	**4.71**
Tradables	26.00	7.90	7.20	5.31	4.41	4.09	3.75	3.41
Non-tradables	30.52	4.97	4.85	4.85	5.21	5.20	5.23	5.21
Regulated items	15.26	6.71	6.19	5.44	6.01	5.03	5.57	5.68
Food	**28.21**	**14.28**	**10.61**	**7.22**	**1.37**	**0.20**	**1.69**	**2.22**
Perishables	3.88	34.94	6.66	(6.63)	(14.72)	(16.92)	(6.81)	(0.32)
Processed	16.26	12.09	12.56	10.74	3.29	2.24	1.71	0.84
Eating out	8.07	8.11	9.18	8.54	7.62	7.10	6.30	6.01
Core Inflation Indicators								
Excluding food		6.31	5.92	5.14	5.12	4.79	4.81	4.71
Core 20		6.82	6.73	6.18	5.31	5.22	5.00	4.87
CPI excluding perishable food, fuel, & public utilities		6.77	6.65	6.03	5.07	4.88	4.56	4.31
Inflation excluding food and regulated items		6.20	5.84	5.05	4.87	4.72	4.59	4.44
Average of all indicators		**6.52**	**6.29**	**5.60**	**5.09**	**4.90**	**4.74**	**4.58**

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

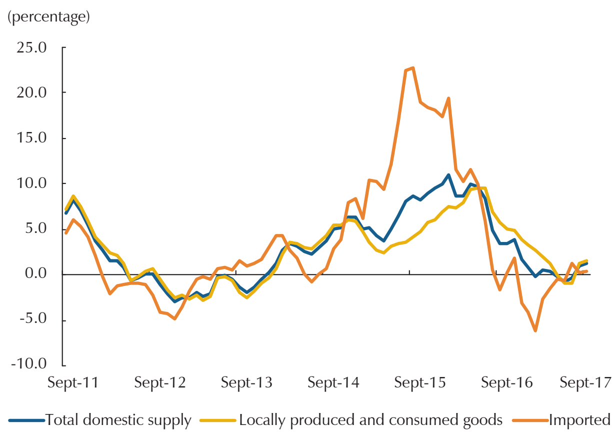
With respect to that, everything indicates that the transmission to the CPI of the accumulated depreciation of the peso between mid-2014 and February 2016 was completed last year, and its effect had probably already disappeared from annual inflation in the first half of 2017. Likewise, it seems that the increase in indirect taxes at the beginning of this year was fully transmitted in the first quarter and consequently, the price levels in the case of the areas affected have not increased as a result of that in the months since then. However, annual inflation is still showing the impact of this shock and will continue to do so until the beginning of next year, a full twelve months after the implementation of the new tax rates. Nevertheless, it is expected to disappear completely at the end of this period, so a decline in annual inflation due to this item is projected as is explained in Chapter V of this *Report*.

The weak pressure on prices also derives from the weakness of demand. In accordance with the output gap estimates, this is in negative territory today, and this suggests that there is excess productive capacity. This should limit the price adjustments in the case of a major number of goods and services, especially those that are less sensitive to indexing (see Chapter IV).

Likewise, in the case of non-labor costs, an approximation of which is the annual change in the producer price index (PPI) for the domestic supply (imported PPI plus internally produced and consumed PPI), significant upward pressure has not been seen for several months either. Even though the annual change in the PPI for domestic supply rose during the third quarter (as it went from -0.83% in June to 1.17% in September), this was due more to a very low basis for comparison during the same period the previous year than an effective increase in the level of prices in recent months. The above could indicate that the rate of adjustment for these prices is still very moderate (Graph 23).

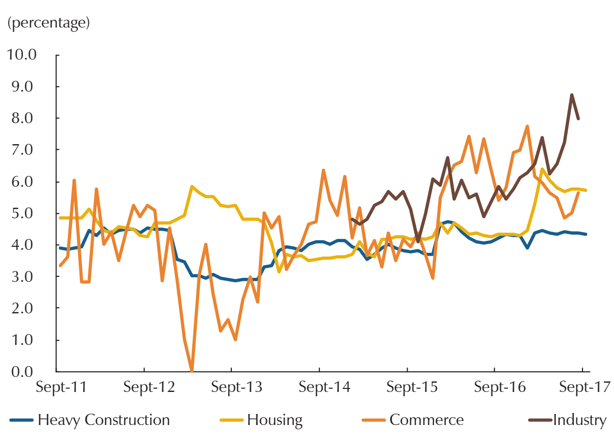
Information on labor costs remains unclear when determining what type of pressure is being brought to bear on prices since, depending on the sector, these are adjusting to annual rates that range from the roof of the target range (4.0%) to a little above the minimum wage increase that was decreed for 2017 (7.0%). Indeed, based on information as of August, the annual adjustment of the wages in the manufacturing industry rose that month (8.0%) with respect to June (7.2%) just as the annual adjustment for commerce did (from 4.8% to 5.6%). On the other hand, based on information as of September, wages in housing construction (5.7%) and in heavy construction (4.3%) did not show any significant changes during the third quarter (Graph 24).

Graph 23
PPI by Origin
(annual change)



Source: DANE.

Graph 24
Nominal Wages
(annual percentage change)



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

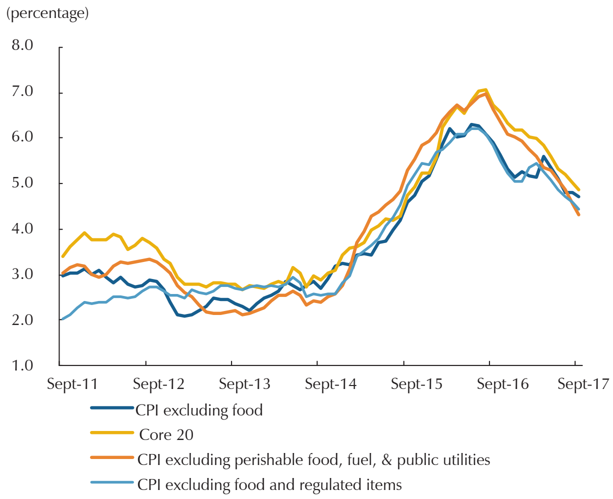
As was mentioned in Chapter V of this Report, the most recent estimates show a gap for the labor market that is positive and broader than the one seen the previous year. This suggests weak pressure on wages, at least in the last few months and for the remainder of 2017 which, at the same time, points to few pressures on the costs of production and, therefore, on consumer prices.

A. CORE INFLATION

In contrast with the recent trend of total inflation, the average of the four indicators for core inflation that are periodically monitored by *Banco de la República* decreased over the course of the third quarter (from 5.09% in June to 4.58% in September). All of the core inflation indicators declined during this period. The CPI excluding food went from 5.12% in June to 4.71% in September; the core 20 CPI, the one with the highest level, went from 5.31% to 4.87%; the CPI excluding food and regulated items went from 4.87% to 4.44%; and the CPI excluding staples, fuel, and public utilities was the one that declined the most: from 5.07% to 4.31% (Graph 25).

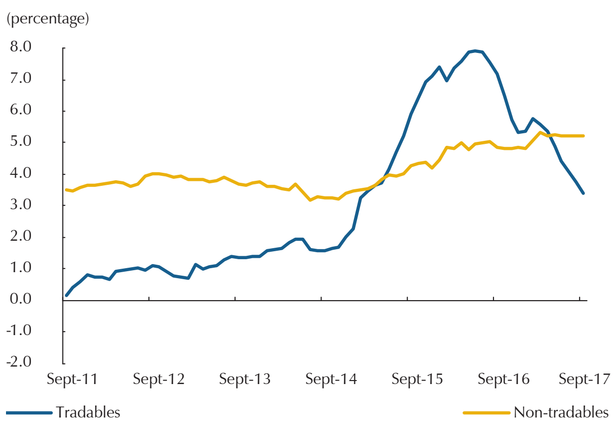
In spite of the successive drops in these core inflation indicators over the last year, all of them are still situated above the roof of the inflation target range

Graph 25
Core Inflation Indicators



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

Graph 26
CPI for Tradable and Non-Tradable Goods, Excluding Food and Regulated Items (annual change)



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

(2% to 4%). The indexation of these prices to past inflation and to wages, together with the upward impact of the more recent tax reform, have contributed to keeping these indicators at relatively high levels without the weakness of demand and the still moderate adjustments in the non-labor costs of production offsetting them.

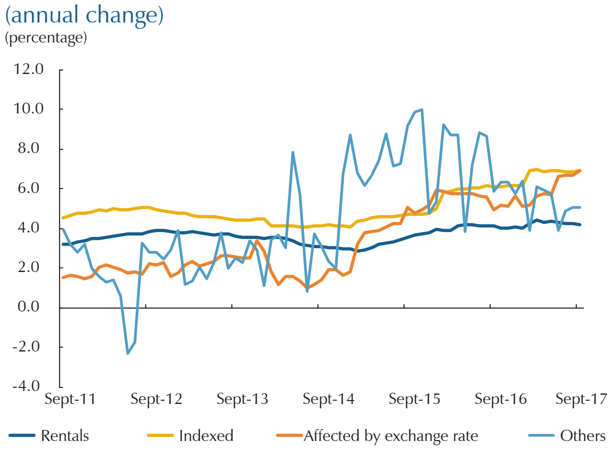
As has been mentioned, inflationary pressure was not perceived during the third quarter when the major groups of the CPI excluding food were analyzed. The segments of the CPI for tradables and regulated prices registered falls in the annual adjustment during the quarter while the CPI for non-tradables remained stable.

Perhaps the most notable fact in core inflation, measured with the CPI excluding food, is the significant decline, the largest among the three main sub-baskets, that appeared in the annual change in the GDP for tradables between June (4.41%) and September (3.41%). This stands out because until this sub-basket incorporated the upswings caused by the higher indirect taxes imposed by the most recent tax reform, its annual variation had been falling since the previous March, which suggests that the transmission of the accumulated depreciation in previous years is now complete and pressure from demand is weak (Table 6, Graph 26).

In the last three months, declines or minimal adjustments in the price level, of a broad range of tradable goods were seen. The vehicles CPI, which presented accumulated decreases of close to 1.0% in the third quarter and ended with an annual change of -0.7% in September, stood out due to its weight in the basket. A similar trend occurred in segments such as electrical appliances and furnishings for the house, electronic products, apparel in general, and telephone services, etc.

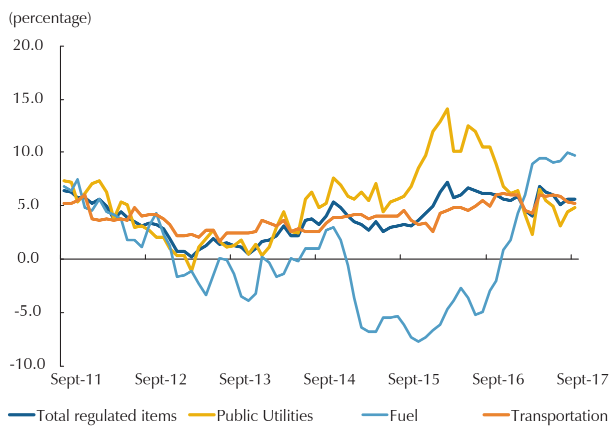
Within the CPI excluding food, the high stability in the annual change in the non-tradable component of the CPI also stands out. This has fluctuated between 4.8% and 5.2% in the last 17 months and remained at this latter level since last April and over the course of the third quarter. Within this sub-group, the performance has been varied with some upward pressure coming from items such as television services, furniture for the house (items that are most affected by the exchange rate) and services related to leisure activities (soccer tickets and "others": subgroup "remainder") (Table 6, Graph 27).

Graph 27
CPI for Non-tradable Goods, Excluding Food and Regulated Items
(annual change)



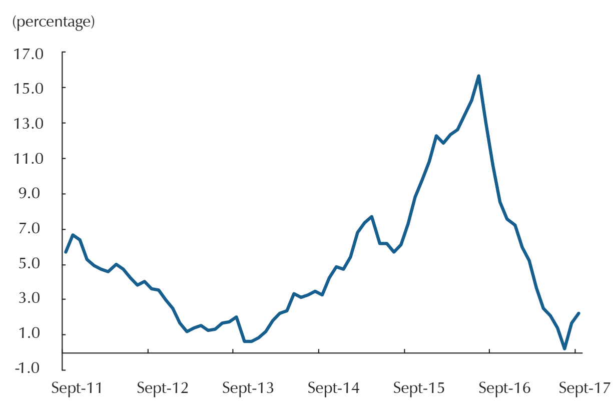
Source: DANE, calculations by *Banco de la República*.

Graph 28
CPI for Regulated Items and Components Thereof
(annual change)



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

Graph 29
Food CPI
(annual change)



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

In contrast, the items in the indexed segment (6.9%) within the non-tradables CPI did not show significant changes during the third quarter, although their annual change remains high since the increase in the minimum wage and inflation from last year have been incorporated into their prices. The annual adjustment of rentals declined slightly for the second consecutive quarter (it went from 4.43% in March to 4.33% in June and to 4.20% in September).

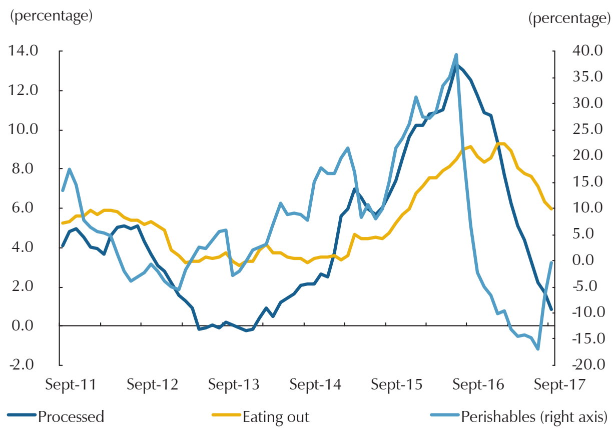
After having put upward pressure on annual inflation during the second quarter, the subgroup of regulated items put downward pressure on it during the third quarter since its annual change went from 6.01% in June to 5.68% in September. This occurred in spite of the fact that readjustments in the prices for fuel and utilities have been seen in the last two months (Table 6 and Graph 28). Nevertheless, these increases were offset by a decline in the annual change in urban transportation.

In the case of the fuel CPI , its annual change is high (9.8% in September) and rose with respect to the one in June (9.1%). The upward trend for fuel is particularly explained by the green tax, which levied 135 pesos on gasoline for automobiles at the beginning of the year, and various increases in the price of gasoline over the course of the year, which reflect the changes in international prices and the exchange rate, in particular.

B. FOOD PRICE INFLATION

Once the adverse climatic conditions caused by El Niño and the labor strikes in the agriculture and freight trucking sector disappeared, annual food price inflation dropped from its recent peak (15.71% in July 2016) and went to levels that were below the long-term inflation target (3.0%) in the months of June (1.37%) and July (0.20%). Starting in August, as had been expected, it rebounded, and in September it stood at 2.22% (Graph 29). This change in the trend for food prices is solely due to the trend of the annual change of the CPI for perishable food, which went from -14.72% in June to -0.32% in September (Graph 30).

Graph 30
Food CPI by Groups
(annual change)



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

The recent upward trend in the annual change of the food CPI for food is not caused by any weakening of the agricultural supply. In fact, throughout the entire year, food supply has been high as some indicators have suggested. Nor has it implied significant increases in prices as was indicated above since the cumulative increase in the food CPI between January and September this year has amounted to only 1.90% and the monthly change for the last four months has been negative. The surge in the inflation for this basket is a result of a relatively low basis for comparison with the same period last year when the prices began to return to normal after the upward impact of the El Niño phenomenon and the trucking strike.

Over the course of the year, the performance of the food CPI has been favored by the gradual stabilization of beef prices, due to which its annual variation has declined considerably (from 20.44% in December to only 0.42% in September). Added to the above is the relative stability of international prices for food and the exchange rate, which has made the decline in the annual change of the CPI for processed food possible (from 10.74% in December 2016 to 0.84% in September of this year).

At the same time, the smaller adjustments in the prices of perishable and processed food, together with a weak demand, has had an impact on the CPI for meals outside the home, the annual change for which, although still high compared to the target of 3.0%, has decreased significantly so far this year (from 8.5% in December of last year to 6.0% in September). Note that this segment is the one with the second highest weight within the group of consumer goods after rent.

IV. Medium-Term Forecasts

For the central scenario, the growth forecast of 1.6% was maintained for the entirety of 2017.

The Colombian economy may have bottomed out with regard to growth in the first half of this year and could have begun its recovery in the second.

The Colombian economy is expected to continue recovering gradually in 2018.

The inflation forecasts for the end of 2017 and for 2018 were lowered in this report.

A. ECONOMIC GROWTH FOR THE REMAINDER OF 2017 AND IN 2018

This Report maintains the GDP growth outlook for all of 2017 that was presented in the June report although within a narrower range of forecast. As was mentioned in Chapter II, the information available to date on the performance of different indicators of productive activity, seems to confirm the forecasts made by *Banco de la República´s* technical staff at on how the adjustment of output to the terms of trade shock would probably bottom out in the first half of the year and how, in the second half of the year, recoveries in its rate of expansion would begin to be seen.

It should be noted that the fundamentals of economic growth are showing signs of recovery in the medium- and long-term, which would make a surge in the rate of expansion of GDP in 2018 possible and even greater than what had been contemplated in previous versions of the Report. Therefore, the technical staff revised the forecast interval upward, including the figure for the central scenario or the most probable scenario, for 2018. As is usual in the preparation of this Report, these growth projections are consistent with the assumptions about the balance of payments in the foreign context (high, low, and most probable) for this and next year presented in Chapter I of this *Report*.

The process of adjusting the output to the terms of trade shock may have bottomed out in the first half of the year.

The assumptions about the external context for the current year and the next suggest that foreign demand may be invigorated towards the end of 2017 and in 2018, *The correction of the foreign debt has been more nominal than real. Therefore, the better terms of trade are expected to contribute directly to the performance of the gross national disposable income.*

which should favor the growth of GDP in the coming quarters. As was presented in Chapter I, the central scenario for the balance of payments includes an increase in the rate of expansion of the advanced economies and of our main trading partners in the region, but it would be primarily concentrated in the coming year. In addition, as a result of its recent trend, the projections of the international prices for the primary commodities exported by this country were revised upward for what remains of 2017 and for 2018. With that, the terms of trade will probably register a level that could be higher, standing around 8.8% in 2017 compared to what was seen in 2016 with an additional increase (although less pronounced) in 2018. The above could imply a better performance of US dollar-denominated net exports which, in turn, could contribute to the adjustment in the current account. It is notable that the correction of the foreign debt has been more nominal than real. Therefore, the better terms of trade are expected to contribute directly to the performance of the gross national disposable income in the future.

The growth forecasts presented in this chapter assume that the absorption will continue to be funded without any serious inconvenience due to the savings abroad, both in the remainder of 2017 and during 2018. With the approval of the tax reform, and what is presented in the General Budget Act of the Nation for 2018 with regard to the fiscal adjustment, *Banco de la República´s* technical staff and the risk rating agencies do not anticipate deterioration in the level of country risk. The above makes it possible to anticipate relative stability in the financing of the current account deficit.

However, risks of lower liquidity persist (or of a higher cost of that liquidity) for next year. Although the normalization process of the monetary policy in the advanced economies has gone as expected in previous versions of this Report, higher than expected increases in the international benchmark rates in 2018 cannot be ruled out. This could affect the capital flows that are entering the country and increase the level and volatility of the nominal exchange rate, thus leading ultimately to a more drastic correction of the imbalance in the current account than what had been considered in the central scenario.

The assumption that the expenditure on public works could expand at a significant rate for 2017 and 2018 is maintained.

In addition to the above, other important assumptions that are implicit in the projected growth of GDP for the remainder of 2017 and for 2018, are related to the performance of government expenditures and that of the investment in public works projects. In the former case, and as was discussed a quarter ago, positive public consumption is anticipated for the remainder of the year spurred mainly by a higher level of expenditure on the part of the regional and local governments. However, the impetus will probably be lower for 2018 given the election calendar and the adjustment of the fiscal accounts in view of the impact of the petroleum revenue in recent years. This would be consistent with what is stated in the *Medium-Term Fiscal Framework* (MFMP in Spanish) and in the General Budget Act of the Nation for 2018, and it implies a fiscal deficit that complies with what is allowed by the fiscal rules. In the second case, the assumption is maintained that spending on public works could expand at a significant rate in 2017, above all

Domestic demand will probably rise in the second half of 2017 and in 2018.

due to the contribution of different regional infrastructure projects such as tertiary roads and other engineering projects as well as the stimulus coming from a greater disbursement of funds for the roads considered within the framework of the 4G. These last items could also be especially relevant to economic growth in 2018 as could the reactivation of expenditure on infrastructure as a result of exploration and development in the mining sector.

That being the case, increases in domestic demand are projected in this *Report* for the second half of the current year and the next. This could occur in a context where the price shocks that affected inflation and real household income in previous quarters could be vanishing more rapidly than had been anticipated in previous reports. Thanks to that, the purchasing power of family income should show a greater than expected recovery which would favor private consumption for what remains of 2017 and in 2018. Furthermore, the projected growth of GDP for next year takes into account the fact that aggregate consumption and investment could be driven in some manner by the recent monetary policy actions as long as the market rates continue to react to the movements of *Banco de la República's* benchmark interest rate. The preceding assumes that the transmission of monetary policy to the market interest rates will continue over the next few quarters, and that loans to firms and households continue to flow under normal conditions. At this level, however, there are some risks which will be analyzed in Chapter V.

In this context, the expansion of GDP for expenditure in 2017 will be characterized by a slowdown in private consumption compared to 2016 even though additional deterioration is not expected in the second half of the year in contrast to the first, as was mentioned in Chapter II. The results for all of 2017 are consistent with the terms of trade shock to income and prices relative to the economy, as well as the impact of the increase in the VAT on the purchasing power of household income, and a macroeconomic environment marked by low levels of agent confidence. Nevertheless, private consumption, which will probably be higher towards the end of the year, is likely to strengthen in 2018 and is expected to show a modest growth rate but one that is higher than what may be seen in the aggregate of the current year.

Investment in capital goods will probably continue growing at positive rates for the rest of the year, and it is expected to surge even more in 2018. The latter is related, to some degree, to the reduction in the tax burden on companies that was approved in the TR, and to the better incentives that firms in the oil sector are likely to receive when they reactivate exploration and drilling activities due to the more profitable level of international prices for crude oil. In contrast, investment in building construction will probably register a significant drop for all of 2017 due to the excess supply of the non-residential component and the low demand for new housing for the high income segment.

Investment in capital goods will probably continue growing at positive rates for the rest of the year, and it is expected to surge even more in 2018.

Net exports, in turn, are expected to make a negative contribution to GDP for 2017 as a whole. This assumes that, for what remains of the year, sales of commodities abroad will recover even if it is at a lower rate than contemplated in the forecasts

Imports will likely register increases spurred mainly by the purchase of capital goods.

from previous quarters. For sales of non-traditional products, in turn, positive, although modestly paced, growth is projected. Imports will likely register increases spurred mainly by the purchase of capital goods. In contrast, the improved outlook for the foreign context makes it possible to forecast a better contribution to the growth of economic activity from foreign demand in 2018. Specifically, the greatest contribution will probably arise from an increase in the quantities exported (both traditional and non-traditional goods and services).

In the area of supply, the estimates of *Banco de la República´s* technical staff suggest that the production of tradable goods and services is likely to recover in the second half of 2017 and in 2018 to the extent that the accumulated depreciation, the search for new markets through trade agreements and more dynamic trading partners make it possible to stimulate the productive apparatus.

The manufacturing industry is expected to show a slight contraction or a close to zero growth throughout 2017. A substantial part of the sub-branches that it is composed of are expected to recover for 2018 in accordance with the better demand expected domestically and from our trading partners who purchase industrial products.

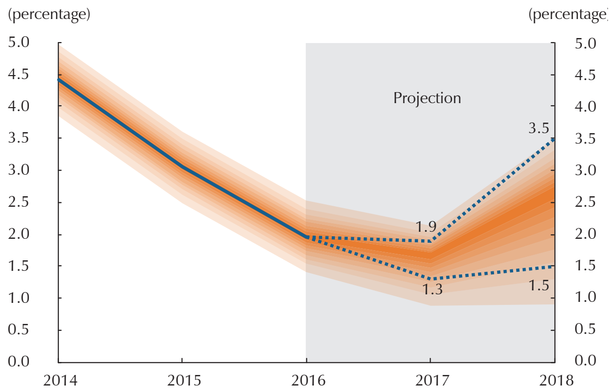
With respect to agricultural work, the better climate conditions seen for most of the year as well as the favorable prices, should lead to some good results in terms of the sectorial GDP for the entirety of 2017. This situation, to which better security and stability conditions in the rural areas are also expected to contribute, should remain the same for 2018. In the case of butchering cattle, there is uncertainty about the length of the cycle for holding cattle back which could culminate towards the end of 2017 and, in spite of predicting positive growth for 2018, expansion of this could be moderate.

With respect to the GDP for mining, in turn, a new contraction is expected for 2017 as a whole, although one that is smaller than the one in 2016. Although positive growth is expected for mining production towards the end of 2017, this will not offset the significant declines that were seen in the case of coal and crude oil production in the first half of the year. A modest expansion in mining is expected for 2018 based on prices for petroleum that are somewhat higher than they were in 2017 and on the investment projects that are being implemented this year. In the case of coal, the recent trend in exports of this mineral make it possible to anticipate a rebound for 2018.

The production of tradable goods and services is likely to recover in the second half of 2017 and in 2018.

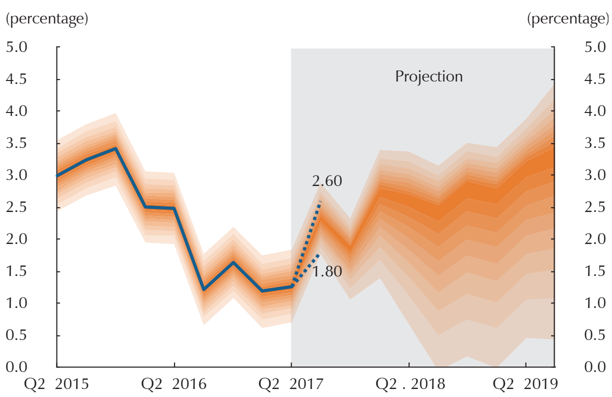
Last of all, the expected growth of the 4G public works projects will continue to stimulate non-tradable production and contribute significantly to the growth of GDP this year and next. It is notable that investment in public works for mining will probably also make it possible to forecast favorable growth for the sector based on the recovery of the prices of minerals and of exports; all of that generates higher levels of investment for the future. Furthermore, this sector has productive

Graph 31
Fan Chart of Annual GDP Growth



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

Graph 32
Fan Chart of Annual Growth of the Quarterly GDP



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

chains with branches such as industry and transportation, reason why it should also contribute to making these sectors more dynamic.

Given the above, Colombia's economic growth is expected to begin to gradually converge with its potential, beginning in the second half of 2017 and throughout 2018. That being the case, the forecast for output in the most likely scenario is around 1.6% for 2017 with a projection range that is between 1.3% and 1.9%. The recovery process for the Colombian economy will probably continue in 2018 and it is predicted that GDP will grow about 2.7% with a forecast range of between 1.5% and 3.5%.

This range is found within the fan chart of economic growth that is derived from the medium- and long-term models of Technical Management. At this time, the breadth of the intervals remains high and, as can be seen in Graphs 31 and 32, the tendencies are still downwards, especially for 2018. The central forecast remained unaltered for 2017 and was revised slightly upwards for 2018 compared to the one presented in the previous quarterly report. The balance of risks considers the elevated uncertainty in the international context and the performance that public consumption and public works could have in the policy horizon. In Table 7 it can be seen that the probability that economic growth will be between 1.0% and

Table 7
Ranges of Probability of the Fan Chart for GDP Annual Growth
(percentage)

Range	2017	2018
< -1.0	0.00	0.05
-1.0 - 0.0	0.04	0.90
0.0 -1.0	10.63	7.49
1.0 - 2.0	80.84	28.19
2.0 - 3.0	8.49	47.44
3.0 - 4.0	0.00	15.73
> 4.0	0.00	0.21
Between 3 and 5	0.00	15.94
Between 2 and 4	8.49	63.17
Between 1.5 and 3	53.79	64.92

Source: *Banco de la República*

A significant downward risk for inflation is the one associated with a lower growth for our trading partners.

2.0% in 2017 is nearly 80.8%. For 2018, the strongest probability is that this growth will be within the interval of 2.3% and 3.0%, and the chance of this is 47.4%.

The main downward risks are associated with lower growth on the part of our trading partners, primarily those in Latin American, which would have a substantial effect on the non-traditional trade. Furthermore, public investment could be more sluggish than was contemplated in the central scenario, and this will depend on the efficiency in implementation, in particular with what is related to the schedules for fourth generation public works. Something similar could occur in the trend of public consumption, which could be affected by the law regarding guarantees, and the forthcoming elections going into effect.

The main upward risks are related to a Colombian tradable productive apparatus that is more dynamic than expected given the accumulated depreciation that should stimulate that production, and taking into account that a large part of the non-traditional exports have been demonstrating significant recovery in recent years. They are also associated with the effects that greater investor confidence could have (caused by the implementation of the tax reform and the consolidation of the peace process) on capital flows and on the risk perception of the country, which would make lower volatility of the exchange rate possible. Note that for 2018, the relief that the tax reform gives to companies is expected to generate a higher level of investment.

B. INFLATION

1. Forecasts

The dynamic PATACONstochastic general equilibrium model, which was used to produce the inflation forecasts that are presented in this Report, was also used in previous reports but with some minor modifications. The central forecast which was obtained for total inflation decreased for different horizons in comparison to the one that was presented in the June report. Something similar happened to the central forecast for core inflation which, in the case of PATACON, corresponds to inflation excluding food and regulated prices.

Thus, according to the central forecast, the convergence to the inflation target of 3.0% may be occurring faster than forecast by the previous reports, and this would be the case for both total inflation and inflation excluding food and regulated items. It should be noted that the policy rule that the PATACON model is utilizing is a function of inflation excluding food and regulated prices.

The central forecast for inflation declined in comparison to the one presented in the June report.

The new forecast indicates that annual consumer inflation will probably end the year slightly below 4.0%, something that was not anticipated in previous reports. A marked drop in inflation is still expected in the first quarter of 2018 once the effect of the increase in indirect taxes, along with other factors, is diluted. Later, the downturn in the indicator should continue more gradually and, unlike what was presented in the previous report, annual inflation at this time is likely to be a little below the target level of 3.0% temporarily, during the second half of the year.

For inflation excluding food and regulated items, the trend will probably be similar although, in this case, a figure that is above 4.0% is still being anticipated for the end of this year. Likewise, its decline during the first quarter of 2018 would be more pronounced than that of total inflation, which would make it possible for this indicator to stand below 3.0% temporarily during the second half of that year while it stabilizes around the longer-term target.

The decrease in the forecasts is partly related to the fact that the projections made a quarter ago tended to overestimate September's results. This was true in the case of both total inflation and inflation excluding food. By sub-groups, the largest forecast errors occurred in the case of the food CPI and in the CPI for tradables excluding food and regulated items.

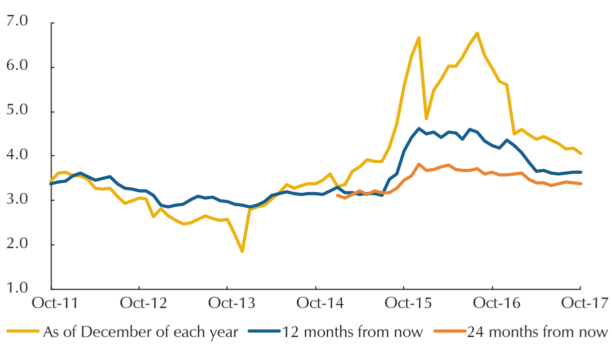
In addition, in the central forecast for this Report, other factors that are exerting downward pressure on future inflation, and that had already been identified in the previous reports, were strengthened.

First of all, the cumulative increase of the policy interest rate registered between September 2015 and July 2016 contributed to moderating the growth of expenditure and reducing inflation expectations to levels that were more compatible with the 3.0% target in previous quarters. These factors will continue to carry out an important role in the convergence of inflation with the 3.0% target in 2018 given the lag with which monetary policy operates (between four and six quarters on average) and in spite of the declines that have been registered in the policy rate since December 2016.

With respect to inflation expectations, the different sources of information suggest that these would probably have remained at about 3.5% during the third quarter for the medium- and long-term horizons. This is the case for the ones that were obtained from the monthly survey of financial market operators and analysts, which showed expected inflation, in mid-October, of 3.6% for twelve months in the future and 3.4% for twenty-four months in the future. These values are very similar to those obtained a quarter ago (Graph 33). For December of the current year, inflation is expected to be 4.07% which is lower than the expected inflation three months ago (4.16%).

Graph 33
Banks' and Stock Brokers' Forecasts of Annual Inflation

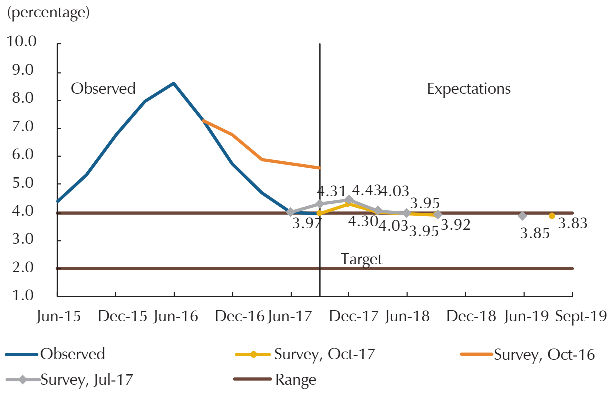
(annual change)



Source: *Banco de la República.*

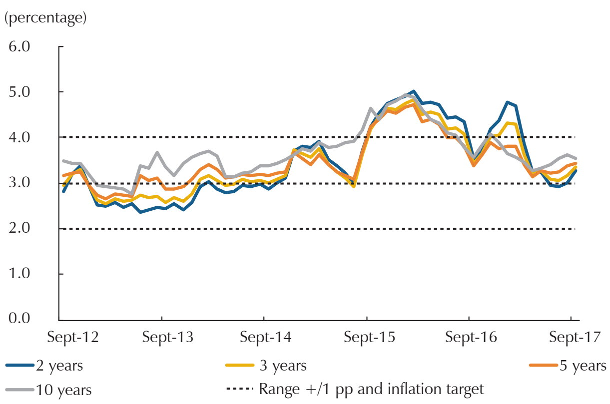
In the case of the quarterly survey of business owners, analysts, and trade unions, the levels are somewhat higher than those derived from the monthly survey,

Graph 34
Quarterly Survey: Observed Inflation and Inflation Expectations (for three, six, nine, twelve, and twenty-four months from now) (annual inflation)



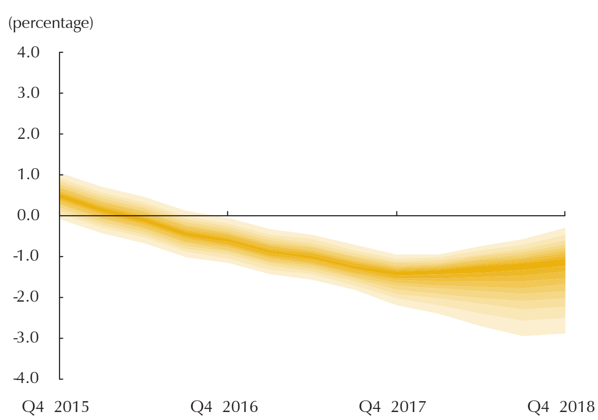
Note: The respective standard deviation is presented for each expectation.
Sources: DANE and *Banco de la República* (the quarterly survey of expectations)

Graph 35
TES-derived Inflation Expectations (two, three, five, and ten years from now)
(monthly average)[a/]



a/ Nelson and Siegel Methodology
Sources: *Banco de la República* (the quarterly survey of expectations)

Graph 36
Fan Chart of the Output Gap



Source: *Banco de la República*

but they decreased slightly compared to what had been obtained three months ago and now are below 4.0% for horizons of twelve and twenty-four months. The survey taken at the beginning of October, in particular, showed an expected inflation of 3.9% for twelve months from now (compared to 4.0% in the July survey) and 3.8% for twenty-four months out (compared to 3.9% in July). The figure expected for December of this year is 4.3% (Graph 34).

The information obtained from the TES yield curve in mid-October shows inflation expectations of about 3.34% at two, three, and five years, which is somewhat greater than what was obtained in mid-July. However, according to this source of information, the medium- and long-term expectations have remained consistently below 3.5% for longer than six months (Graph 35).

The reduction in total inflation and inflation excluding food and regulated items for the next few quarters, as suggested by the central forecast that is presented in this *Report*, is also the result of an aggregate demand that continues and will continue to present sluggishness with respect to the productive capacity of the economy. This is obtained from the estimates of the output gap which show that this will probably remain in negative territory for both for the remainder of 2017 as well as all of 2018 in spite of the recovery in terms of growth that is expected for 2018 (Graph 36). With a negative gap, the economy faces excess productive capacity, reason why the pressure on prices that is derived from demand growth tends to be limited.

The presence of a negative gap in previous quarters is likely to have generated stronger downward pressure than had been anticipated in some segments of the CPI such as tradable goods and services. This will also continue to happen in the short- and medium-term in the case mentioned and in the case of others such as the CPI for non-tradable goods and eating out, etc. This situation partly explains the decline in the central forecast in this *Report*.

The central forecast of the Bank´s technical staff includes a gradual normalization of monetary policy in the advanced economies. In particular, as was men-

The central forecast includes a gradual normalization of monetary policy in the advanced economies.

tioned in Chapter I of this *Report*, a 25 bp increase in the Fed's policy interest rate for the remainder of 2017 and two additional increases, for an accumulated 50 bp, over the course of 2018 are assumed. The forecast further assumes an improvement in the international prices for petroleum in 2018 compared to the average seen in 2017. Under these circumstances, capital should continue to flow into the emerging economies and into Colombia in particular without major changes in the financing costs, which will make it possible to envision some stability in the exchange rate and hence, limited upward pressure on consumer inflation by means of this channel. In spite of the above, risks of upward pressure on inflation persist.

Note that the upward pressure on prices attributable to the accumulated depreciation of the peso in previous years probably disappeared between late 2016 and early 2017. The central forecast from previous reports could have tended to prolong this process more than what had been seen in the end, and this could explain, in part, the overestimation of the inflation of CPI excluding food and regulated items, especially of tradables. This fact explains part of the decrease in the central forecast compared to what had been presented in previous reports.

Also the upward shock that hit consumer prices due to the increase in indirect taxes at the beginning of the current year is still expected to weaken in 2018. That shock, which was transitory in nature (at least with respect to its direct impact), should disappear from the annual change in the CPI twelve months after having appeared; reason why a significant decrease in total consumer inflation and inflation excluding food and regulated items is expected in the first quarter of 2018. This decline is, in addition, greater in the current Report than previously foreseen which also helps to reduce the projections.

Regarding food prices, the favorable climatic conditions that the current supply faces, together with a substantial increase in the amount of land cultivated, suggest limited price increases and an annual change that is below 3.0% for this segment of the CPI for what remains of the year and the beginning of the next. Added to the above is the fact that significant increases are not projected for international prices of agricultural raw materials imported by the country in the coming quarters, and that a relative stability in the exchange rate is expected for 2018 as has already been stated.

At the end of the second quarter of 2018, the upward shock on inflation, which was due to the increase in indirect taxes at the beginning of this year, is expected to diminish.

The central forecast extends the limited pressure caused by the food prices into the second half of 2018. This is important in order to explain the decline in the forecasts for total inflation at that horizon compared to the previous report, but it contains a high degree of uncertainty and faces upward risks as will be explained in the next section of this chapter.

In the current *Report*, a decline in the annual change of the CPI for regulated items, which will gradually decrease to 3.0% over the next eight quarters, is still being considered. The stability of the exchange rate and the moderate increase in the international fuel prices ensures the absence of shocks to this component of the CPI.

Finally, the new inflation predictions for 2018 include an implicit decline in inflationary inertia and a lower degree of indexation than was considered in the previous report. This is due to the fact that, at the close of 2017, inflation is likely to decline since it is currently somewhat below 4.0%. This same circumstance should contribute to wage adjustments at the beginning of next year being carried out at rates that are more compatible with the 3.0% target compounded by the existence of a relatively weak labor market.

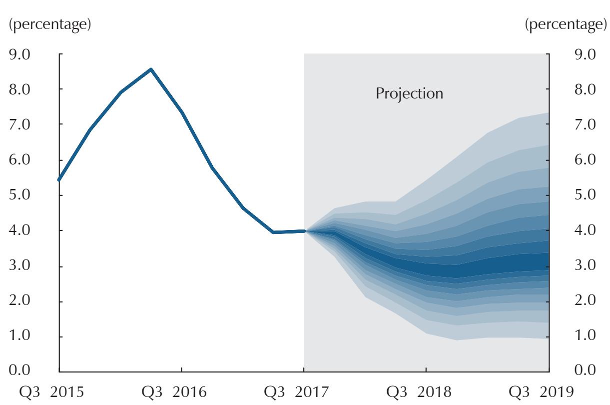
2. Balance of Risks

The balance of risks for total consumer inflation and for inflation excluding food and regulated items is given in the fan charts in Graphs 37 and 38. For this Report, both fan charts present an upward bias starting in the first quarter of 2018. The balance of risks for total inflation, like that for inflation excluding food and regulated items, was constructed on the basis of the central forecast for this variable derived from the Patacon model. The risks considered in the construction of the fan chart are presented below.

The upward risks considered are:

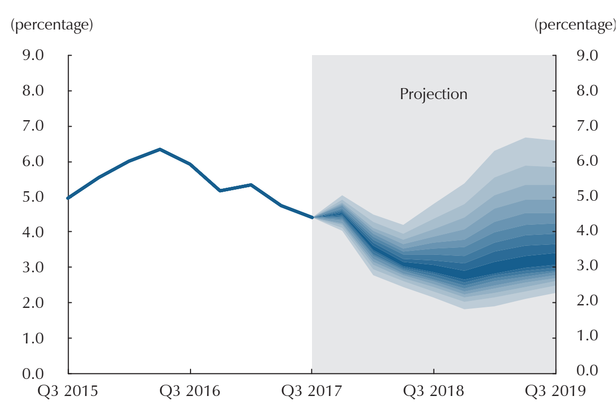
A path of food prices that is above what is expected in 2018: currently there is a good supply of agricultural products, which makes it possible to expect low food prices for the remainder of 2017 and early 2018. However, in the past, low prices have tended to discourage the supply several quarters ahead, especially in the case of perishable agricultural products that have a short production cycle. It is possible that the central forecast is underestimating this phenomenon and that the prices of food may rise more than what has been

Graph 37
Fan Chart of Total Inflation



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

Graph 38
Fan Chart of Inflation Excluding Food and Regulated items



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

A greater depreciation than projected represents an upward risk for inflation.

considered here, especially toward the second half of 2018. That would generate upward pressure on consumer inflation that has not been foreseen in the central forecast. The resulting less favorable trend in food prices could delay the convergence of total inflation with the target in 2018, especially if inflation expectations are affected.

Inflationary pressure from the exchange rate: in the current *Report*, two risk factors that put upward pressure on the exchange rate with respect to the forecast considered for this variable in the central scenario are highlighted.

In the first place, a drop in the price of crude oil in comparison to the level considered for this variable in the central scenario over the course of the horizon covered by the forecast cannot be ruled out. Although the worldwide inventory levels of crude oil declined recently thus leading to an increase in the international price, the sustainability of this increase depends on maintaining the agreement to reduce production established by members of OPEC which, considering that ruptures have been frequent in the past, cannot be counted on. In addition, a higher price could stimulate a larger supply on the part of producing countries that are not part OPEC. If this happens, there is the possibility that the Colombian peso will depreciate more than was considered in the central forecast.

A second factor has to do with the normalization of monetary policy in the United States, which is expected to continue to be very gradual, given the outlook for that country's economy. To be specific, the central forecast assumes three increases of 25 bp each in the Fed's policy rate between the fourth quarter of 2017 and late 2018. Nevertheless, the possibility that the increase in the interest rate on the part of the Fed could occur at a faster pace than anticipated cannot be ruled out if the favorable economic conditions that are currently expected materialize. If these additional increases are not discounted by the market, they could affect capital flows into emerging economies and put pressure on a depreciation of the exchange rate not considered in the central forecast.

A sharper depreciation could put direct upward pressure on inflation in 2018, primarily through the CPI for tradable goods. It could also have longer-lasting second round effects if it affects inflation expectations.

The main downward risk is:

The main downward risk for inflation will probably be a domestic demand that grows less than expected.

Domestic demand that grows less than expected: among the factors that could affect the trend of domestic demand and put downward pressure on it, the following stand out: less credit for households, household consumption that is lower than expected, and weak performance from public works. The first risk factor could be explained by the fact that the current deterioration in the quality of the loan portfolio could raise the perception of risk with regard to consumers, thus triggering increases in the restrictions when loans are granted (even with an interest rate that is declining) thus affecting the level of household consumption. The second factor, which will probably reinforce the effect of the first one, is related to the possibility that households may have a lower income due to the deterioration that the labor market has been showing, especially in the urban area. Last of all, regarding investment, new setbacks in the implementation of public works, like those that have already occurred, cannot be ruled out. None of these factors have been thoroughly considered in the central forecast. A downward risk for domestic demand translates into a downward risk for total inflation which could help this to converge with the target more rapidly, or even settle below it for a longer period of time than had been expected.

In line with the set of risks presented, the balance sheet suggests that the probability that total inflation will be below 4.0% in 2017 is 56%, and that it will rise in 2018 is 65% (Tables 8 and 9). Graph 39 shows that the balance of risks for the end of 2018 did not vary substantially in comparison to the one in the previous report although the most probable value for the projected inflation (central forecast) decreased a little as was mentioned above. It should be noted that the range of the function of forecast density that is shown in Graphs 37 and 38 only includes 90% of this based on the shaded area. These results, just like the central forecast, assume an active monetary policy in which the policy rate is adjusted in order to guarantee that the target is reached.

Table 8
Estimated Probability of Inflation being between 2.0% and 4.0% by December 2018
(percentage)

Report	Probability
March 2017 Report	46.72
June 2017 Report	44.65
September 2017 Report	47.59

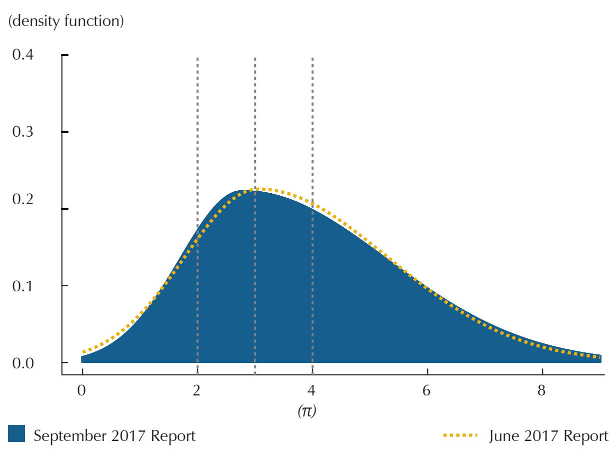
Source: calculations by *Banco de la Repúblic*a

Table 9
Fan Chart´s Range of Probability for Total Inflation
(percentage)

Range	2017	2018
< 2.0	0.00	17.82
2.0 - 2.5	0.03	11.31
2.5 - 3.0	1.18	12.63
3.0 - 3.5	13.49	12.35
3.5 - 4.0	41.33	11.30
> 4.0	43.98	34.59
Between 2 and 4	56.02	47.59

Source: calculations by *Banco de la República*

Graph 39
Cross-section of the Fan Chart of Total Inflation for December 2018



Source: *Banco de la República*.

Box 2

UNCERTAINTY ABOUT THE REVISIONS AND CHANGES IN THE FORECAST FOR THE GDP OF THE QUARTERLY NATIONAL ACCOUNTS

Daniel Parra
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The data published by the National Bureau of Statistics (DANE) on the quarterly Gross Domestic Product (GDP) are used to evaluate or confirm existing relationships between variables, to forecast their future values, and to provide support for decisions on economic policy. However, many of the figures available are revised due to the lagged inclusion of information from companies' balance sheets and other sources that cause variations in the quarterly accounts with respect to the first available results published. This generates uncertainty and partially affects the economic analysis and the adjustment of the econometric forecast models. The revisions of these series are mainly done to introduce new and better data, update the seasonality factors, correct errors, and because of methodology or base year changes (Sleeman, 2006).

Taking the above into account, it is important to study the magnitude and the bias of these revisions and their likely relationship with the volatility of the economic series. Below, an analysis is done of the revisions of the GDP annual variations in the Colombian economy and in the large branches for the period between the first quarter of 2002 and the second quarter of 2017. In addition, and in order to include the change of methodology and base year in the DANE´s[1] calculation of GDP at constant prices, done at the beginning of 2010, the different calculations were carried out on the total of the sample and on the data included between the first quarter of 2010 and the second quarter of 2017.

The revision of the annual variation of GDP g periods is defined below as the difference between the annual change of GDP for period t published in $t + g$ and the annual change of GDP for period t published at time t[2]. Thus, the revisions can be expressed as:

$$R_t^g = \Delta GDP_{t+g} - \Delta GDP_t, \ with\ g = 1, \ldots, n$$

Where,

R_t^g is the revision done periods ahead for period t.

ΔGDP_{t+g} is the annual variation of GDP for period t, published g periods ahead of its first publication.

ΔGDP_t is the annual variation of GDP for period t at the time of the first publication.

In this exercise, the revisions that are calculated were made between the first publication and the different quarterly releases for up to four years ahead of the initial publication; i.e., an evaluation period of sixteen quarters is considered. To do this, the following statistical parameters will be used:

Average revision (AR): this measurement is defined as the simple arithmetic average of the revisions made for a certain number of periods ahead; in other words:

$$AR^g = \frac{1}{n}\sum_{t=1}^{n}(\Delta GDP_{t+g} - \Delta GDP_t) = \frac{1}{n}\sum_{t=1}^{n} R_t^g$$

Where n corresponds to the number of observations.

This measurement makes it possible to determine whether the revisions g periods ahead were upwards (or downwards) on average; in other words, if the data later announced are higher (or lower) on average than the data initially published. Graph B2.1 shows the AR for the annual growth of GDP for g periods ahead, where g_1 indicates the simple arithmetic average of the revisions one quarter ahead; i.e., the average difference between the growth rates announced and those registered in the publication issued immediately afterward. Likewise, for instance, g_4 indicates the same difference with respect to the information published after one year. It can be seen that the revisions of GDP growth have, on average, an upward trend

* The authors are, as follows, a leading professional, a professional specialist, and intern students in the Department of Programming and Inflation of the Economic Studies Division. We would like to express our gratitude to Adolfo Cobo for his comments. The opinions expressed here are the sole responsibility of the authors and do not imply any commitment on the part of the Bank or its Board of Directors.

1 Using the year 2000 as the base and a methodology based on the simple Laspeyres index, GDP was calculated at constant prices starting with the first quarter of 2002, and ending with the fourth quarter of 2009. In comparison, the base year to calculate GDP was changed starting in the first quarter of 2010, and 2005 was taken as the reference point. Likewise, the Chained Laspeyres index was chosen as the new method. See DANE (2010) "Quarterly National Accounts of Colombia: new base year 2005".

2 This growth corresponds to the first publication issued for that quarter.

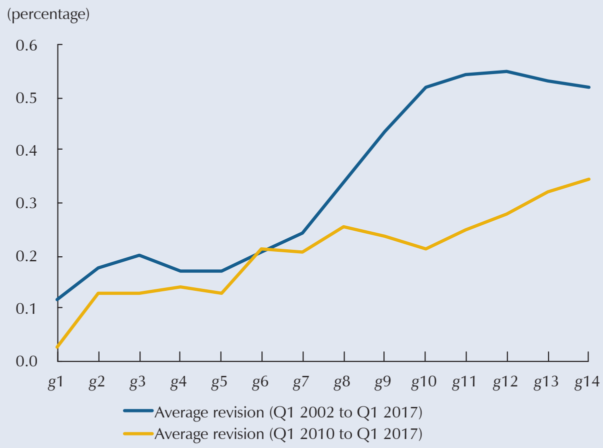
for the two samples. However, it can also be seen that the results are lower when only the data beginning in 2010 is used.

Average absolute revision (AAR): this measurement is defined as the simple arithmetic average of the absolute value of the revisions made for a certain number of periods ahead; i.e.:

$$AAR^g = \frac{1}{n}\sum_{t=1}^{n}\left| \Delta GDP_{t+g} - \Delta GDP_t \right| = \frac{1}{n}\sum_{t=1}^{n}\left| R_t^g \right|$$

Where n corresponds to the number of observations.

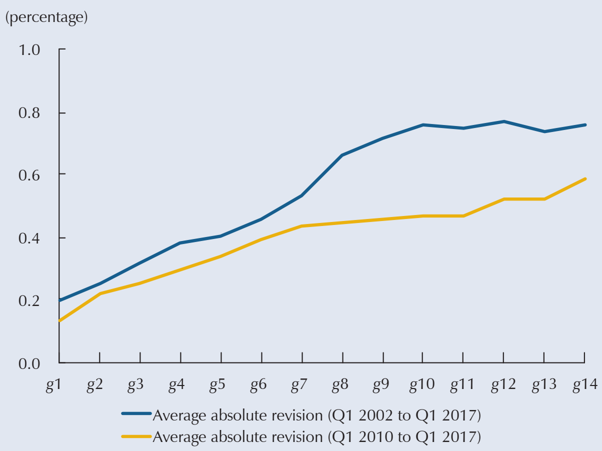
Graph B2.1
Average Revision for Annual GDP Growth



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

This measurement makes it possible to estimate, on average, the absolute magnitude of the revisions made g periods ahead. As can be seen in Graph B2.2, the magnitudes of the revisions are greater on average as more distant horizons are considered. In addition, the average magnitude of the revisions is lower when the period starting in 2010 is considered as compared to what occurs if the entire sample is included. This allows us to state that the new methodology of chained indices used by DANE presents a lower number of revisions than what has been registered in previous instances.

Graph B2.2
Average Absolute Revision for Annual GDP Growth



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

When this same exercise was carried out by branch of activity, it was found that the sectors with the largest degree of revision are: construction; electricity, gas and water utilities; and industry, respectively. Note that while the bias in the revisions for the first two activities is upward, the one for the last activity is downward (Table B2.1). Likewise, it is evident that the level of dispersion among sectors of both the average revision and the average absolute revision are more significant when they are calculated over a longer horizon. Finally, the number of sectors that are revised upward is greater than the number of those revised downward. This fact is in line with the information found for the total economy.

Revisions are not the only source of uncertainty when forecast exercises are carried out. The volatility of each one of the series, which can be calculated through the use of data dispersion measurements, must also be kept in mind. Since it is directly associated with uncertainty, the volatility makes it difficult to forecast the series. This volatility may be caused by intrinsic characteristics of the series, exogenous shocks, or issues with its measurement. Therefore, the revisions made of the GDP may affect the performance of these series and increase their volatility, and thus they become a source of uncertainty. In general, Table B2.1 shows how the sectors with the highest AAR also have greater volatility.

The construction sector presents the highest level of volatility, followed by the mining sector (fifth column of Table B2.1) once the standard deviation of the annual GDP growth is calculated by sector. The issues involved in calculating and measuring this variable are one of the causes of high volatility in the construction sector.[3] However, this may also be caused by the magnitude of the GDP quarterly revisions. In the case of mining, the volatility is mainly attributed to external shocks, especially those related to the international prices of raw materials. The other branches of the economy, in turn, show a relatively stable performance.

The volatility and uncertainty derived from the revisions complicate economic analysis and forecast exercise for *Banco de la República´s* technical staff and for the market analysts. Graph B2.3 shows an exercise in forecast evaluation that takes the information given by the analysts in the statistical appendices of each Inflation Report as a reference. This was used to estimate the changes in the projection of

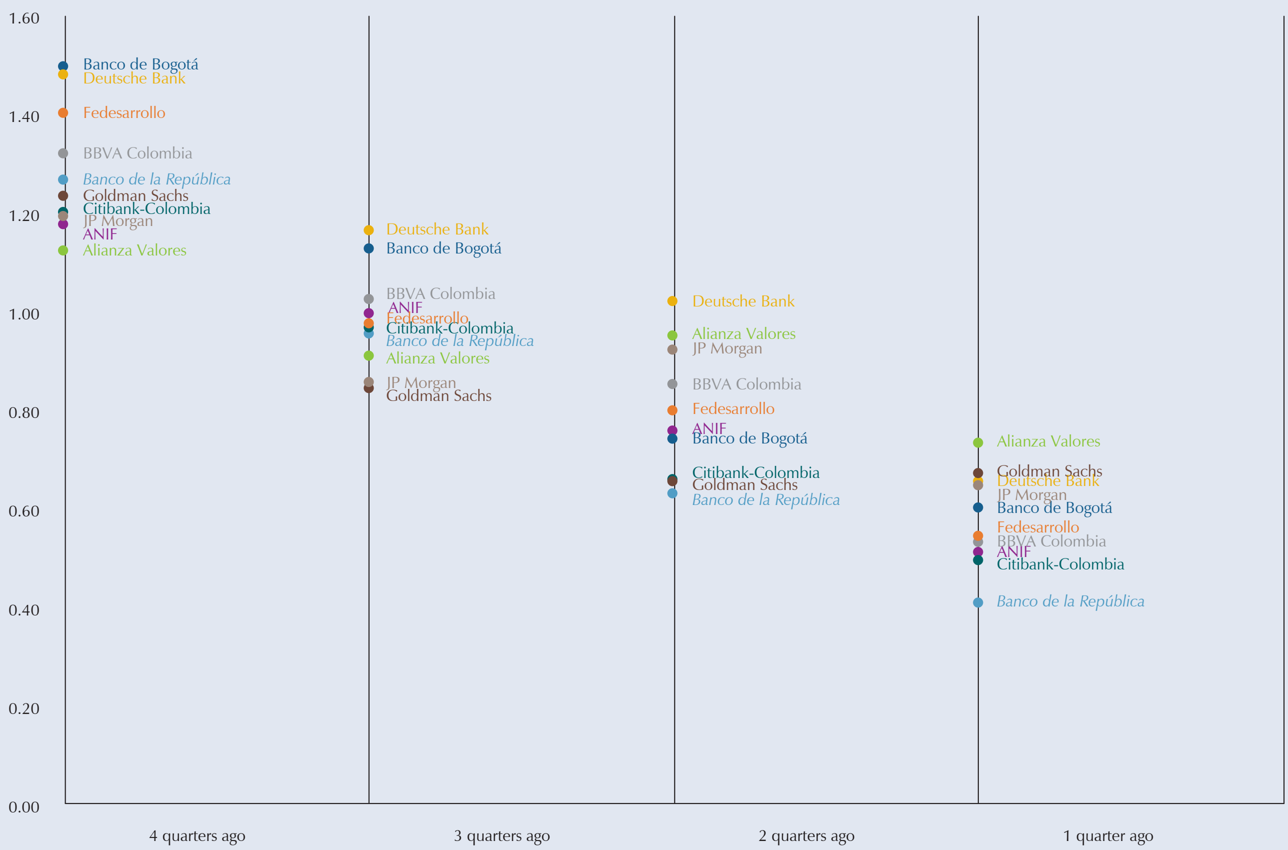
3 See Box 1, "Measure of public works in the GDP," in the Board of Directors Report to the Congress, March 2013.

Table B2.1
Average Revision, Average Absolute Revision, and Average Historical Standard Deviation

	Average revision		Average absolute revision		Average historical standard deviation
	g2	g4	g2	g4	
Agriculture	(0.04)	0.09	0.70	0.92	2.21
Commerce, Repairs, Restaurants, & Hotels	0.14	0.13	0.47	0.71	1.56
Construction	0.40	(0.30)	2.04	2.86	6.57
Electricity, Gas, and Water	0.62	1.18	0.84	1.49	1.41
Financial establishments	0.14	(0.05)	0.37	0.74	0.86
Industry	(0.40)	(1.01)	0.87	1.75	2.56
Mining	(0.04)	0.01	0.62	0.90	3.71
Social, Community, and Personal Services	0.18	0.23	0.38	0.58	1.30
Transport, Warehousing, and Communications	0.12	0.16	0.54	0.79	1.89
Total	**0.18**	**0.17**	**0.25**	**0.39**	**1.25**

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

Graph B2.3
RMSE of Forecasts Compared to the First Publication



Source: DANE, Inflation Report appendices, calculations by *Banco de la República*.

annual GDP from the first quarter of 2004 to the first quarter of 2017. As can be seen, the forecast error made one year before for the projection of GDP for the year following it, stands between 1.1 and 1.5 percentage points (pp) on average. Later, when more information is available and as the forecast horizon approaches the date when the annual GDP data is published by DANE, it is clear that forecast errors get significantly reduced. In particular, the forecast error ranged between 0.35 and 0.75 pp when the exercise was done the previous quarter. In addition, there is no substantial variation in the dispersion of the projections that the analysts give for each one of the horizons under evaluation. A reduction in these measurements for all horizons is seen when the selected period of analysis starts in 2010.

As mentioned above, a large part of the forecast errors could be related to the uncertainty derived from the revisions done by DANE between publications and the volatility in the measurement of certain GDP components such as public works. Nonetheless, the 2010 changes in the methodology used by DANE significantly improved the economic analysis; most analysts were able to limit their forecast errors when the revisions done to the macroeconomic figures were reduced in magnitude.

V. Risks to Macroeconomic Stability

The Colombian economy is still adjusting to the multiple shocks, both foreign and domestic, that it has received in recent years. Likewise, the macroeconomic imbalances that had accumulated are still being corrected.

The central scenario of this report projects that the economy will continue to adapt in an orderly fashion in a context in which income from abroad and domestic demand are recovering.

Going forward, unanticipated rises in the cost of foreign financing, abrupt drops in the prices of the main commodities the country exports, or persistently low confidence levels of households and/or businesses, are the primary risks the country's economic recovery faces.

As was mentioned in previous reports, the Colombian economy has shown signs of an orderly macroeconomic adjustment in response to the different external and internal shocks that have affected it in the last few years. A downturn in foreign demand on the part of our country's trading partners and a series of domestic supply shocks, such as El Niño and the trucker's strike, was added to the negative shock to the terms of trade that was generated by the significant reduction in the price of petroleum. Taken together, these had a negative impact on the growth of economic activity and trend of inflation.

In the previous scenario, the aggregate demand has been adjusting to the new dynamics of national income and to some changed conditions abroad. The impact of several of the shocks registered in previous years has been waning, in some cases faster than expected, and the foreign demand is recovering. These facts improve the outlook for the country's economic activity. Thus, the central scenario postulated in this Report includes macroeconomic imbalances continuing to adjust in an orderly fashion in both the foreign and domestic spheres for what remains of the year.

In this adjustment process, the relative stability of the exchange rate, after the actual depreciation, stands out. The convergence of inflation to its long-term target, which has been occurring at a rate that is a little better than what had

The Colombian economy is continuing to show signs of an orderly macroeconomic adjustment due to a solid policy framework and the partial reversal of some of the shocks that had affected it in recent years.

been estimated, also stands out. The risk premia, in turn, have gone back to lower levels, the deficit in the current account has been reduced, and domestic demand is expected to continue recovering.

This accommodation of the economy has been the result of a solid economic policy framework that includes inflation targeting by means of a floating exchange rate, sustainability criteria in the management of public finances through the implementation of the fiscal rule, regulations that seek the stability and reinforcement of the financial system, an increase in the level of the international reserves, and access to a flexible credit line with the International Monetary Fund (IMF). Likewise, the recovery of Colombia's terms of trade in recent months and the better rate of growth in foreign demand from our trading partners may be contributing to better conditions for the recovery of the country's income from abroad.

In spite of the previous positive signs, the projected rebound in the Colombian economy and the correction of the macroeconomic imbalances face some risks. With respect to the expected adjustment of the current account, the trend of income and expenses depends on events that have a high level of uncertainty and may not materialize. For example, the hope is that the current petroleum prices will be maintained and that the recovery of foreign demand will be sufficient to boost exports other than commodities. Concerning the outflows, the forecasts suggest that the recovery of expenditures will be consistent with the current national income and that the demand for tradable products will not generate additional pressure on the current deficit. Therefore, on this last point, the assumption is that some imports of goods and services will gradually be replaced by those from national production.

Concerning the level and cost of foreign financing, the main risks are related to the uncertainty about the speed with which monetary policy will return to normal in the developed countries and about the perception of the risk regarding emerging economies. The assessment that the international market makes of the adjustment seen in Colombia's current account is another risk to consider. All of this could affect access to and the cost of foreign financing, influence the trend of the nominal and real exchange rate, and have an impact on the country's prices and economic activity.

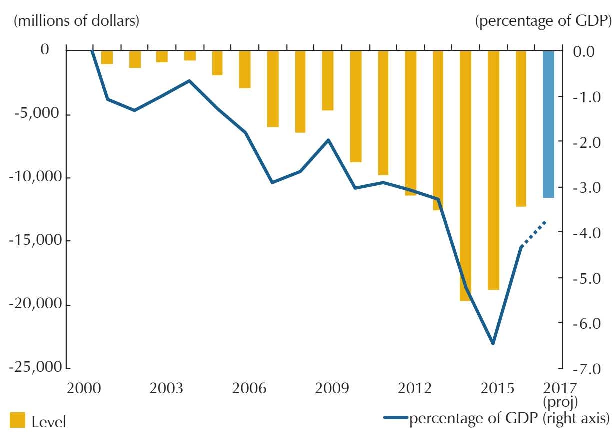
The main risks that the economic recovery of the country faces are the uncertainty regarding the normalization of monetary policy in the advanced countries, abrupt drops in the prices of the main commodities, and persistently low confidence levels of households and businesses.

In the domestic context, the indicators of household and business confidence remain at low levels and economic sectors that are labor-intensive, such as trade and housing construction, registered mediocre or negative growth. If this trend becomes accentuated, the level and quality of employment could deteriorate and affect other markets such as credit. It is notable that the indebtedness in the economy remains at historically high levels and that the most recent loan portfolio data continue to show declines in their quality. In conclusion, additional deterioration could mean obstacles to the recovery process of the economy through mechanisms that may halt the transmission of the monetary policy or that restrict the supply of credit.

In the rest of this chapter, recent developments and some perspectives and considerations regarding the current account, the real exchange rate, indebtedness, and housing prices, which are variables that the literature has identified as relevant for identifying possible macroeconomic imbalances and understanding the adjustment process, will be presented. The Index of Macroeconomic Imbalance (IMI),[7] which combines the estimated imbalances for each one of these variables, is also included.

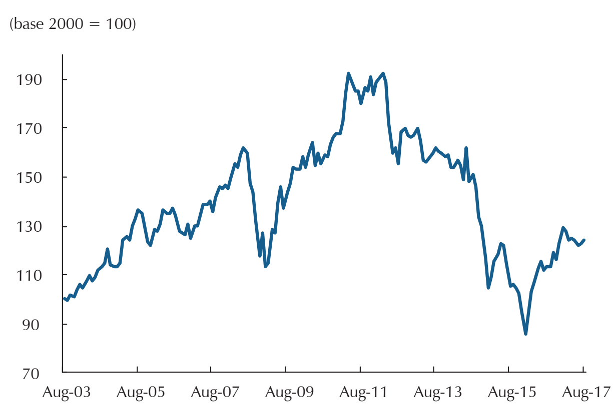
A. CURRENT ACCOUNT AND REAL EXCHANGE RATE

Graph 40
Deficit in Current Account



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

Graph 41
Terms of Trade Index[a/]



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

As of the first half of 2017, the information on the current account is still showing signs of adjustment in the external imbalance. During this period, the current deficit stood at 4.1% of GDP, a figure that is lower than the one registered during the same period the previous year (4.6% of GDP). This trend is expected to continue for the entirety of 2017 and this will probably take the current account deficit to 3.7% of GDP by the end of the year (Graph 40), thus completing two continuous years of external adjustment.

The trend of the deficit in the current account has occurred in a context of a recovery in foreign demand, better terms of trade caused by an upturn in the prices of commodities, and conditions of foreign financing that remain ample although with a slightly higher cost. All of this has contributed to continuing the orderly adjustment of the country's foreign accounts.

In contrast to what was seen in 2016 when the adjustment of the foreign balance was explained by a sharp contraction of external expenditure which reflected a lower domestic demand for imported goods and, in particular, a tightening of investment, in 2017 the foreign adjustment is likely due to a better environment for prices and demand for Colombian exports. Specifically, the estimate of the current deficit for 2017 as a whole assumes a significant recovery in income from abroad, especially

7 See Arteaga, Huertas and Olarte (2012). "Índice de desbalance macroeconómico" (Index of Macroeconomic Imbalance), Borradores de Economía (Economic Drafts), no. 744, *Banco de la República*.

In 2017, the lower deficit of the current account has occurred in a context of recovery in domestic demand and an upturn in the prices of commodities.

income associated with the balance of trade and services explained by: 1) a recovery of Colombia's terms of trade (Graph 41), which has favored exports of commodities, primarily those from the mining-energy sector; 2) better performance of exports of non-traditional products spurred by our trading partners' greater external demand and the cumulative effect of the depreciation of the Colombian peso; 3) the positive impetus of income from services, especially tourism, associated also with the effect of relative prices and the accumulated investments in the sector, and 4) significant growth of workers' remittances related to the improved economic outlook in the countries that these funds come from.

Expenses abroad, in turn, will probably register moderate growth in 2017 but less than the estimate for income, which explains the continuation of the adjustment in the foreign balance. The greater foreign expenses will probably be largely fueled by the effect that the recovery of commodity prices has on the remittance of profits from the mining-energy sector, the imports of technical services for the petroleum sector, and on the increase in the value of freight payments abroad. In addition, imports of goods will probably register a slight recovery compared to the sharp contraction seen in 2016. This will reflect the fact that some investment components are more dynamic, linked to a surge in domestic demand and the increase in purchases abroad of supplies for industry that, to some extent, supports the trend of the non-traditional export sector.

The availability of funds from international financing has been important in the adjustment process of the Colombian economy. These funds have made it possible for the foreign accounts to adapt to the new conditions in the worldwide context of commodity prices and a global activity that has shown signs of recovery to date. In this case, the high liquidity of the international capital markets and the relatively low cost of funding have favored a process of gradual and orderly adjustment of the economy and its accounts abroad. The risks on this front will probably continue to be related to the uncertainty about the speed and effects of the normalization of monetary policy in the United States.

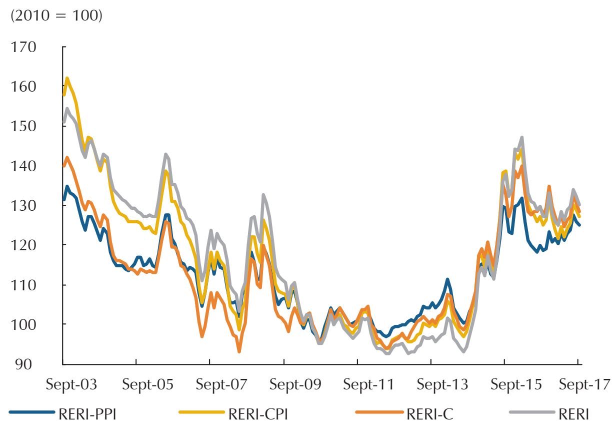
The adjustment of the foreign imbalance will depend, in part, on the replacement of the consumption of some imported tradable goods, the increase in exportable products, the international prices for commodities, and the cost of foreign financing.

In the future, there is the risk that the country's economic recovery process may be accompanied by an adjustment abroad that could interrupt or reverse it. Indeed, the reduction of the current deficit, relative to the GDP foreseen for 2018, assumes a gradual substitution of nationally produced products for the consumption of imported tradable goods as well as a recovery of a supply of exportable products. However, another possibility is a surge in domestic demand supported by an increase in imports that are not offset by greater foreign sales. The latter scenario of economic recovery could imply an expansion of the current deficit to levels that could be perceived as unsustainable.

Another risk that cannot be ruled out is deterioration in foreign financing conditions that could generate a much more accentuated closure of the current account than estimated in this *Report*, and truncate the economic recovery.

Unexpected shocks such as, for example, falls in the international prices of crude oil, larger than expected rises in global interest rates, upswings in the country risk premia, etc. could bring about a scenario like this.

Graph 42
Multilateral Exchange Rate Indexes (nominal and real)

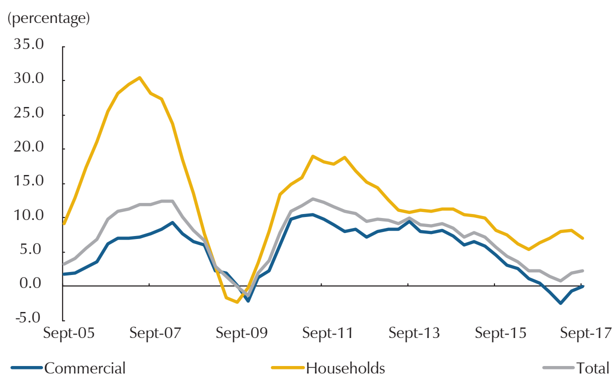


Note: The RERI is the nominal exchange rate of the Colombian peso index with respect to the currencies of our main trading partners.
The RERI-PPI and the RERI-CPI compare the purchasing power of the Colombian peso to our main trading partners using the PPI and CPI, respectively, as deflators. With the RERI-C (or competitiveness), a comparison is made to our main competitors in the US in the coffee, banana, flower, and textile markets.
Source: *Banco de la República*

The real exchange rate (RER), in turn, has shown relative stability in the last few months (Graph 42). Going forward, the performance of several of its fundamentals will drive its trend. For example, if the actual recovery of the terms of trade is maintained, it will probably contribute to a real appreciation. Other future trends such as greater velocity in the normalization of monetary policy in the United States or increases in the risk premia for emerging markets could generate pressure in the direction of a real depreciation. The trend of the nominal and real exchange rate will also depend on the perception the market has of the country's actual foreign adjustment and whether or not the monetary and fiscal measures are contributing to that adjustment.

B. INDEBTEDNESS

Graph 43
Real Annual Change of Indebtedness[a/]

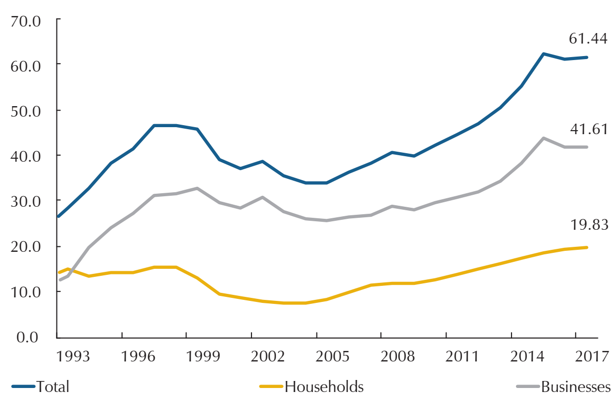


a/ Includes bank loans in national and foreign currency, securitization of mortgage loans, bond issues, and foreign direct financing.
Source: Financial Superintendence of Colombia, calculations by *Banco de la República*.

The greater sluggishness of national income and the adjustment the Colombian economy has experienced, has been reflected in the trend of the financial sector indicators. The total loan portfolio has slowed down and its quality indicators show some deterioration. As of September 2017 and in real terms, the total debt[8] continued growing at a low rate (2.2%) and one that is less than the rate registered a year ago. However, in the last few months the total portfolio has become somewhat dynamic, driven by the commercial debt which, in real terms, has stopped contracting. Household debt, in turn, is registering positive growth (6.9%) but with signs of moderating in comparison to the growth of previous quarters (Graph 43). In spite of the sluggishness of the loan portfolio, indebtedness with respect to GDP remains at historically high levels and similar to those seen in the last two years (Graph 44).

8 This includes bank loans (n/c and f/c), placement of bonds on the domestic market and foreign direct financing. Financing registered in dollars is adjusted to deduct the foreign exchange effect on the commercial portfolio.

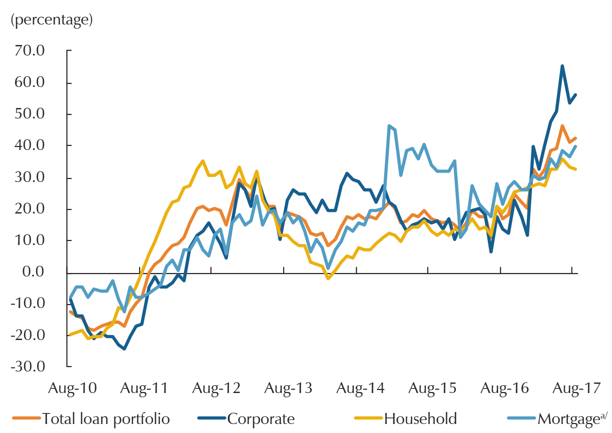
Graph 44
Indebtedness as Share of GDP[a/]



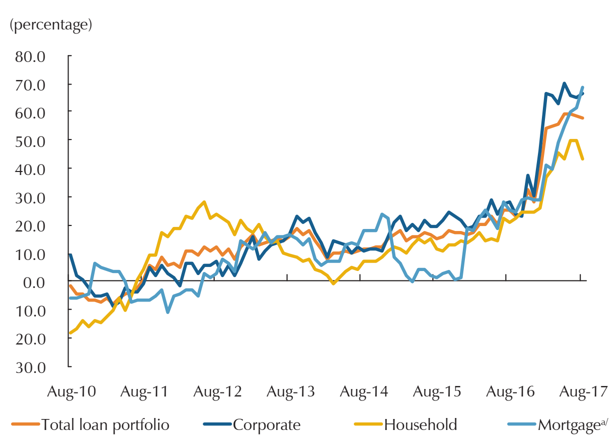
Note: 2017 is an estimate based on information as of September.
a/ Includes bank loans in national and foreign currency, securitization of mortgage loans, bond issues, and foreign direct financing.
Sources: DANE, *Banco de la República*, Financial Superintendence of Colombia, and the Colombian Stock Exchange

Graph 45
Annual Growth of the Non-Performing and Risky Portfolio

A. Non-performing portfolio



B. Risky Loan Portfolio[b/]



a/ The change in level of the series between January 2015 and January 2016 resulted from the reclassification of residential leasing when it was moved from the commercial loan portfolio to the housing portfolio due to the implementation of IFRS.
b/ Corresponds to the portfolio with ratings other than A.
Source: Financial Superintendence of Colombia, calculations by *Banco de la República*.

So far this year, the quality of the loan portfolio has continued deteriorating. In August, the non-performing loan portfolio rose 42.5% annually and the risky portfolio,[9] 58.1%. This growth was well above what had been registered during 2016 (Graph 45). Some of this deterioration was focused on specific sectors such as mass transportation, electricity, and infrastructure (especially affected by the loans granted to the "*Ruta del Sol*" concession) and has been dissipating by means of gradual adjustment mechanisms applied by financial sector agents. These adjustments do not represent risks to financial stability for now. With respect to credit offered to households, the mortgage portfolio is the one that has presented the greatest deterioration in its quality. In spite of the rise in the non-performing and risky loan portfolios, their levels with respect to the total are far removed from the maximums seen in 1999. In addition, the loan-loss provisions cover more than 100% of the debt and the solvency indicators remain at proper levels.

Going forward, various supply and demand factors could further weaken the strength of the loan market. First of all, in spite of the fact that the reductions in the benchmark interest rate have been transmitted to the commercial loan interest rates, this loan portfolio is still at a standstill. This fact suggests a weak demand for loans on the part of businesses. In the households, the concerns about the future performance of the labor market, which may be showing less favorable conditions, especially in urban areas, could also be affecting the demand for loans. In this context, if the outlook for economic activity does not recover or business and household confidence does not improve, the deterioration in the demand for credit could become accentuated.

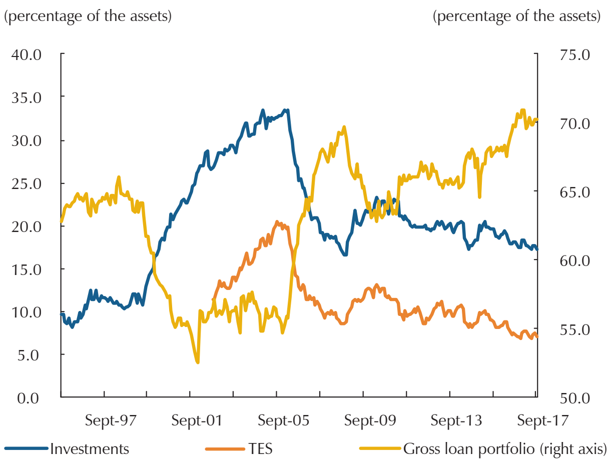
With regards to the supply of credit, additional deterioration in the quality of the loan portfolio (corporate, household, or mortgage) or a weak economic activity could discourage the granting of loans, in-

9 In other words, all of the loan portfolios that have a rating other than A.

crease the requirements for providing credit, or encourage the purchase of other types of assets by the financial sector.

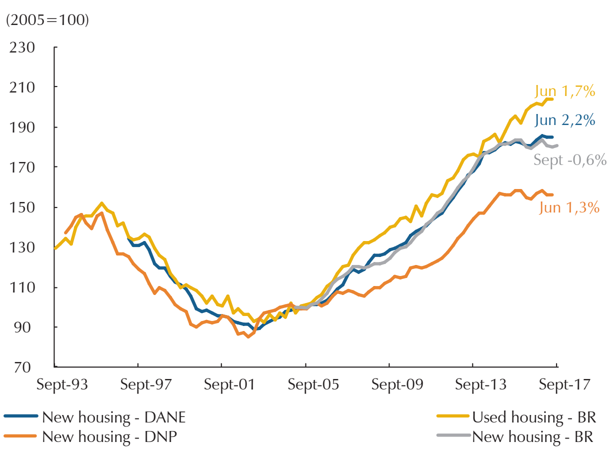
In fact, in the most recent survey of the financial system, the agents said that their requirements for granting a loan have increased due to a less favorable or more uncertain economic outlook.[10] The financial system could, in that case, prefer investments in public debt securities[11] (Graph 46), which would imply an additional downturn in the loan market. A significant increase in credit risk could also delay the transmission of the cuts in the policy rate to the interest rates for loans, and with that, the recovery of the economy will probably be slower and weaker.

Graph 46
Loan Portfolio, Investments, and TES



Source: Financial Superintendence of Colombia, calculations by *Banco de la República*.

Graph 47
Housing Prices in Colombia (relative to the CPI)[a/]



a/ Information as of the second quarter of 2017 for New housing - DANE, New housing - DNP, and Used housing - BR. For New housing - BR, the latest datum corresponds to the third quarter of 2017.
Sources: DANE, DNP, and *Banco de la República*

C. HOUSING PRICES

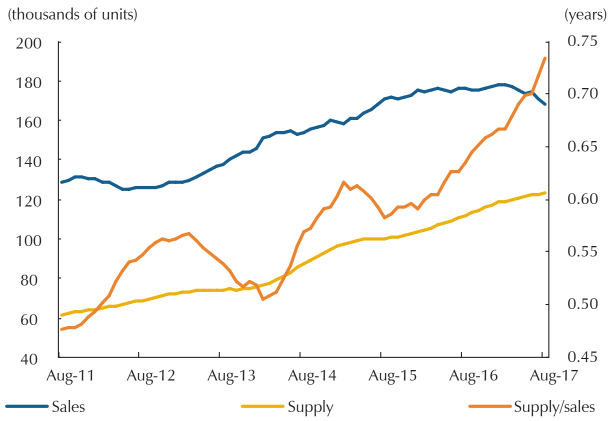
The most recent data on the housing market are showing signs of moderation in the trend of both prices and quantities, a fact that reflects the adjustment that the Colombian economy is registering. In fact, during the second quarter of 2017, the average for the indexes for new housing prices, relative to the CPI, registered an annual upswing of 1.2%. This figure is composed of the annual changes in the indexes calculated by DANE (2.2%), DNP (1.3%), and *Banco de la República* (0.1%). In addition, based on data as of September 2017, the index calculated by *Banco de la República* already shows negative changes for new housing relative to the CPI (-0.6%).

The growth rate of the price index for used housing also continued to become more moderate. Indeed, as of June 2017, the used housing price index (UHPI) registered a change of 1.7% (Graph 47). This has certain similarities with what was seen in Chile and Peru after the shock to the terms of trade that also affected these countries.

10 As noted in the Report on the credit situation in Colombia that *Banco de la República* publishes quarterly. For more information see http://www.banrep.gov.co/es/encuestas/reporte-situacion-credito-colombia-septiembre-2017

11 The share of the TES in the assets of the credit establishments is at low levels.

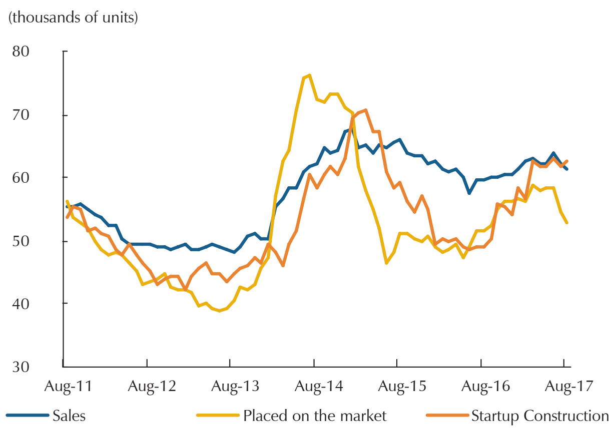
Graph 48
New Housing: Sales (twelve months cumulative) and Placed on the Market (12-month average)[a/]



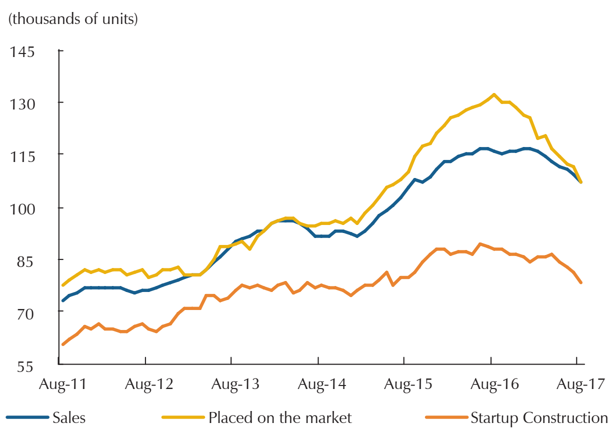
a/ Includes information on the thirteen regional areas
Source: Camacol, calculations by *Banco de la República*.

Graph 49
New Housing: Sales, Placed on the Market, and Start up Construction (12 months cumulative)[a/]

A. Price lower than or equal to 135 SMMLV: LIH



B. Price greater than 135 SMMLV: non-LIH



a/ Includes information on the thirteen regional areas
Source: Camacol, calculations by *Banco de la República*.

The numbers listed by the Colombian Chamber of Construction (Camacol),[12] in turn, show that for the 12-month aggregate up until August 2017, housing supply[13] is continuing to grow but at a slower pace than in previous periods. This trend could be reflecting a market adjustment to the lower demand for housing (measured as units sold). In fact, in the 12-month aggregate, ending in August 2017, there was a 4.4% annual fall in units sold while the average supply for the last twelve months has probably grown 10.4% annually (Graph 48). The above may be indicating an accumulation of units in some segments, in particular in the segment that does not include low-income housing (non-LIH), which could partly explain the easing of prices. In the specific case of the non-LIH segment, in the 12-month aggregate with figures as of August 2017, the units that are at the stage of being placed on the market dropped 19.0%, while sales declined 8% annually (Graph 49). It should be noted that last September the national government expanded the number of people qualified for interest rate subsidies in the purchase non-LIH housing, the value of which does not exceed 435 SMMLV by 40,000.[14]

Given the major importance of this sector for employment, which accounts for close to 6% of the total number of people employed in the country and for the growth of GDP, the adjustment seen in the housing market is part of the concerns about the expected upturn in the economy. However, the reduction in the interest rates as a result of the recent monetary policy measures, the drop in inflation that has improved household purchasing power, and the government subsidy programs, should favor the performance of this sector.

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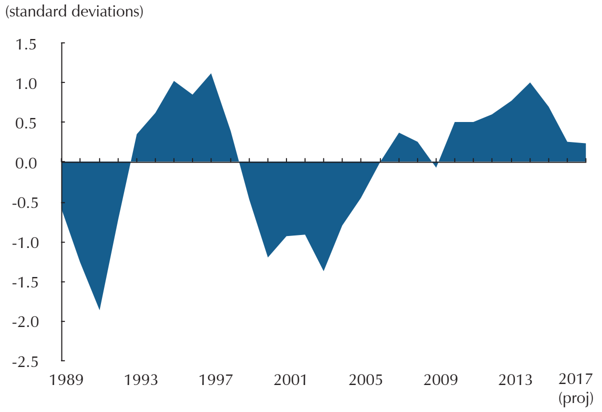
12 Corresponds to the information for the 13 regions: Antioquia, Atlántico, Bogotá y Cundinamarca, Bolivar, Boyacá, Caldas, Huila, Nariño, Norte de Santander, Risaralda, Santander, Tolima and Valle.

13 The supply corresponds to the units available for sale that are held by the builder. These units may be in pre-sale, in construction, or finished.

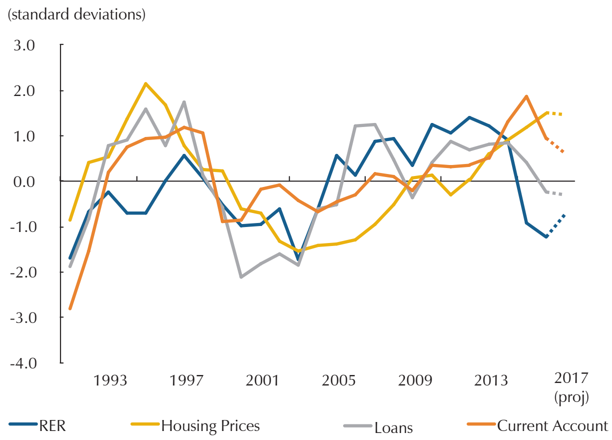
14 Corresponds to 2.5 pp over the interest rate applicable to new housing, the price of which is between 135 and 435 SMMLV.

Graph 50
Index of Macroeconomic Imbalances



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

Graph 51
Gaps in the Current Account, the Real Exchange Rate, Housing Prices, and Credit[a/]



(proj) projected
a/ Gaps are calculated as the difference between the actual value and the estimate of the long-term value.
The negative value is given for the RER such that, in all cases, imbalances are indicated by positive gaps.
Source: *Banco de la República*

D. INDEX OF MACROECONOMIC IMBALANCES

The available information, along with the technical staff's projections for 2017, suggest that the deficit in the current account will probably continue to close, indebtedness is likely to continue slowing down, and the housing market could register signs of moderation. All of the above is likely to be consistent with the process of macroeconomic adjustment that the Colombian economy has been experiencing over the past two years.

The sum total of the imbalances reflected in the IMI was revised downwards for 2017 (Graph 50) even though the indicator is registering levels similar to those seen in 2016. The current account gap[15] will probably continue to close although at a slower pace than the one a year earlier, when the sharp reduction in external outlays largely explained the foreign adjustment. The better levels of the terms of trade throughout the year, which have brought about a recovery in foreign sales, are probably generating pressure on the appreciation of the real exchange rate. Credit, in turn, is maintaining positive growth rates though it is still slowing down, reason why a more negative gap than the one in 2016 is expected. Finally, imbalances in the housing market could be expected to stop growing (Graph 51) because prices remain stable for this sector and show some signs of moderation.

15 For this Report, a new approximation taken from Cote and Torres (2017), "Un nuevo cálculo de la tasa de cambio real de equilibrio para Colombia: enfoque de balance macroeconómico" (A new calculation of the real balance exchange rate for Colombia: macroeconomic balance approach) (mimeo), *Banco de la República*, which was included within the set of methodologies considered for calculating the current account gap, was substituted for the estimate of the sustainable current account based on Arteaga, Luna, and Ojeda-Joya's (2011) data panel estimate.

Box 3
SOME MEASUREMENTS OF A SUSTAINABLE CURRENT ACCOUNT FOR COLOMBIA

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Nicolas Martinez Cortez
Maria Alejandra Prieto Sanchez
Jhon Edwar Torres Gorron

Economic literature shows that large current account (CA) imbalances have been an important source of macroeconomic misalignments. For example, Reinhart and Reinhart (2009) indicate that these imbalances have been associated with an increased likelihood of economic crises. In fact, some authors think those imbalances were one of the factors that contributed to the most recent global crisis (Gervais et al., 2016). For that reason, it is important to calculate some standard or sustainable level for the current account and contrast the actual CA position with that level. Four measurements of a CA that are common in the literature and would be sustainable in the case of Colombia are presented in this box: long-term level, external sustainability, co-integration between expenditures and revenue, and a co-integrated panel. There is a table that summarizes the results of these measurements at the end (Table B3.1).

Measurement 1: long-term level

Under the first approach, the sustainable level for the current account is its long-term level, which is understood to be the historical average of the actual series. Graph B3.1, panel A shows the result using the annual series of the current account as a percentage of GDP for the 1980-2017 period[1]. Following this measurement, the sustainable CA is -2.2% of GDP.

Measurement 2: External sustainability

In the second measurement, the sustainable current account is calculated as a function of the long-term AEN level, both of them as a share of GDP. Starting from:

$$\frac{CA_t}{GDP_t} = \frac{AEN_t}{GDP_t} - \frac{AEN_{t-1}}{GDP_t}$$

and assuming parity of purchasing power and a long-term period, the equation is:

$$\left[\frac{CA}{GDP}\right]^* = [(1+g^*)\,(1+\pi^{+*})-1]\left[\frac{AEN}{GDP}\right]^*$$

where $g*$ and π^{+*} are, respectively, the annual growth of the potential Colombian output and the long-term foreign inflation,[2] with the latter calculated as the year´s four quarter average once the series is filtered through Hodrick and Prescott (HP). The long-term level of $\frac{AEN}{GDP}$ is approximated by obtaining the annual series as the average of the four quarters and afterwards filtering it with HP.

For 2017, that AEN level is -43% of GDP and the sustainable CA obtained under this approach is -1.9% of GDP. The change in this measurement can be seen in Graph B3.1, panel B.

Measurement 3: co-integration between income and expenditure

This measurement is an application of the exercise done by Baharumshah *et al.* (2003) and described in detail in Arteaga *et al.* (2012). There the sustainability of the CA in statistical terms depends on the existence of a co-integration relationship between income and expenditure. With the above, the CA is sustainable in the long-term if the expenditure component varies in the same proportion as the income component does. This relationship is based on compliance with an intertemporal budgetary constraint on the economy in which the sustainability of the CA requires that the current net international debt be equal to the sum of the future flow of net income.

Following this measure, the sustainable current account estimated for 2017 is -2.2% of GDP and its evolution over time is presented in Graph B3.1, panel C.

Measurement 4: co-integrated panel

This methodology corresponds to the one presented in Cote and Torres (2017). In it, obtaining the standard or sustainable CA is based on an estimate of an equilibrium relationship between the CA and a set of generally determining variables included in previous work (see, for example,

* The authors are, as follows, professionals and a specialist professional in the Department of Programming and Inflation. The opinions expressed, possible errors, and omissions are not binding on *Banco de la República* nor its Board of Directors.

1. The value of the CA/GDP for 2017 corresponds to the technical staff´s projection presented in this Report.

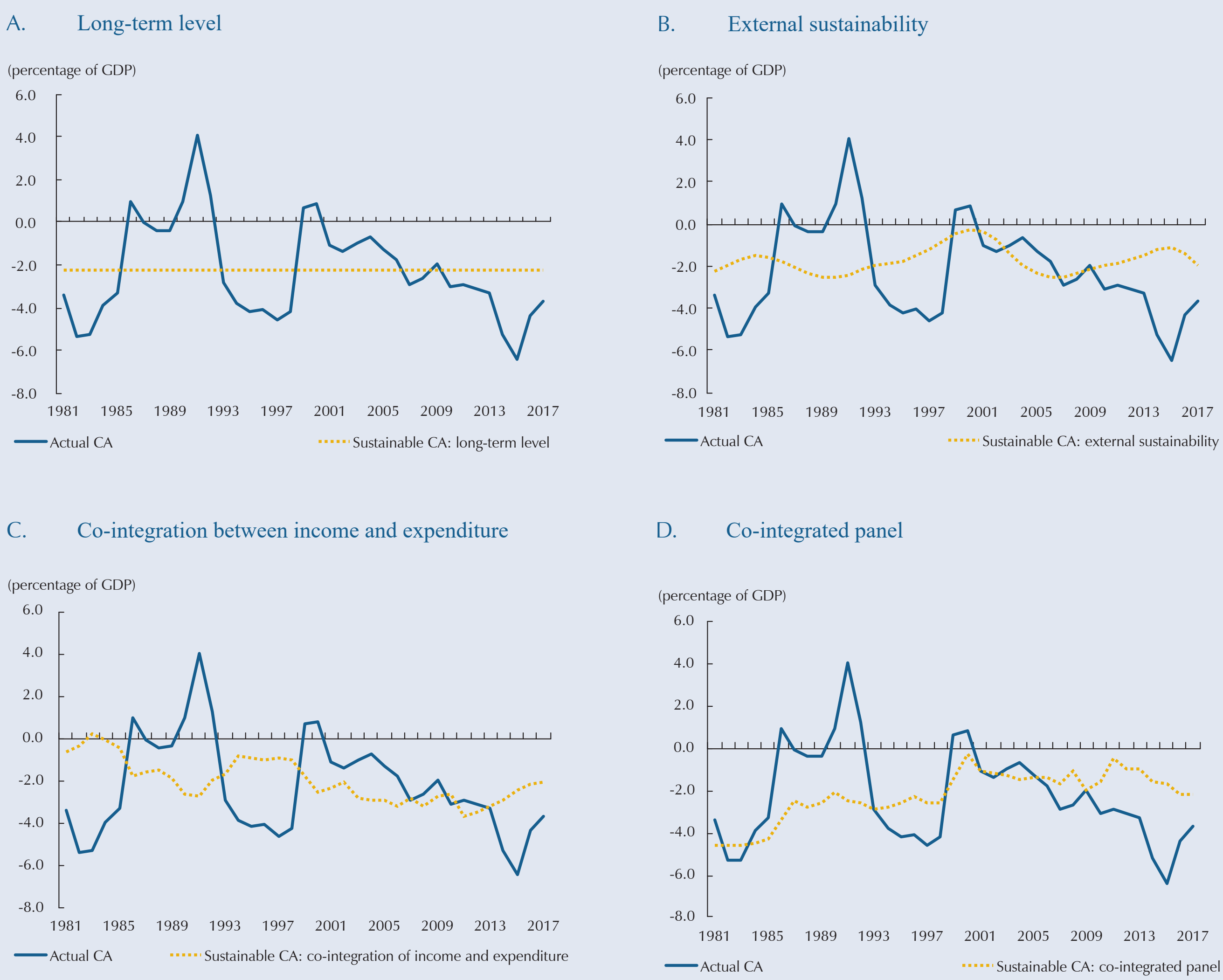
2 Obtained by means of an index that weighs the consumer inflation of Colombia´s trading partners by using the respective weight of each country in the total exports of non-traditional goods.

Table B3.1
Summary of Some Measurements of Current Account Sustainability
(percentage of GDP)

Measurement	Historical average	Results for 2016	Results for 2017
Long-term level	(2.20)	(2.20)	(2.20)
External sustainability	(1.70)	(1.30)	(1.90)
Co-integration between income and expenditure	(2.00)	(2.10)	(2.10)
Co-integrated panel	(2.00)	(2.10)	(2.20)
Actual Current Account	(2.20)	(4.40)	(3.7)[a/]

a/ This value corresponds to the forecast by the technical staff of *Banco de la República*.
Source: authors' calculations.

Graph B3.1
Summary of Some Measurements of Current Account Sustainability



Source: authors' calculations.

Gosse and Serranito, 2014) and using the fully modified ordinary least squares (FMOLS) methodology in the panel version.

The sample used contains annual data for 21 countries in Latin America and the Caribbean for the 1980-2017 period. The variables that are included in the estimate are the net foreign assets lagged one year as a percentage of GDP, the petroleum balance sheet as a percentage of GDP, the public debt as a percentage of GDP, loans to the private sector as a percentage GDP, the differential of the interest rates with respect to the United States, the population dependency ratio, and GDP per capita relative to that of the United States.[3]

The standard CA estimated using this methodology is presented in panel D of Graph 1. This signals a level of sustainable CA of around -2.1% of the GDP for 2017, the year in which the exercise was completed.

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3 For more details about the definitions of the variables, see Inflation Report, June 2017, Box 3.

Appendix

Macroeconomic forecasts by local and foreign analysts

A summary is presented in this Appendix of the most recent projections by local and foreign analysts for the main variables of the economy for 2017 and 2018. At the time they were consulted, the agents had information up to October 23rd, 2017.

1. Projections for 2017

On average, the local analysts expect an economic growth of 1.7% in comparison to the 1.8% estimate in the Inflation Report from the previous quarter. Moreover, the foreign entities that were consulted projected an average expansion of 1.7% for GDP.

Table A1
Projections for 2017

	Growth of the Real GDP (percentage)	CPI Inflation (percentage)	Nominal Exchange Rate	Nominal TDR (percentage)	Fiscal deficit (percentage of GDP)	Unemployment Rate in thirteen cities (percentage)
Local analysts						
Alianza valores[a]	1.5	4.1	3,200	3.8	3.8	9.5
ANIF	1.8	4.2	n. d.	5.3	3.0	10.1
Banco de Bogotá[a]	1.8	4.0	2,950	5.3	3.6	9.8
Bancolombia[a]	1.6	4.0	2,950	5.6	3.6	10.7
BBVA Colombia[a]	1.5	4.0	3,030	5.5	3.6	10.6
BTG Pactual	1.8	3.9	3,060	n. d.	3.6	9.4
Corficolombiana	1.9	3.9	3,050	5.3	3.7	9.5
Corredores Davivienda[a] [c]	1.6	3.9	3,015	5.3	3.7	10.3
Credicorp Capital[d]	1.9	4.0	2,900	5.3	3.0	10.4
Davivienda[a]	1.6	3.9	3,015	5.3	3.7	10.3
Fedesarrollo[a]	1.7	4.2	n. d.	n. d.	3.6	n. d.
Itaú [a] [b]	1.6	4.2	3,050	5.2	3.7	11.0
Ultraserfinco[a] [e]	1.7	4.1	2,900	5.3	3.6	10.6
Average	**1.7**	**4.0**	**3,011**	**5.2**	**3.6**	**10.2**
Foreign analysts						
Citibank-Colombia[a]	1.6	4.0	3,000	5.2	3.8	10.4
Deutsche Bank	1.6	4.0	3,046	n. d.	3.7	10.0
Goldman Sachs	1.6	4.2	2,758	n. d.	3.6	n. d.
JP Morgan	1.8	4.0	3,100	n. d.	3.6	n. d.
Average	**1.7**	**4.1**	**2,976**	**5.2**	**3.7**	**10.2**

a/ The deficit forecast is from the CNG
b/ Formerly Corpbanca until June 2017
c/ Formerly Corredores Asociados. d/ Formerly Correval.
e/ Formerly Ultrabursatiles.
n.a.: not available.
Source: *Banco de la República* (electronic survey)

Table A2
Projections for 2018

	Growth of the Real GDP (percentage)	CPI Inflation (percentage)	Nominal Exchange Rate
Local analysts			
Alianza Valores	2.0	3.5	3,300
ANIF	2.3	3.3	n. d.
Banco de Bogotá	2.5	3.4	3,000
Bancolombia	2.5	3.5	2,950
BBVA Colombia	2.0	3.1	2,970
BTG Pactual	2.5	3.3	3,120
Corficolombiana	2.6	3.5	2,900
Corredores Davivienda[a/]	2.2	4.2	3,085
Credicorp Capital[b/]	2.5	2.9	2,900
Davivienda	2.2	4.2	3,085
Fedesarrollo	2.4	3.5	n. d.
Itaú[c/]	2.5	3.8	3,120
Ultraserfinco[d/]	2.5	3.3	2,900
Average	**2.4**	**3.5**	**3,030**
Foreign analysts			
Citibank-Colombia	2.5	3.3	3,100
Deutsche Bank	2.5	3.2	3,021
Goldman Sachs	2.7	3.5	2,910
JP Morgan	3.0	3.9	n. d.
Average	**2.7**	**3.5**	**3,010**

a/ Formerly Corredores Asociados.
b/ Formerly Correval.
c/ Formerly Corpbanca until June 2017
d/ Formerly Ultrabursatiles.
Source: *Banco de la República* (electronic survey)

With respect to prices, local analysts estimate that inflation will be 4.0% which corresponds to the upper limit of the target range set by the Board of Directors of *Banco de la República* (JDBR) for 2017 (between 2.0% and 4.0%). Foreign analysts anticipate a figure of 4.1%, which is slightly outside the target range, at the end of the year.

With respect to the exchange rate, national analysts expect the market exchange rate (MER) to end the year at an average value of COP 3,011 compared to the COP 3,036 estimated in the survey mentioned in the previous report. The foreign analysts, in turn, forecast a MER that is close to COP 2,976 for the end of the year.

Local analysts are projecting an average value of 5.2% for the rate for fixed term deposits (FTD). In addition, they expect the unemployment rate to be at 10.2%.

2. Projections for 2018

National analysts expect an economic growth of 2.4% for 2018 while foreign analysts expect one of 2.7%. With respect to inflation, both local and foreign analysts estimate that it will be 3.5%. With regards to the nominal exchange rate, national entities expect the values to average COP 3,030 and foreign entities expect them to average COP 3,010.