# INFLATION
## REPORT

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March 2010*

# 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 long-term growth in output. Accordingly, the objectives of monetary policy combine the goal of price stability with maximum sustainable growth in output and employment. In this respect, monetary policy complies with the constitution and contributes to the well being of the Colombian population.

## HORIZON AND IMPLEMENTATION

The Board of Directors of the Central Bank of Colombia (BDBR) sets quantitative inflation targets for the current year and the next. BDBR policy initiatives are designed to meet each year's target and to provide for long-term inflation at around 3%. The annual variation in the consumer price index (CPI) is the inflation measurement used.

## THE DECISION-MAKING PROCESS

Monetary-policy decisions are 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 targets. If the assessment suggests, with enough certainty, that inflation will deviate from its target under current monetary-policy conditions and the deviation would not be due to temporary shocks, the BDBR modifies its policy stance. For the most part, this is accomplished by changing the intervention interest rate (charged by the Central Bank of Colombia on short-term liquidity operations).

## COMMUNICATION AND TRANSPARENCY

decisions on monetary policy are announced after meetings of the Board of Directors, through a press bulletin posted immediately on the Bank's website (www.banrep.gov.co). Inflation reports are published quarterly and lend transparency to the Board's decisions. They also contribute to a better understanding of monetary policy and help to enhance its credibility. Specifically, these reports i) let the public know how the Board of Directors and the Technical Governor of the Bank view recent and anticipated changes in inflation and its short and mid-term determinants; ii) explain the implications of those determinants for monetary-policy management within the scope of inflation targeting; iii) describe the context and analysis justifying monetary-policy decisions made during the quarter; and iv) provide information that helps economic agents to form their own expectations about future developments with respect to inflation and growth in output.

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# Developments In The Inflationary Situation And Monetary Policy Decisions

In March 2010, annual inflation was 1.84%, 25 basic points (bp) lower than in February, and below by 16 bp the figure recorded in December 2009. This decrease in annual – and particularly March - inflation, was not forecast by the technical team of *Banco de la República*, the Central Bank of Colombia, neither by the average market analysts since inflation was expected to increase in the first quarter of the current year.

Inflation overestimation was partly based on the projection of the Consumer Price Index (CPI) for food. By the end of 2009, the presence of the so-called El Niño event and its adverse effects on weather and harvest made predict that the prices in this group would rise since early 2010, though with stronger emphasis on the second and third quarters. However, notwithstanding the fact that in March some prices of perishable products recorded significant rises, the annual total food CPI variation was 0.34%, therefore a lower result than expected.

Several facts may have counteracted the adverse effect of the El Niño event presence on food prices. Firstly, restrictions of trade with Venezuela enhanced the domestic supply of meat, vegetables and other processed products formerly exported to that country. Likewise, the stability seen in some international prices along with the appreciation of the exchange rate, did contribute as well to a lesser increase of imported food prices. On the other hand, demand weakness and a rise in salary costs that were more coherent with the long-term inflation target have caused prices of items such as food away from home to show a significant slowdown since early 2009. Finally, important improvements in both food distribution channels and production should not be ruled out as price-increase mitigating factors.

Although the above aspects serving to mitigate the impact of the El Niño event with respect to food prices were taken into account in the preparation of the previous report projections, their slowdown incidence has been more intense than expected. For this reason, the technical team anticipates increasing food prices, but at a lower rate than those projected in December. Therefore, this

temporary price shock is likely to continue being felt even more intensely in the second and third quarters of 2010, but in this occasion it would not lead to total inflation beyond the target range, such as it had been predicted in the previous report for these periods. The reversal of the food price shock would take place by the end of the year and early 2011. In this way, the improved behavior of the food CPI reduces the risks of second-round effects on the other prices in the economy.

Inflation slowdown took place as well in the CPI without food (2.4%). Similar behavior was shown by the other core inflation measures and, as of March 2010, the mean of the four measures officially calculated by the Bank was set at the lower stripe of the target range.

Within the CPI without food, the greatest drop in annual growth was seen in the tradable group, which has been going through a continuous deceleration process since 2009 to finally stand at 0.27% in March of the current year. The exchange rate appreciation and a negative output gap partly explain this behavior, although to a lesser extent, since last August, non-tradables have shown a diminishing annual increase rate and, as of March 2010, reached 3.98%. As for the regulated group which in the course of 2009 had been decelerating, they experienced an upturn so far in 2010 and recorded an annual increase of 3.37% in March.

With regard to economic growth, the real GDP results published by the DANE (the National Administrative Department of Statistics) for the last quarter of 2009 accounted for better dynamics than expected, mainly explained by the behavior of Government consumption and civil works. Household expenditures recovered as well, but at a slower rate than their historical average. The real increase in exports and imports remained in negative terrain.

For the first quarter of 2010, the available economic activity indicators show an economy growing at a faster rate than projected. Factors such as the best results of world economy, a revived confidence in agents, and the dynamism of several leading indicators, evidence the strength of this dynamics. For the whole year of 2010, the technical team has been foreseeing an economic growth between 2% and 4%, the mid-point being the most likely to occur. Despite this recovery, the output gap would continue to be negative, which may imply a reactivation with no inflationary pressures.

At the labor market, the employment increase has not offset the higher labor supply and, as a result, the unemployment rate is still remaining at high levels. By eliminating the effects of seasonal unemployment series, the trend suggests that this variable would stop growing and even go down. Any way, the labor market will continue to be loose, with low pressures on salaries. In addition, the employment increase continues to concentrate in the informal and low-quality sector, a fact likely to affect consumer confidence and prevent a more accelerated increment of household expenses.

So far this year up to March, the broader monetary aggregate (M3) kept a relatively stable annual growth close to 7%. A similar behavior was shown by the total gross portfolio in national currency, with an annual increase of nearly 5%. The mortgage portfolio continued to show important annual increments, and the consumer portfolio went on recovering slowly but on a continuous basis. The commercial portfolio was the less dynamics, this being explained partly because of big enterprise prepayments and the issue of real sector bonds. The Holy Week seasonal change affected portfolio indicators as well.

In the last semester, the downturn of both passive interest and commercial credit rates ceased. On the other hand, interest rates for households, particularly for consumption and, to a lesser extent, mortgage rates, began to decline again. In real terms, both passive and active rates increased in March due to deceleration of inflation index without food.

In the external overview, world growth continued to accelerate thanks to the recovery of the big emerging economies and the United States economy. Generally, economic growth results tended to be better than expected and, for this reason, GDP forecasts for 2010 boosted. The remarkable exception has been Europe where the high public debt levels and doubts about their sustainability in countries such as Greece, Portugal and Spain, have put the soundness of the euro zone to test. To this date, market uncertainty about the type and amount of help the member countries will give to Greece, together with the requisites they would demand in exchange for any such help, have led to devaluations at the international stock exchange markets and a fall in the value of currency, particularly the euro, with respect to the dollar. Therefore, the impact this crisis may have on the other two countries and on the dynamics of the world economy will depend upon a solution to be given by the European Community.

In brief, in the first quarter of 2010, total inflation as well as all the CPI disaggregations traditionally calculated by the Bank (such as coves, food, regulated, tradable without food, non-regulated and non-tradable without food, and regulated items), are below the upper limit of the target range. All of the measurements decelerated, with the exception of the regulated and food groups. The foregoing gave origin to a decline in the Central Bank's inflation forecasts and market inflation expectations, and enhanced the likelihood of meeting the price increment goal in the current year and the years to come.

Notwithstanding the increased growth of the economy, the output gap remains negative; this fact, added to the good behavior of inflation and the expectations, allows an even more expansive monetary policy without compromising inflation targets and macroeconomic stability.

For the above reasons, in their session of 30th April, the Board of Directors of the Central Bank of Colombia (BDCB) has decided to reduce the intervention interest rate by 50 bp in order to establish it at 3%. Given the higher deposits

by the General Treasury of the Nation in the Central Bank, the Board decided as well to stop the sale of the Colombian peso-denominated bonds known as TES that it was carrying out on a monthly basis in order to counteract the monetary effect of reserve accumulation.

The BDCB will continue to carefully monitor the international situation, together with inflation behavior and forecasts, and it reiterates that the future monetary policy will depend on the new information available.

**Board of Directors of the Central Bank of Colombia**

# INFLATION
## REPORT

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# I. INFLATION AND ITS DETERMINANTS

**Contrary to expectations, consumer** inflation fell in the first quarter and settled below the target range.

**The effect of El Niño event on food** prices has been less significant than expected and was mainly offset by a negative demand shock owing to the fall of sales to Venezuela.

**By the end of 2009, the economy expanded** and everything indicates that this trend was maintained during the first quarter of 2010. Nevertheless, trade restrictions continue to affect manufacturing export sectors.

**High unemployment levels and lower** inflation perspectives have allowed for salary adjustments in keeping with the long-term target.

## A. RECENT DEVELOPMENTS IN INFLATION

Graph 1
Annual consumer inflation

(Percentage)



Mar-05 Sep-05 Mar-06 Sep-06 Mar-07 Sep-07 Mar-08 Sep-08 Mar-09 Sep-09 Mar-10

——— Inflation target          ......... Target range
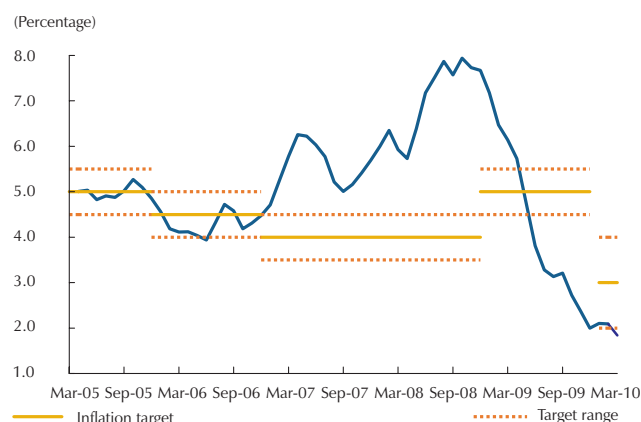
Source: DANE, calculations by Banco de la República.

Consumer price inflation was again reduced in the first semester of the year, contrary to what was expected in the December *Inflation Report* and the analysts' projections. As of March, the result was 1.84%, below the lower limit of the target defined by the Board of Directors of the Central Bank of Colombia (BDCB) for 2010, which is the long-term range (from 2% to 4%), as well. The result, as of December, had been 2.0% (Graph 1).

Inflation reduction observed in the first semester is significant if we take into account that, in a considerable part of the consumer price index basket, increments take place during the first months of the year. On average, in the past, nearly 43% of each year's inflation occurred during that period.

In previous reports, like in market predictions, an annual inflation increase had been forecast for the first quarter, for two reasons: In the first place, because upward pressures in the food prices were anticipated owing to the effects of the El Niño event. Secondly, because greater adjustments than those eventually seen were expected in prices of other goods and services and particularly for tradables, since they are more sensitive to exchange rate variations.

Overestimates of consumer price inflation have become usual over the past few quarters. During 2009, this occurrence could be explained because world recession reduced cost-driven pressures strongly than estimated, these pressures arising from the high prices of raw materials and oil of previous years, and because this involved a contraction of domestic economic activity at the end of 2008 that, though mild, did also discourage price increases in Colombia. In addition, the exchange rate depreciation lasted less than expected and, for the second semester, it reverted, thus permitting the fall in several tradable prices and contributing to reduce inflation expectations.

For the first quarter, some of these deflationary factors were maintained with higher intensity than originally envisaged in the previous report. Particularly, the exchange rate continued to show an appreciation-oriented trend, which has served to further moderate tradable price adjustments or even permitted their reduction, as observed in March. Likewise, the low inflation seen at the end of 2009 contributed to reduce wage adjustments down to levels compatible with the long-term target range, and led to other smaller-than-usual adjustments in the highly indexed prices of goods and services, simultaneously with reducing inflation expectations.

All the foregoing was coupled with a stronger-than-expected downward effect on the prices of food and other goods, owing to the collapse of exports to Venezuela. All this served to neutralize part of the upward pressures expected as a consequence of El Niño event. In addition, it is very likely that other factors not initially taken into account, relating to the change in the composition of family expenditures and with some modernization introduced in the Colombian productive structure, may have permitted (and are permitting) that both El Niño and other similar supply shocks have lesser inflationary impact than the ones observed in the previous three or four decades.

## 1.    Core Inflation

Core inflation, which includes those prices being more directly influenced by monetary policy, decreased significantly during the first quarter of the year. Particularly, the average of the three indicators appearing on the Bank's web page was established at 2.6% in March, thus falling by 48 basic points (bp) as opposed to December results. If a fourth indicator is added in the average – inflation without food and regulated prices – the outcome is similar: it shifts from 3.1% in December to 2.5% in March. Core inflation has been showing an

Graph 2
Annual core inflation indicators

(Percentage)
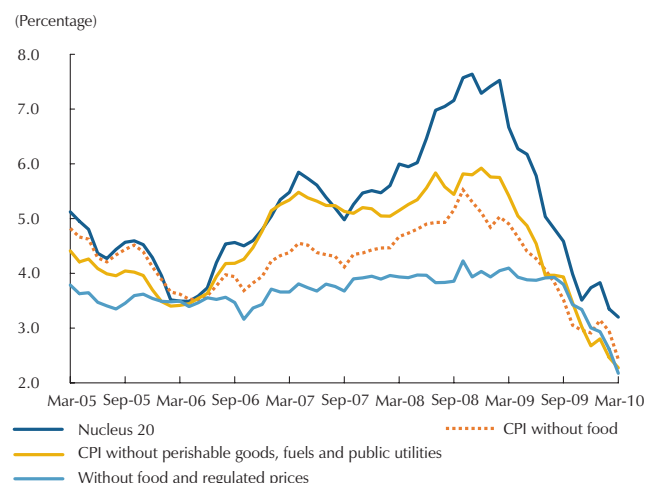


Source: DANE, calculations by Banco de la República.

acute and continuous slowdown since March 2009 (Graph 2).

The higher core inflation record is still held by nucleus inflation with 3.2% in March, while the lower belongs in the CPI without food and regulated prices, with 2.2%. On its part, inflation without food was established at 2.4% in March, as opposed to 2.9% in December. In this way, all of the indicators stood within the target range.

Unlike the developments occurring during the first three quarters of 2009, by the end of past year and in the first three months of 2001, the fall of annual inflation concentrated on the prices of tradables and non-tradables, excluding food, fuel, and energy (Table 1). This is what made an important reduction possible in annual core inflation, such as measured by the different indicators estimated by the Central Bank, and it suggests the presence, during the past few months, of permanent deflationary factors originating in weak supply, high productive capacity excesses, downward inflation expectations, an the appreciation of the exchange rate.

In the case of the tradables CPI without food and regulated prices, annual variation in March was 0.3%, significantly lower than the one observed three months earlier (1.4%) and also much lower than anticipated by the Central Bank. March record is the lowest exhibited since the series started being

Table 1
Annual Inflation Breakdown by Upward Pressures

| Description | Weight | Annual growth | | | | Share (%) in the slowdown (between Dec-09 and Mar-09) |
|---|---|---|---|---|---|---|
| | | Dec-09 | Jan-10 | Feb-10 | Mar-10 | |
| **Inflation** | | | | | | |
| **Total** | 100.00 | 2.00 | 2.10 | 2.09 | 1.84 | 100.00 |
| **Without foods** | 71.79 | 2.91 | 3.14 | 2.94 | 2.43 | 213.51 |
| Tradables | 26.00 | 1.36 | 1.20 | 1.04 | 0.27 | 174.79 |
| Non-tradables | 30.52 | 4.41 | 4.40 | 3.94 | 3.78 | 115.02 |
| Regulated | 15.26 | 2.58 | 3.92 | 4.15 | 3.37 | (76.29) |
| **Food** | 28.21 | (0.31) | (0.54) | (0.07) | 0.34 | (113.51) |
| Vegetables, fruits, tubers, and milk | 5.12 | (4.24) | (3.69) | (0.64) | 0.62 | (153.86) |
| Cereals, oils, and others | 8.03 | (3.93) | (4.12) | (3.10) | (2.67) | (65.58) |
| Food away from home and others | 11.59 | 5.07 | 4.83 | 4.03 | 4.14 | 63.69 |
| Beef and beef substitutes | 3.47 | (4.13) | (5.60) | (6.20) | (6.17) | 42.23 |

Source: DANE; calculations by Banco de la República.

Annual inflation in tradables and non-tradables, without food and regulated prices

(Percentage)
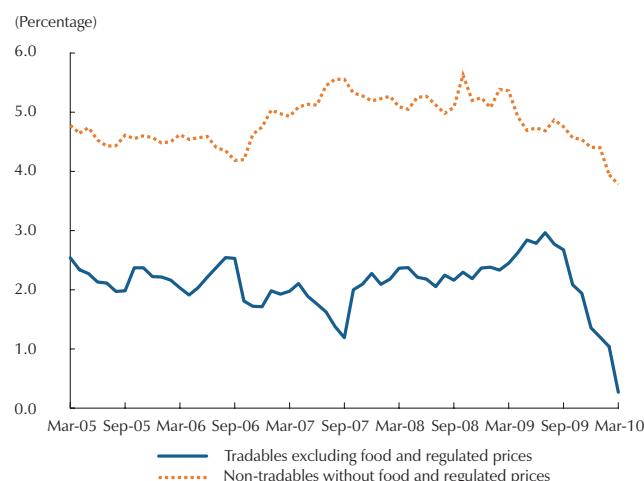


Source: DANE, calculations by Banco de la República.

estimated (1983) (Graph 3). In the past two months, the downward trend accelerated, showing absolute falls in the prices of a wide range of goods, this being quite unusual in the past. Items having contributed more strongly to this fall are vehicles, air tickets, and telephony devices and services.

The appreciation of the exchange rate partly explains the behavior of tradables in the past few quarters. Nevertheless, the intensity of their plunge suggests the presence of other factors having played a less significant role in the past; among them, domestic demand weakness is worth mentioning, likely added to stagnant o decreasing international manufacture prices owing to world recession. It is possible that in this environment the passage of appreciation on to domestic prices may have increased.

Likewise, downward domestic inflation expectations, together with lower salary raises, may have contributed to reduce adjustments. Finally, tradable series have shown great persistence in the past, which can help reduce prices and keep them low in a context where they are falling. In addition, it would seem that, as a result, greater flexibility in downward prices is becoming feasible as opposed to what used to happen in the past, at least with regard to tradable goods (see Chapter III).

Non-tradables without food and regulated prices did also contribute to contract core and total inflation, though to a lesser extent than tradables; in the latter case, annual variation shifted from 4.4% in December to 3.8% in March, very much in line with the Bank's forecasts (Graph 3). All of the group components (rentals, high indexation and low indexation) have been falling in the course of 2010, maintaining the downward trend observed since the second quarter of the past year (Graph 3).

Amidst the non-tradables, worth highlighting is the behavior of highly indexed items such as education and health, among others. As of March, the CPI of this sub-basket exhibited an annual variation of 4.8% against 6.8% recorded in December 2009. On their side, low-indexation items continue to mark a lower inflation (2.9%) than the rest of the group, the same that has been taking place in the past few years. With regard to rentals, everything indicates that they have been affected by demand weakness since past year's second quarter: their annual variation shifted from 5.4% en March 2009 to 3.9% in December, and to 3.7% in March 2010 (Graphs 3 and 4)

So far in 2010, the only group that has been driving the upward CPI without food is that of regulated prices, the annual variation of which shifted from 2.6% in December 2009 to 3.4% in March (Graph 5). In the previous quarterly

(Percentage)

(Percentage)

(Percentage)
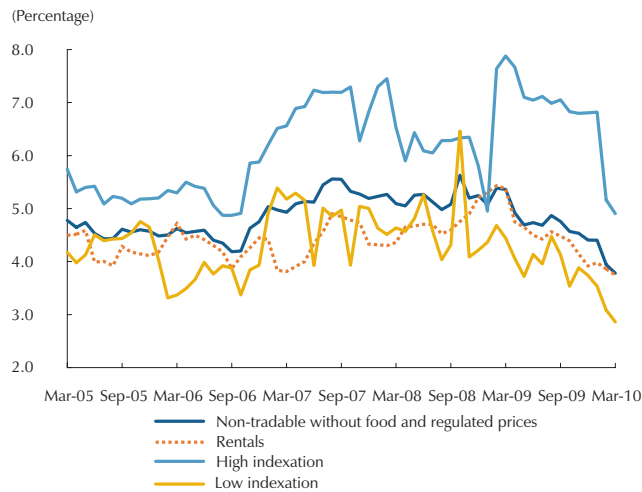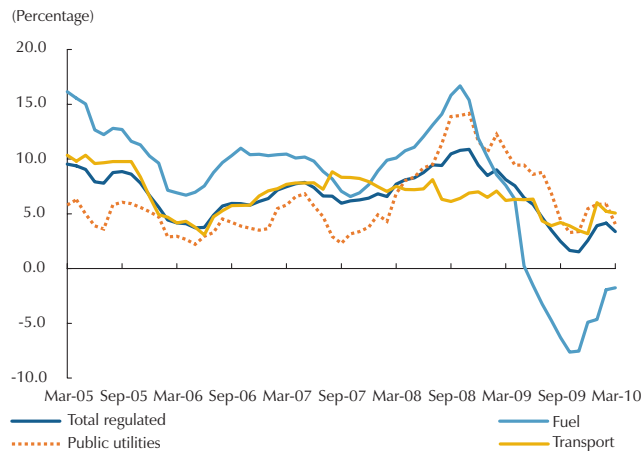
report, an increase of this indicator was anticipated. Rises in the prices of fuels explain the main part of regulated price acceleration: according to the provisions of the National Government, retail prices of gasoline increased by COP $200, while the increment of motor fuel oil ("ACPM") prices was COP $100 as a result of international prices.

The two other components (transport and public utilities) of the regulated group exerted pressures as well. In the case of utilities, particularly energy, rate increases had been 4% so far in the course of this year and would be associated, in part, with El Niño event. Rainfalls since the first quarter of 2009 could partially explain the increase in the value of energy transacted at the stock exchange by more than 100%: the price of kilowatt per hour was COP $120 at the beginning of the year, while it was already exceeding COP $280 at the end of March.

## 2. Food Inflation

After having commanded the reduction in inflation throughout 2009 with falls in price levels by the end of the year, food CPI began to recover since January. In terms of annual variations, it shifted from -0.3% in December 2009 to 0.3% in March of the current year (Graph 6). Although the previous Inflation Report had anticipated a raise for the first quarter, the final result was significantly lower than expected. It seems that something similar happened with market expectations, as deducted from the analysis of the agents' forecasts (transcribed at the end of this chapter).

El Niño event had an effect on prices of perishable foods such as vegetables, garden produce, legumes, tubers, and fruits, these items beginning to register rather significant increases (Graph 7).

Nevertheless, these increases were counteracted by unexpected falls in the prices of other goods such as meat and meat substitutes that were being affected more than expected by the weakness of domestic demand and, particularly, the drop of sales destined to Venezuela. The slow recovery of household

Graph 7
Food inflation per causes

(Percentage)
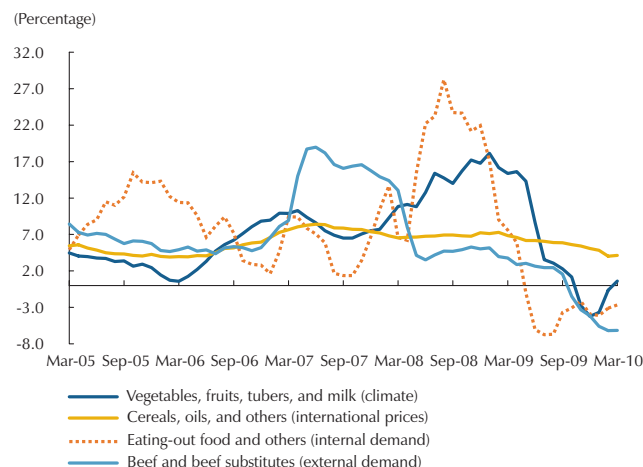


Source: DANE, calculations by Banco de la República.

consumption towards the end of 2009 and early 2010 did as well contribute to moderate increases in food away from home spending, which has an important share (nearly 30%) in the food CPI.

With respect to this last item, changes in the pattern of household consumption in the past few years where meals outside the home and processed food in general have gained market share at the expense of perishable foods with more volatile prices, may have been reducing the impact of supply shocks of climatic nature on total inflation. This could be added to other changes in production associated to better techniques, enhancement of the agricultural frontier, a more intensive use of in raw materials and water resources, better communication ways, and further integration between regional markets, among others. However, information available with respect to these aspects is scarce.

Notwithstanding, it is worth point out that in this report, like in the previous one, the impact of El Niño event is expected to be felt in the second quarter and early in the following three-month period. For this reason and some other motives discussed in Chapter III, increases in the annual variation of the food CPI are expected in the next months to come.

## B.    INFLATION DETERMINANTS

### 1.    Aggregate demand

#### a.    *2009 GDP*

Graph 8
Real GDP growth

(Billions of year 2000)                    (Percentage)
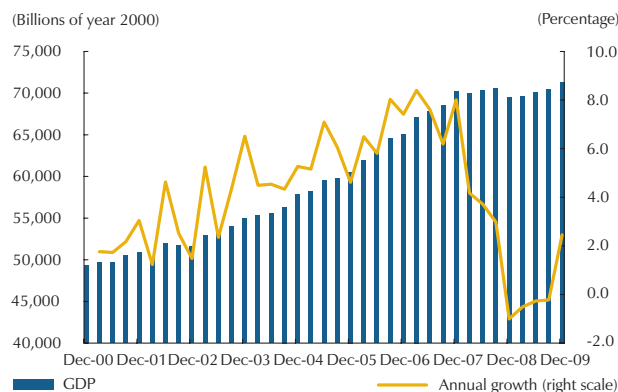


Source: DANE.

At the end of March, the National Administrative Department of Statistics (DANE) announced the economic growth for both the fourth quarter 2009 and the whole year. According to this entity, the gross domestic product (GDP) grew at an annual rate of 2.5% in the last quarter of the previous year (Graph 8) and 0.4% for the whole year.

In general terms, the result for the whole year 2009 was established within the range predicted in the previous *Inflation Reports* (i.e., between -0.2% and +0.4% expected in December). Nevertheless, for the fourth quarter, growth was higher than anticipated, this suggesting that the economy may be recovering faster than suspected.

With regard to quarterly growth, GDP expanded at a rate of 1.1%, the best known since the end of 2007. The first clear signs of recovery had taken place in the second quarter of 2009. In fact, apart from the contraction witnessed by the end of 2008, no other fall of a quarter GDP was registered as opposed to the previous three-month period, which suggested that recovery has been smooth and continuous, though at a slow pace.

Like in other emerging countries in the region, Colombia was able to resist to a large extent the impact of the global financial crisis. Despite the fact that in the second quarter this crisis coincided with commercial restrictions imposed by Venezuela, which contributed to further weakness of aggregate demand, the country's economy grew above what was seen in advanced economies (-3.2%) and the Latin American Average (-1.7%.).

This relatively short recession and the recovery experienced in a considerable part of the previous year were possible, to a great degree, because of the combination of expansive monetary and fiscal policies, and due to the soundness of the Colombian financial system that could mitigate the contagious effects of the international financial crisis. In particular, interest rate reduction and a sharp fall of the inflation prevented household consumption from contracting in 2009 and allowed some recovery in the fourth semester: this spending grew by 0.1% in the whole year, 1.0% in the last quarter.

Although these growth rates are low, they can be seen as quite significant when compared to those registered in the past because contraction in consumption was very little in absolute terms, and it surpassed in the second quarter the levels observed prior to the crisis. This is an important result within the framework of a strong world recession (Table 2).

On the public consumption side, it had a strong momentum beginning in the second semester of the year thanks to the counter-cyclic policy being implemented. For the whole year, this aggregate grew by 2.9%, and 5.3% in the fourth quarter. In this way, Government consumption became one of the components contributing to a greater extent to GDP growth in 2009.

Investment in civil works, that has an important public component and therefore was encouraged by the Government's counter-cyclic program, grew by 33.9% in the whole year 2009 and attained annual growths exceeding 40% in the last quarters, due to the fact that the spending amount in roads was virtually twofold. This dynamics contrasted with the strong contraction observed in the other components of gross capital formation, by mitigating the fall of this last variable that had been established at -5.2% for the whole year. Investment without civil works and without stocks, which essentially is of private origin, fell by 12.4%.

The decline in private investments and, above all, of those destined to industry, was largely explained by the reduction of internal and external demands and

Table 2
Annual GDP variation by type of expenditure
(Percentage)

| | 2009 | | | | 2009 Full Year | Full year contribution (pp) |
|---|---|---|---|---|---|---|
| | I Qtr. | II Qtr. | III Qtr. | IV Qtr. | | |
| **Consumption** | (0.4) | 0.2 | 1.2 | 2.0 | 0.7 | 0.6 |
| Household consumption | (0.6) | (0.1) | 0.2 | 1.0 | 0.1 | 0.1 |
| Non-durable goods | (0.9) | (1.2) | 2.2 | 1.3 | 0.3 | 0.1 |
| Semi-durable goods | (1.8) | 1.9 | (0.4) | 3.8 | 0.8 | 0.0 |
| Service | 1.2 | 1.9 | 0.1 | 1.5 | 1.2 | 0.4 |
| Durable goods | (7.5) | (7.6) | (5.7) | (4.6) | (6.4) | (0.3) |
| Government consumption | 0.3 | 1.1 | 4.7 | 5.3 | 2.9 | 0.5 |
| **Gross capital formation** | (3.7) | (9.4) | (10.0) | 3.0 | (5.2) | (1.4) |
| Gross fixed capital formation (GFCF) | (2.9) | (1.4) | (2.3) | 0.3 | (1.6) | (0.4) |
| GFCF other than civil works | (5.9) | (14.5) | (15.8) | (13.5) | (12.4) | (2.3) |
| Farming, forestry, hunting and fishing | 2.8 | 1.9 | 4.3 | 7.5 | 4.2 | 0.0 |
| Machinery and equipment | 2.0 | (19.0) | (19.8) | (19.6) | (14.4) | (1.4) |
| Transport gear | (18.1) | (16.5) | (1.9) | (7.6) | (11.3) | (0.3) |
| Construction and buildings | (14.5) | (8.8) | (17.9) | (7.7) | (12.4) | (0.7) |
| Services | 2.0 | (0.1) | (0.4) | (0.1) | 0.3 | 0.0 |
| GFCF in civil works | 6.9 | 41.9 | 41.0 | 44.7 | 33.9 | 1.9 |
| Stock | (9.7) | (60.5) | (53.6) | 26.4 | (30.4) | (1.0) |
| **Internal final demand** | (1.2) | (2.2) | (1.7) | 2.2 | (0.7) | (0.8) |
| **Exports** | 1.4 | (4.9) | (10.8) | (18.0) | (8.2) | (1.5) |
| **Imports** | (2.0) | (10.6) | (12.0) | (11.4) | (9.1) | 2.7 |
| **GDP** | (0.5) | (0.3) | (0.2) | 2.5 | 0.4 | 0.4 |

Source: DANE; calculations by Banco de la República.

the resulting deterioration in entrepreneur/businessman confidence. These factors, the effect of which was more strongly felt in the first half of the year, generated excess installed capacity, and forced agents to postpone some of their investing plans.

In 2009, external purchases and sales contributed in net terms to growth, since the strong fall of exports (to − 8.2%) was more than offset by a more significant decrease in imports. In this year, export behavior was strongly affected by the drop in growth suffered by the country's major trading partners, to which the already mentioned commercial restrictions imposed by Venezuela were added.

This last situation caused exports, as measured in real pesos, to decline on a permanent basis throughout the year with no reactivation signs in the fourth quarter unlike the other demand components.

As for imports, despite their fall in annual terms throughout the year, they began to grow in levels since the second semester in harmony with consumption recovery. Nevertheless, the increases witnessed are still incipient because, at the end of 2009, the value of imports in constant pesos was scarcely reaching the level seen in 2007 (see Highlight).

## EXPORTS AND IMPORTS IN DOLLARS AS OF FEBRUARY 2010

As of the preparation date of this report, the DANE had already announced the January and February export figures. In these first months of 2010, foreign sales grew at a 19% annual rate (Graph A), mainly due to increases in mining and farming exports of 65% and 14.5%, respectively. In contrast, industrial sector exports recorded an annual fall of 8.5% and 19.8% for not counting traditional products such as coffee, ferronickel, oil by-products, and gold. Notwithstanding, in volume terms, only mining sector exports showed a slight improvement (annual 1.3% increase), mainly due to larger oil sales (33%).

It is important noting that major export products (such as coffee, coal, ferronickel, oil and oil by-products) accounting for 64% of total foreign sales showed, in both value and volume terms, a growth of 53.7% and 1.5% respectively in that period, particularly owing to the behavior of oil and oil by-products. In this manner, the good performance of exports in dollars is mainly attributable to basic export products, given the rises in their prices and, to a lesser extent, to increments in the quantities exported.

In the course of the year through February, total exports destined to the United States market (accounting for 44% of the total demand for Colombian exports) recorded a 62.6% growth owing, mainly, to increased sales of oil (200%) and, to a lesser extent, agricultural products (29.5%). As for industrial exports destined to the same market, they exhibited similar levels than those observed in the same period of the previous year, with a slight 0.2% reduction.

It is worth stressing the behavior of sales to Asia (a market that accounted for 12% of the total exported), which in annual terms grew 168% owing to increments of 497% in mining, 73% in industry and 10.2% in agricultural exports. Despite the good growth of industrial exports to this destination, is share is still very low.

With regard to exports towards Venezuela, an annual fall of 75% was recorded since they shifted from US$905 m accrued as of February 2009 to US$226 m a year later, given the generalized drop of foreign sales to that country. Therefore, the reductions of exports to Venezuela in the same period with respect to agriculture, mining, and industry, were 99.3%, 81.1%, and 73,6%, respectively.

All of the foregoing, along with the slight increment (of about 11%) observed in industrial exports without major

Graph A
Total exports (January through February)

(Millions of dollars)                    (Annual percentage variation)



Total exports

Variation (right scale)

Source: DANE; calculations by Banco de la República.

products (i.e. coffee, ferronickel, oil by-products, and gold) towards destinations such as the European Union and the Rest of the Latin American Integration Association (Aladi in Spanish), evidence a weak recovery of foreign demand for Colombian industrial products (Graph B).

As for imports (CIF) in dollars, they grew 3.4% in the course of the year through February with respect to the same period of the previous year. Intermediate goods imports were the most dynamic, with a 24% annual growth, followed by consumer goods with 8.2%. In both cases, a recovery was seen in growth tendencies as compared to those observed in 2009. On the capital goods side, imports recorded an annual 15.1% drop in this same period, and remained unchanged, with no visible recovery signs in their levels (Graph C).

Graph B
Industrial sector exports without major products [a/]
(millions of dollars)
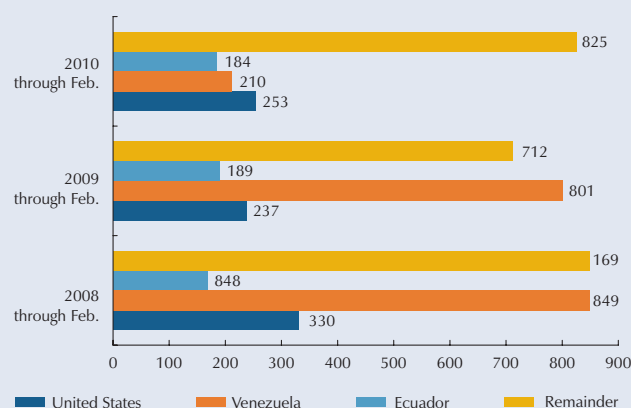


 a/ Products not included are: coffee, coal, ferronickel, gold and oil, and by products.
Source: DANE; calculations by Banco de la República.

Graph C
Imports of goods C.I.F.
(January through February)
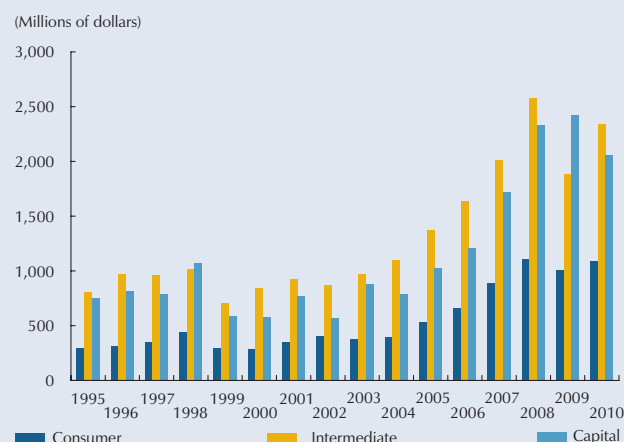


Source: DANE; calculations by Banco de la República.

By economic activity branches (Table 3), those having contributed the most to the annual GDP growth in both 2009 and the fourth semester of the year were civil works, mining, and the finance sector. The mining sector was propelled by the oil GDP which maintained a permanent expansion trend in the course of the year by always growing at annual rates above 10%. This good performance indicates that, as encouraged by the high prices of oil and other raw materials, the abundant flows of foreign investment in the past few years are already beginning to show results in the production area. On the other hand, the GDP of financial establishments and other services grew by 3.2% thanks to the fact that the exposure of financial intermediaries to the external crisis was relatively low, and that these entities were additionally favored by the appreciation of shares and the Colombian peso-denominated treasury bonds known as TES. This was coupled to real estate services maintaining growth dynamics similar to that observed in previous years (around 3% per annum).

In contrast, the sectors having experienced more falls in 2009 were building construction and industry. In the case of building construction GDP, annual drops were persistent throughout 2009, and the fourth quarter figures did not

Table 3
Annual GDP variation by economic activity branches
(Percentage)

| | 2009 | | | | 2009 Full Year | Full year contribution to growth (pp) |
|---|---|---|---|---|---|---|
| | I Qtr. | II Qtr. | III Qtr. | IV Qtr. | | |
| Farming, forestry, hunting and Fishing | 0.4 | (0.4) | 1.4 | 2.8 | 1.0 | 0.1 |
| Mine and quarry development | 11.0 | 10.2 | 8.8 | 15.0 | 11.3 | 0.5 |
| Manufacturing industry | (7.6) | (10.2) | (5.6) | (1.4) | (6.3) | (0.9) |
| Electricity, gas, and water | 0.4 | (0.0) | 1.7 | 2.9 | 1.2 | 0.0 |
| Construction | (2.9) | 17.8 | 14.5 | 22.0 | 12.8 | 0.6 |
| Buildings | (13.8) | (10.4) | (17.1) | (7.6) | (12.4) | (0.3) |
| Civil works | 6.9 | 41.9 | 41.0 | 44.7 | 33.9 | 0.9 |
| Commerce, repairs, restaurants and hotels | (2.5) | (4.9) | (4.3) | 0.1 | (2.9) | (0.4) |
| Transport, storage, and communication | (0.4) | (0.7) | (3.3) | (0.2) | (1.2) | (0.1) |
| Financial establishments, insurance, real estate, and services to enterprises | 4.9 | 4.2 | 0.7 | 2.8 | 3.1 | 0.6 |
| Social, community and personal services | 0.4 | 1.7 | 1.4 | 1.8 | 1.3 | 0.2 |
| Aggregate value subtotal | (0.1) | 0.2 | 0.2 | 3.0 | 0.8 | 0.7 |
| Taxes less subsidies | (4.3) | (5.3) | (4.2) | (3.7) | (4.4) | (0.4) |
| Gross domestic product | (0.5) | (0.3) | (0.2) | 2.5 | 0.4 | 0.4 |

Source: DANE; calculations by Banco de la República.

show any clear reactivation signs. This sector was notoriously affected by the fall of works in progress, particularly those destined to housing other than the so-called social-interest dwellings, and offices, locals and warehouses. In the short term, building construction GDP has not been significantly correlated to real estate service GDP.

On the industry side, the main obstacle to recovery has been the external demand deterioration, particularly owing to the commercial restrictions imposed by Venezuela since the second semester. Annual growth was also negative in this sector during the four quarters, although by the second half of the year a slight increase began to be noticed in production levels as compared with the previous months.

Throughout 2009, just as expected, the GDP of tradable sectors which were the most exposed to the external crisis, happened to contract (0.4%), while non-tradables' GDP grew by 0.8% and offset the fall of the other. However, in the fourth quarter, acceleration of the annual growth rate of tradable GDP was much higher than non-tradable acceleration (Graph 9), this owing mainly to additional momentum occurring in the mining and farming sectors.

## Graph 9
## Annual tradable and non-tradable GDP growth

(Percentage)



Source: DANE; calculations by Banco de la República.
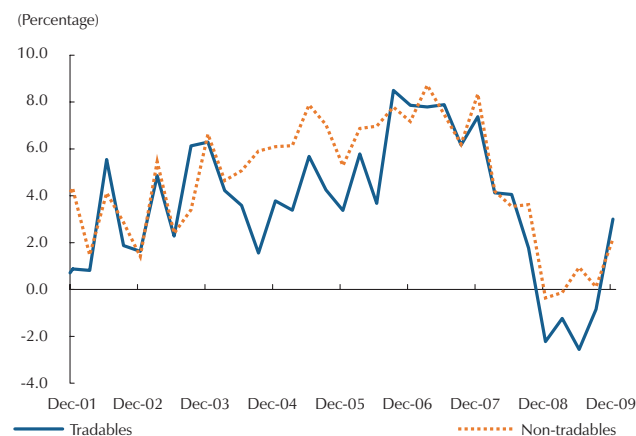
## Graph 10
## Fedesarrollo consumer confidence index

(Index)



Source: Fedesarrollo.
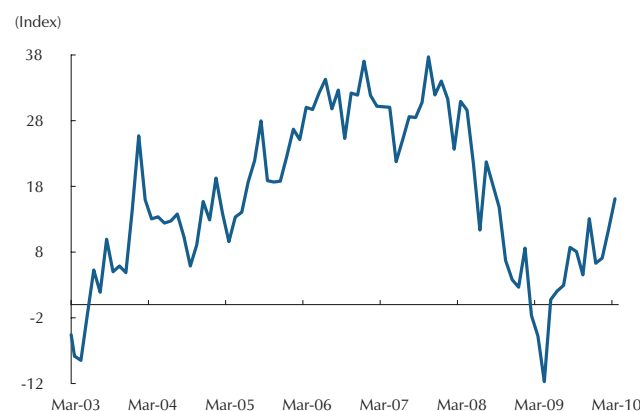
## Graph 11
## Household and retail commerce growths

(Annual percentage variation)                (Annual percentage variation)



Source: DANE, calculations by Banco de la República.
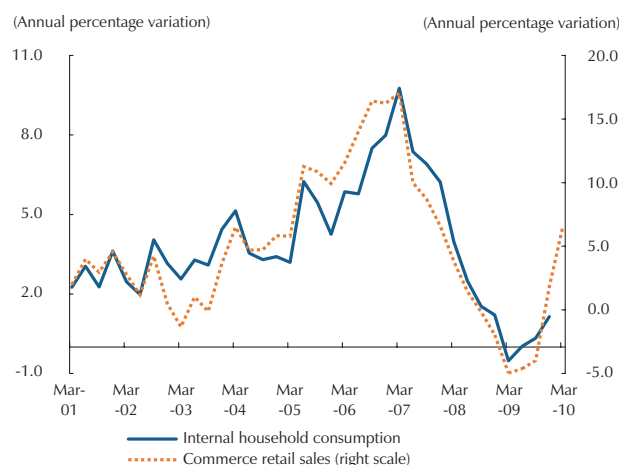
### b.    GDP for the first quarter of 2010

Most indicators available to the real sector in the first quarter of 2010 showed economic activity expansion and acceleration of annual growth rates. In particular, indicators relating to demand indicate that private consumption continued to exhibit favorable dynamics, similar to that observed two quarters ago. Nevertheless, indicators associated to investment other than civil works and construction (excluding stock accumulation) are still showing negative annual growth, which suggests a week performance of spending in investments by sectors such as industry and farming.

As regards consumption, the Fedesarrollo consumer confidence indicator (CCI) with data as of March suggests that agent confidence grew for the third time in three consecutive quarters. Thus, the indicator was established at its highest level since 2008, though still below the figures seen in the 2006-2007 period where consumption grew at rates of more than 5% per annum (Graph 10). Since April 2009, and despite a relatively high volatility, the CCI has been growing in a sustained manner.

Another important consumption indicator having as well a favorable performance during the first semester of the current year was the DANE retail sales index. As of February, the seasonally adjusted series kept the growing tendency first observed since halfway through the previous year. In the course of the first two months, the average annual growth rate of sales was 6.4%, a very favorable record as opposed to what was observed in 2009. In quarterizing the series, a high correlation between retail sales and household consumption GDP is found, this allowing to expect an acceleration of this type of spending during the first quarter of 2010 (Graph 11).

With respect to investment, emphasis is made in the fact that imports of capital goods in dollars and real pesos continued to fall in February. This behavior suggests that fixed gross capital formation other than civil and construction works and would have

(Annual percentage variation)
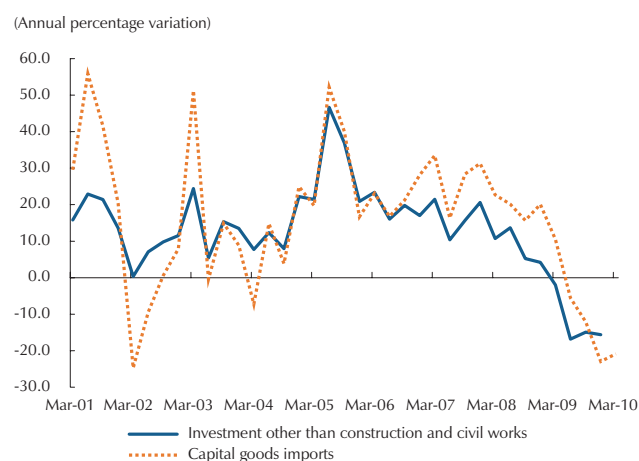


Source: DANE; calculations by Banco de la República.

Graph 13
Industrial production index without coffee threshing
(deseasonalized series and annual growth)
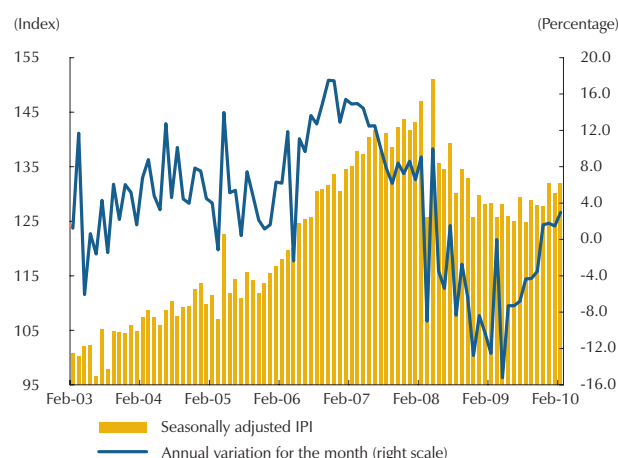


Source: DANE; calculations by Banco de la República.

persisted in exhibiting contraction in annual terms
during the first semester of this year (Graph 12).

By major economic activity branches, the annual
variation in February of the production index
without coffee threshing, as disclosed by the
DANE, was 3%. Although this record is the best
figure for one month of annual growth rate since
April 2008, production levels experience a rise at
a slow pace: in correcting the series by seasonal
factors, the production rate in February was hardly
similar to the level attained in December of the
previous year (Graph 13).

In examining industry by sub-sectors, it becomes
evident that, in February, the only branches
accounting for clear expansion in their production
were chemical substances, plastics, oils and greases,
garments, and textiles. The remaining 42 branches
were either stagnant or experiencing drops (like in
the case of tobacco, footwear, carpentry products,
publishing and printing, rubber, glass, and non-
metallic minerals). This accounts for a very sluggish
and non-generalized industrial sector expansion.
Likely, the low level of exports to Venezuela and
the slow substitution of this market are preventing
industry from exhibiting a faster and broader
recovery.

On the other hand, the building construction
sector is showing some signs of growth, but from
very low levels. For example, the construction
approved area, pursuant to January and February
licenses, increased at an average rate close to 8%
per annum that, even though it may seem high, leaves this indicator with
records scarcely similar to those witnessed five years ago. Likewise, the
perspectives of the agricultural activity are not favorable for the first quarter,
given the poor performance of coffee production (which fell by 29% in
annual terms during the first quarter), and the effect that El Niño event may
bring on transitory crop production, as it has happened in the past.

On the contrary, another supply indicator linked with urban economic
activity that does indeed show a high growth rate is the demand for total
(regulated and non-regulated, and excluding exports) energy. It has grown
at an annual rate of 7.2% in March, the highest in the whole decade (Graph
14). In the first quarter, its annual increase was 5.1%, higher that the rate
recorded in last year's fourth quarter (2.6%).

Graph 14
Total energy demand^a/

(Percentage)                                          (Level)
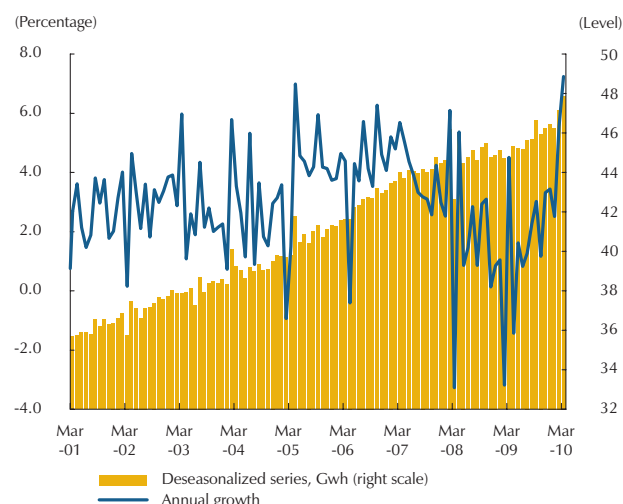


a/ Does not include exports.
Source: XM filial ISA.

Given the foregoing, GDP in the first quarter of 2010 is expected to grow at an annual rate similar to that of the fourth quarter of 2009. This dynamics suggest that household consumption would go on expanding; and, unlike what took place in 2009, this would be possible due to an upturn in consumer consumption of durables. The behavior of gross capital formation in the first quarter will continue to be driven by investment in civil works and, to a lesser extent, by stock accumulation. On the contrary, the remaining investments will continue to fall in annual terms, though with some recovery in level.

In contrast with what was observed in 2009, predictions for the first quarter of 2010 are that the external sector may contribute in a negative manner to GDP growth because, in annual terms, imports would fall less than exports. The GDP forecast is taking into account a contraction of about 72.8% in exports in dollars to Venezuela during the first quarter, as indicated in Chapter III of this report.

Consequently, for this report it has been estimated that growth in the first quarter shall be between 2.3% and 3.1%; this means a reduced GDP expansion face to the figure observed for the fourth quarter of 2009, and places Colombian economy on a moderate growth path.

**2.    Labor and job market, and wage and salary costs**

Information available about this market shows that in spite of recent signs suggesting that unemployment deterioration is diminishing, both labor and job quality are still being affected; the market continued being loose. The above might hurt household and consumer confidence, while preventing the emergence of inflationary pressures via labor costs.

In the first semester, employment started showing positive annual growth rates. According to the "GEIH" (literally: Great Integrated Household Survey), in the December through February average, the number of employed increased at an annual rate of 7.1% for the whole national total, and 5.5% for the thirteen areas. Nonetheless, these increments imply a slowdown in job creation face to the moving quarter ending in January. However, in examining the deseasonalized series that gather more accurately the recent trends of the variable, it can be seen that, up to February, job creation was concentrated on the thirteen major urban areas (Graphs 15 and 16) since, for the national total, the number of employed fell as compared with the previous moving quarter.

Source: DANE; calculations by Banco de la República.

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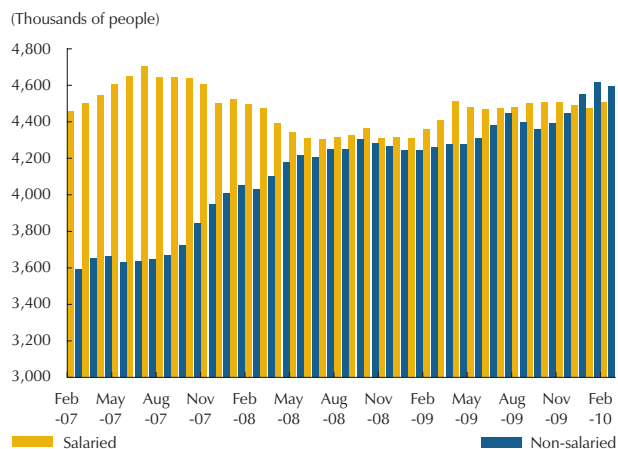
Source: DANE (GEIH); calculations by Banco de la República.

Besides, with deseasonalized figures of the thirteen major cities, employment growth in the past few months has concentrated on the non-salaried group, usually associated to lower quality jobs, less stability and, very likely, pertaining to the informal sector. In contrast, salaried employment has shown either stagnation or a slight backward step since early 2009, excepting February of this year (Graph 17).

Deterioration in the quality of employment deriving from increased involvement of non-salaried workers in the total seems to be related as well to the rise seen in the objective sub-employment rate, particularly in the thirteen areas (Graph 18). This is likely to affect household confidence, as shown by the close relationship between the number of salaried jobs per capita and the Fedesarrollo consumer confidence index (CCI) (Graph 19). Should this standstill of salaried and formal jobs continue, consumption recovery might take place at a slower pace than expected (see Chapter III).

On the other hand, employment expansion has not offset job supply; for this reason the unemployment rate has continued to climb. An evidence of the foregoing is higher growth in the global participation rate (GPR) (supply indicator) face to the occupation rate (OR) (demand rate) as observed in Graph 20, panels A and B. For the moving quarter ended in
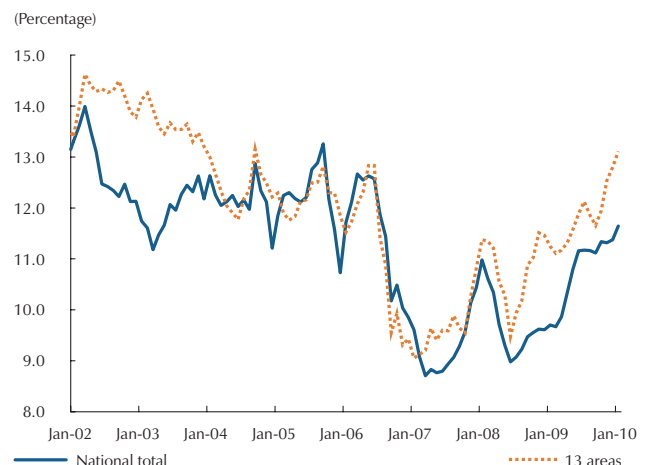
Source: DANE (GEIH); calculations by Banco de la República.

Graph 19
Salaried as a ratio of total population (TP) and
CCI (13 areas, deseasonalized mobile quarter)

(Index)                                    (Percentage)

CCI ——      Salaried /TP, four-months anticipated (right scale) ·······
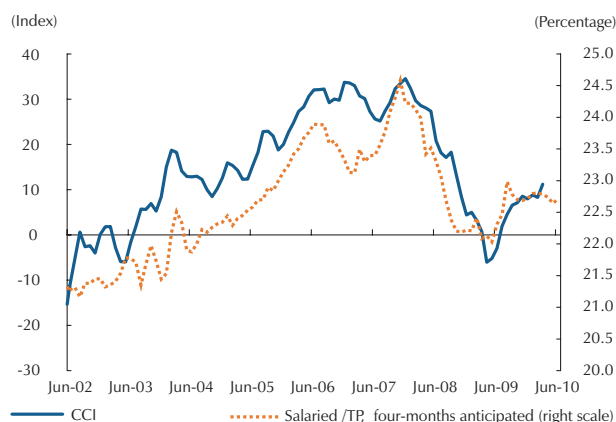
Sources: DANE, Fedesarrollo; calculations by Banco de la República.

Graph 20

A.    Global participation rate (GPR) and
      occupation rate (OR)
      (13 areas deseasonalized moving quarter)

(Percentage)

GPR ——      OT ·······
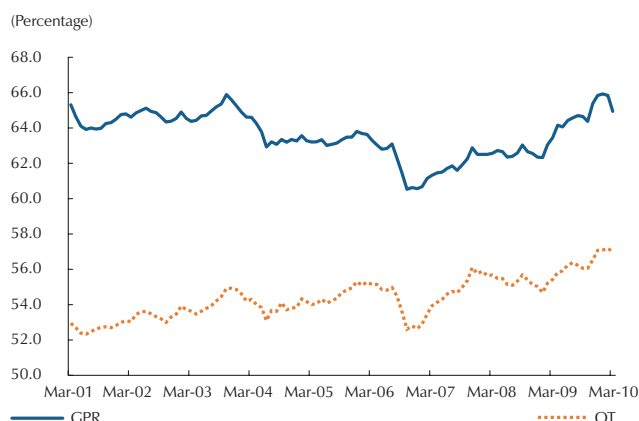
B.    Job supply and demand expansion
      (annual variation of GPR and TO, moving quarter)

(Percentage points)

GPR (supply) ——      OT (demand) ·······
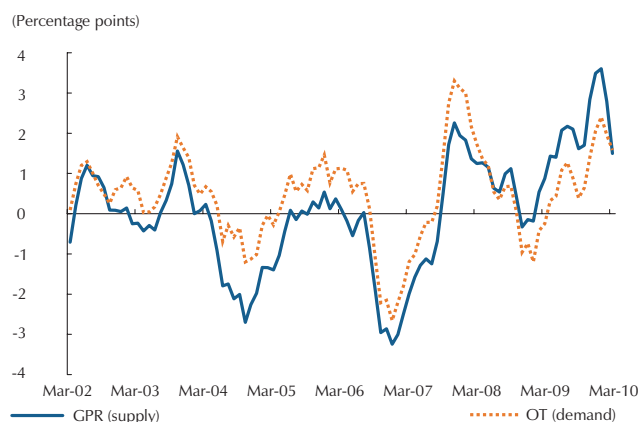
Source: DANE; calculations by Banco de la República.

February, the unemployment rate was established
at the highest levels since 2005 and 2006: 12.8%
nationwide, and 13.7% for the thirteen areas. In
addition, DANE figures show that employment
duration has increased (see section 4, page 34)

In the middle of this scenery, evident facts suggest
that the unemployment rate increase is likely to
come to an end. This interruption of the current
trend becomes clearer in the thirteen areas where
unemployment deterioration is everyday less.
In addition, where the deseasonalized series is
analyzed, it is observed that the UR shows a
decreasing trend since several months ago (for
moving quarter figures) (Graph 21). This suggests
an improvement in employment, which could be
taking place due to the more favorable economic
conditions witnessed at the end of last year.

The high unemployment and informality levels
kept the labor and job market in a loose situation,
which has prevented pressure on wages, allowing
salaries to be adjusted to rates decreasing everyday
and in line with the inflation target range. A raise
of the minimum salary by 3.6% did also contribute
to this situation. So, in the case of construction,
wage increases were between 3.1% and 3.6% per
annum in March (Graph 22); and for commerce,
increase in February was 2.7% (Graph 23). In the
industry sector, deceleration signs can be seen

Graph 21
Unemployment rate (UR)
(deseasonalized moving quarter)

(Percentage)

National UR ——      13 areas UR ·······
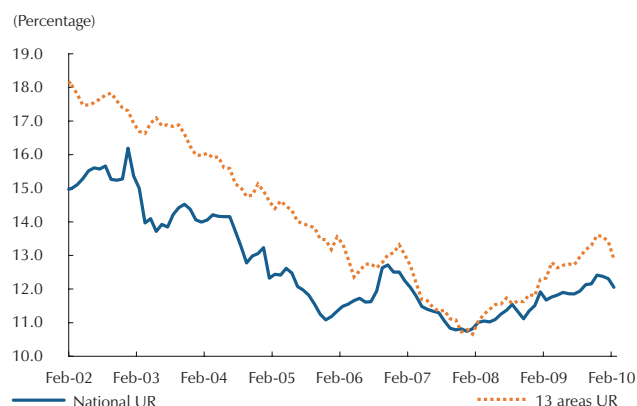
Source: DANE (GEIH); calculations by Banco de la República.

Graph 22
Nominal sector salaries index: heavy construction and housing

(Annual percentage variation)
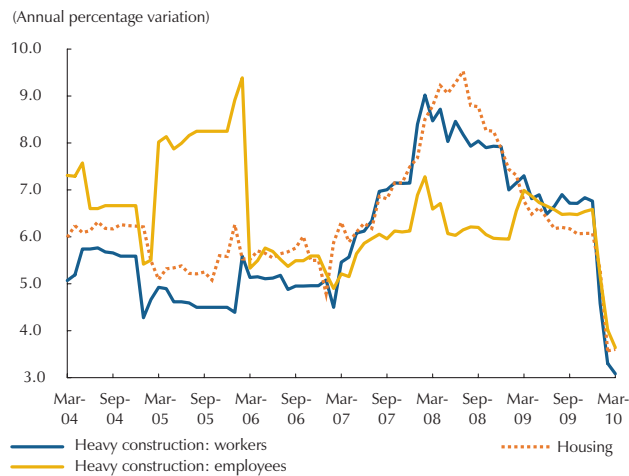


Note: Workers: Master builder, worker, officer, inspector, topographer/surveyor, and chainman Employees: Chief engineer, assistant engineer, storeman, accountant, guards, mechanics, and laboratory assistant.
Source: DANE (ICCP*, ICCV**) * Heavy Construction Cost Index ** Housing Construction Cost Index.

Graph 23
Nominal salary index: industry and commerce

(Annual percentage variation)
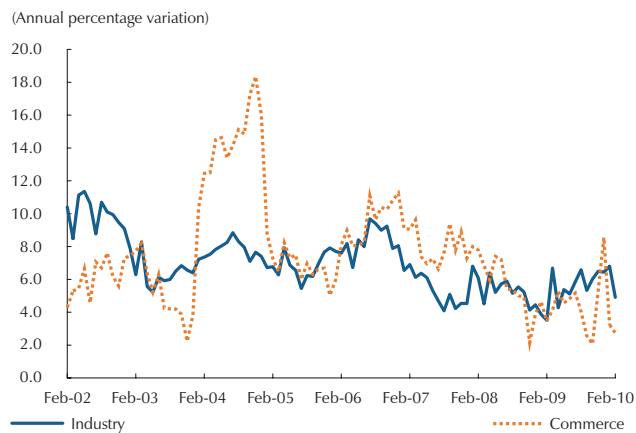


Source: DANE (MMM* and MMCM**) * Monthly manufacturing sample ** Monthly Retail Commerce Sample.

too, since salaries shifted from an annual growth rate of 6.3% in the fourth semester of 2009 to an annual rate of 4.9% in February (Graph 23). In sectors like industry, the foregoing has contributed to a decline in the unitary labor cost (ULC), which should be translated into less pressures upon prices (see Highlight).

Towards the remainder of the year, and owing to economic growth expectations, it is possible for unemployment to diminish slightly, with no substantial changes in informality levels. Due to this, the absence of pressures on salaries and prices is very likely. On the other hand, an aspect deserving more attention is the adverse impact that deterioration in job quality may have on consumer confidence and, therefore, on the recovery pace of the economic activity.

## 3. Other costs

Producer prices and non-salary costs did not increase much so far this year. Major rises occurred in the prices of goods of national origin, particularly in the farming and mining sectors, and were partially offset by drops in the prices of imported items. As a result, annual inflation for producers, as measured by the producer price index (PPI), shifted from -2.2% in December 2009 to -0.2% in March 2010 (Graph 24). In these three months, monthly inflation was positive, though decreasing, since it went from

## THE UNITARY LABOR COST AS AN INFLATIONARY PRESSURE INDICATOR

The unitary labor cost (CLU in Spanish) is a measure of labor cost concerning its efficiency in goods production. Although the CLU is usually considered a direct indicator of inflationary or deflationary pressures, history indicates that this is not necessarily the case and the determinants of labor cost must be carefully analyzed to understand their effect on price formation.

The CLU can be estimated as the real wage paid to workers, divided by the output per hour worked. With information of the manufacturer monthly sample, since the fourth quarter of 2009, the industry's CLU has exhibited a reduction in its annual growth, and this trend has continued until February 2010 (Graph A).

Graph A
Output by worker and unitary labor cost ("CLU")

(Annual percentage variation)
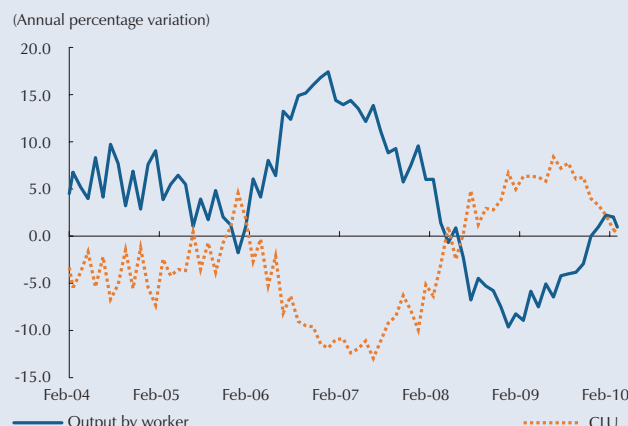


Source: DANE; calculations by Banco de la República.

In order to determine the effect of labor cost slowdown on inflation, the historical information available can be analyzed. It is possible to find in the past certain periods like 1991-1992, 1995-1996 and 1998-1999 for which CLU moderation was accompanied by a reduction in core inflation (Graph A). Nevertheless, in the 2006-2007 periods, the drastic fall of the CLU was not associated to a deflation and, in fact, there are indications that it came along with a slight increment in core inflation.

Intuition behind inflation acceleration in a CLU reduction context might be found in the phenomenon known as labor hoarding. In all the periods analyzed, the CLU fall was mainly determined by an increment in the product per hour worked rather than a salary drop. According to the labor-hoarding hypothesis, at the time of undergoing a negative demand shock firms refuse to dismiss labor in the same proportion than output reduction, in order to keep those workers they know and appreciate. Consequently, once demand is recovered, firms may be able to meet it with no need of further labor hire, in this way increasing the implicit work productivity measures. Nevertheless, if demand recovery is very strong, the margin firms counted on may be exhausted; for this reason they might find it necessary to carry out additional hire, in this way raising the new units' cost of production (known as marginal cost).

However, the effect that a marginal-cost increment has on inflation depends, to a great extent, on the ability of firms to convey increases to sales prices. If the aggregate demand is reinforced, the firms may increase the prices of their products; nevertheless, if demand is weakened, pressures upon product prices would not be seen.

This hypothesis might be the explanation behind the evidence found with respect to the CLU effect on inflation. In the 1991-1992, 1995-1996, and 1998-1999 periods, aggregate demand had endured shocks during recessions in such a way that the output gap was contracting and, therefore, core inflation was reduced. On the other hand, in the 2006-2007 period, both aggregated demand and the output gap were in expansion; for this reason, the increments in marginal costs could be reflected in higher inflation.

Recently, CLU deceleration obeyed to two phenomena: first a reduction in the adjustment pace of real wages (deflated by the CPI or the industrial PPI) in the current year. On the other hand, an output acceleration per hour worked: this variable grew at an annual rate of 2.1% on average, so far in 2010, this occurring thanks to a recovery of industrial production above hours worked. Nevertheless, since aggregate demand is currently affected, the output gap is negative today (Graph B). The foregoing would indicate that if the strong increase of output per hour worked continues, firms would very unlikely convey the higher marginal costs to the consumer prices.

Therefore, the current situation of the CLU, coupled with a negative output gap, may give signs that inflationary pressures are not being observed in the short term on this front.

Graph B
Unitary labor cost, GDP gap and core inflation

(Annual percentage variation)                                    (Percentage)
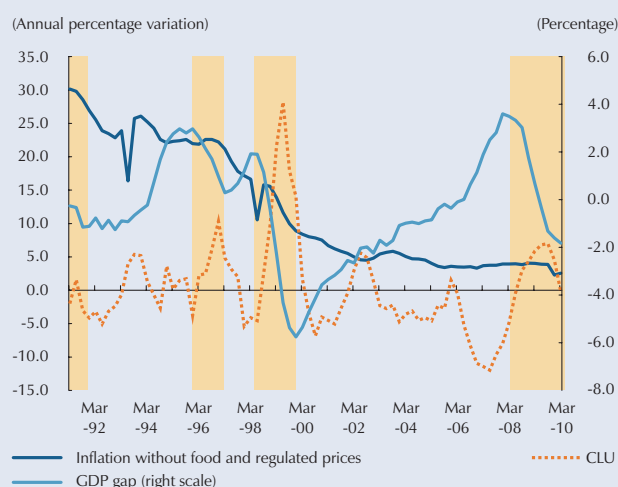


Source: DANE; calculations by Banco de la República.

## Graph 24
## Total PPI

(Annual percentage variation)                    (Index, December, 2006 = 100)



Annual variation          PPI (right scale)

Source: DANE.

## Graph 25
## PPI by origin

(Annual percentage variation)          (Annual percentage variation)



Produced and consumed          Imported (right scale)

Source: DANE.

## Graph 26
## Produced and consumed PPI by branch of economic activit

(hours)



Agriculture          Industry          Mining (right scale)

Source: DANE;  calculations by Banco de la República.

1.2% in January to 0.6% in March. By origin, the annual PPI variation for produced and consumed goods accelerated in the quarter, closing at 2.1% in March, while the PPI for imported goods did not have significant changes and remained in negative terrain (Graph 25).

Items that contributed most to the acceleration of produced and consumed goods PPI were those relating to oil refining and natural gas. In addition, there was an impact of some foods that could have been affected by rainfall-cycle alterations associated with El Niño, as it was the case of legumes, rice, and tubers. Industrial goods prices tended to show much more moderate adjustments permitting their annual variation of their index to remain near 0% in the first quarter (Graph 26).
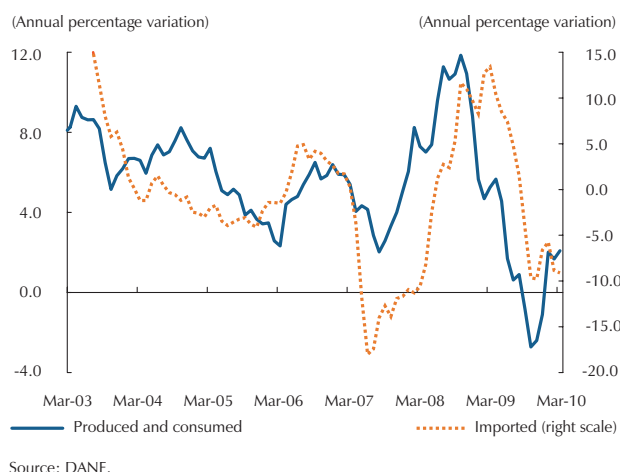
For the imported goods PPI, their annual variation reduction was explained by the exchange rate appreciation so far in 2010, rather than an increase in the implicit dollar prices (Graph 27).

Taking as a basis the PPI, the CPI, and other DANE information sources, the weighed non-labor cost indexes were estimated by using the social accounting matrix (SAM). During the first quarter of this year, the annual variation of these indexes reflected the same dynamics of the producer prices: some recoveries were observed in the national component, while the

## Graph 27
## Implicit PPI in dollars

(Annual percentage variation)



Annual depreciation          Imported PPI in pesos
Implicit PPI in dollars

Source: DANE; Financial Superintendency; calculations by Banco de la República.
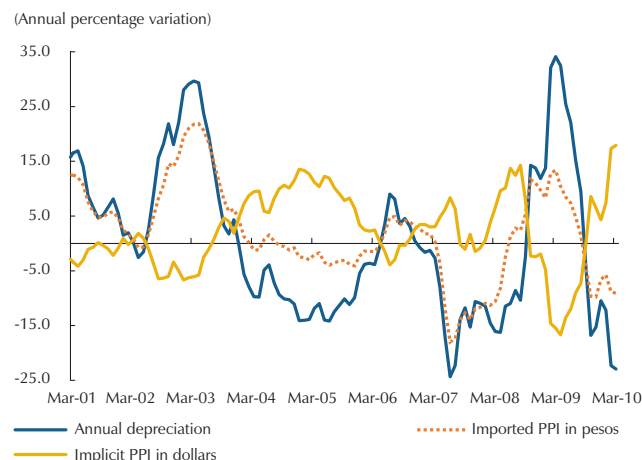
Graph 28
Non-wage costs indices from the SAM and housing

(Annual percentage variation)    (Annual percentage variation)



National component (right scale)    Imported component

Source: Banco de la República.
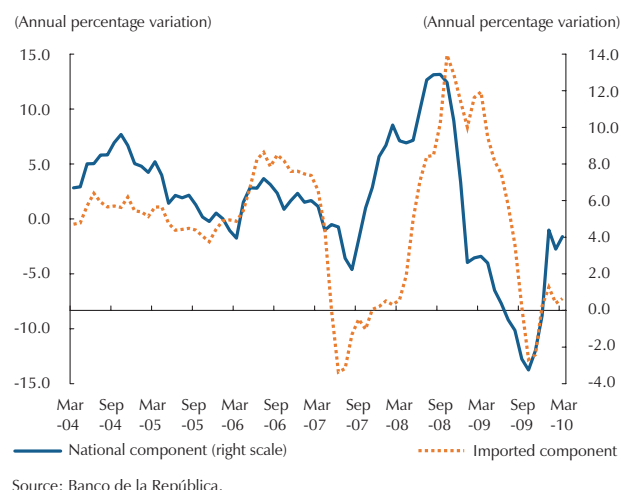
imported component continued to decrease in annual terms (Graph 28).

For the rest of the years, no raising pressures in mining prices should take place, provided that international prices of raw materials and oil do not record significant increases and the exchange rate remains relatively stable. Something similar can be expected for industrial goods prices. The situation becomes a little more complex in the case of farming goods because additional increases cannot be ruled out as a result of El Niño event. Because of this circumstance, upward pressures on producer prices could be expected in the second and third quarters of 2010 that, notwithstanding, would be temporary and tending to cease by the end of the year and early 2011.

At this point, for this report, it is considered that non-salary cost pressures have been quite moderate so far this year, and they might continue to decline since a relative stability in international prices and the exchange rate is expected (see Chapter III). Besides, higher farming prices would not have permanent effects on the total costs of the economy.

### 4.    Surplus Production Capacity and Demand Pressures

The balance between production and potential supply of the economy is, among others, a determining factor of inflation pressures. With the reduction of economic activity up to halfway through 2009, those pressures were significantly reduced. Although the economy has returned to a recovery path, the production level is still below its true potential, as shown by the low utilization of the country's productive infrastructure.

In the course of 2010, the indicators of installed capacity utilization (UCI in Spanish) announced by the National Association of Colombian Entrepreneurs (ANDI) and Fedesarrollo remained at historically low values, despite some recovery signs (Graph 29). In the case of the Fedesarrollo indicator, installed capacity was established at 66.0% in the first quarter, a figure that was 0.8 percent points lower than the record of the first quarter of 2009 and 5.1 pp below its historical average. According to the ANDI, the utilization of installed capacity was 75.4% in February 2010, i.e., 2.0 pp less than the same period of 2009 and 1.0 pp below the series average.

Added to the surplus of installed capacity, a continuous expansion of labor share above demand has led labor market to continue to show surplus supply. For this reason, the Bank estimations indicate that the unemployment rate observed today is above that compatible with a stable and low inflation, known

(Percentage)



a/ Deseasonalized series.
b/ The calculation of the ANDI's UCI is based on the arithmetic average.
Sources: ANDI and Fedesarrollo.

Graph 30
Annual GDP growth: observed and potential
(annual average)

(Percentage)
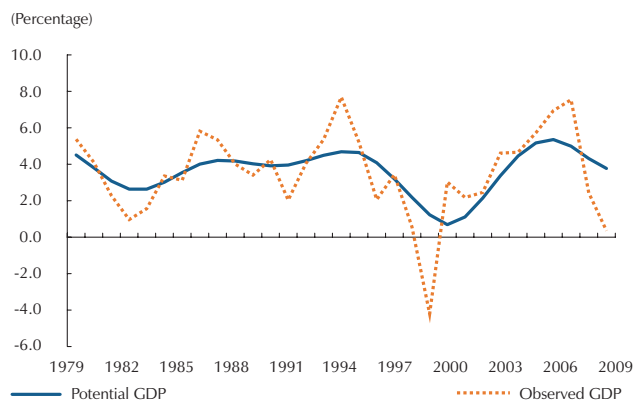


Source: DANE; calculations by Banco de la República.

Graph 31
Output gap
(annual average)

(Percentage)
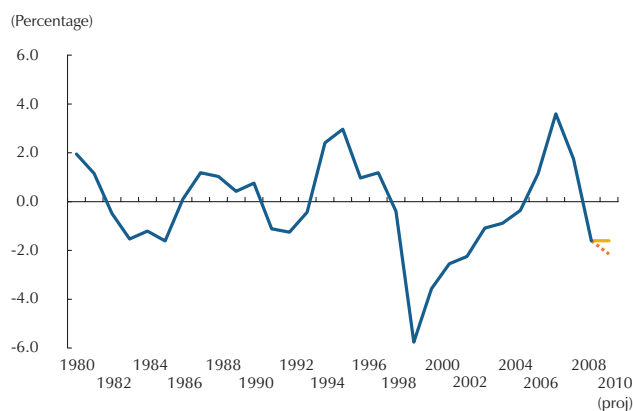


(proj): projected
Source: Banco de la República

as *non-accelerating inflation rate of unemployment* (Nairu).

In this manner, the low utilization of installed capacity, together with the labor market gap, managed to limit demand-pull inflation pressures upon prices in early 2010 and, very likely, they will continue to do so during most of the year since a quite strong recovery of demand or a significant reduction of the unemployment rate are not foreseen.

Moreover, permanent shocks endured by the Colombian economy following the international crisis and the deterioration in external financial conditions added to commercial restrictions having been imposed upon the country, would have led the potential product growth to drop as compared to 2008. As a result, econometric estimations made by the Bank point to a potential GDP growth for last year, between 3.5% and 4.0% (Graph 30).

Given the foregoing, the output gap would have been established at -1.6% for 2009 (Graph 31). This figure is lower that the one published in the previous report, owing to the fact that the economic activity grew in the last quarter of 2009 at a higher rate than projected.

For 2010, some factors are expected to slightly reduce potential growth. On the one hand, the decline observed in 2009 investment would weaken productive capacity in 2010. On the other hand, deterioration in the quality of employment and labor force lag may negatively affect economic productivity in the current year. This would imply growth in potential GDP, which would then be established between 3% and 3.5%; as a result, the output gap would remain in negative terrain and, very likely, it would broaden face to the estimations for 2009. Particularly, if GDP growth for 2010 as reported by the DANE approaches the expectations of Chapter III of this report, the gap would be between -1.6% y -2.2%.

## 5. Inflation Expectations

Mid-term and long-term inflation expectations continued to drop so far this year, and in most

(Percentage)



| | Apr-03 | Apr-04 | Apr-05 | Apr-06 | Apr-07 | Apr-08 | Apr-09 | Apr-10 |
|---|---|---|---|---|---|---|---|---|
| | 16.1 | 70.4 | 79.0 | 90.1 | 25.9 | 6.3 | 53.1 | 93.8 |
| Target | 5.0%-6.0% | | 4.5%-5.5% | 4.0%-5.0% | 3.5%-4.5% | | 4.5%-5.5% | 2.0%-4.0% |

Source: Banco de la República.

(Percentage)



| Observed | Expected minimum | Expected average |
|---|---|---|
| Expected maximum | Survey, Apr-09 | Survey, Jul-09 |
| Survey, Oct-09 | Survey, Jan-10 | |
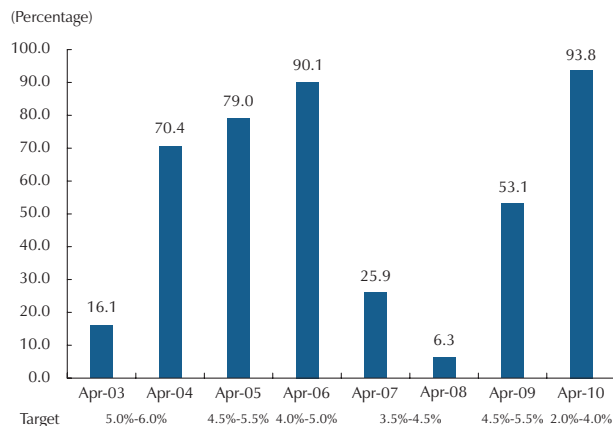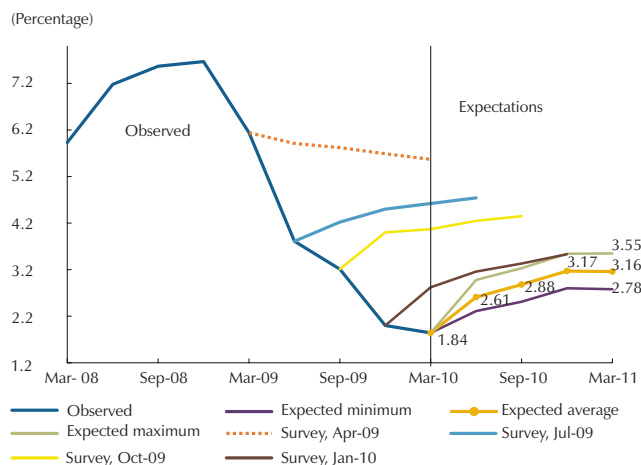
Source: Banco de la República.

cases were established within the target range set by the BDCB (between 2% and 4%). According to the quarterly Central Bank survey applied to a wide range of agents and analysts, in early April the average inflation expected for the end of 2010 is 3.2%, below the result obtained in the January survey (3.5%), where 94% of the surveyed expected inflation to be established by the end of the year within the target range set by the BDCB. For March 2011, inflation expected stands as well at 3.2% According to the quarterly Central Bank survey (Graphs 32 and 33).

As regards the monthly expectations survey applied in early April to financial market operators, shows a 3.3% total inflation expected for December 2010 (as opposed to 3.7% obtained three months ago). This expectation has also been converging towards de mid-point of the target range so far this year (Graph 34). As per the twelve-month expectations (up to March 2011), they continued to be higher in this survey (3.7%), although they declined (by 10 bp) face to what was reported in the previous quarterly report (Graph 34).

The monthly survey digs as well in the expected inflation without food (Graph 35). The expectations for this sub-basket were again lower than the total GDP and those registered for the GDP without food in the previous quarterly report: for December, the surveyed foresee a 3.0% inflation without food, while the figure for a twelve-month horizon (April 2011) is 3.4%.

The foregoing results let hint that financial market operators still consider that the main pressures upon inflation in the next months will come from food prices. In particular, where food price inflation implicit in the monthly survey is cleared, an expected figure of about 4.0% is obtained for the end of the current year. Undoubtedly, this acceleration gathers the estimations made by the agents for the size of the shock likely to result from El Niño. However, in the last months, this expectation was reduced as well and, in March, it was 75 bp below that provided in January 2010 (Graph 36)

Finally, average inflation expectations obtained from the Colombian government treasury bonds or public debt certificates known as TES (with preliminary January data) are established at 2.61%, 3.91% and 4.18%, for 1, 5 and 10-year term certificates, respectively (Graph 37). These figures have

## Graph 34
### Annual inflation forecast by banks and brokerage firms

(Percentage)



— Twelve months ahead   ·····  As of December each year
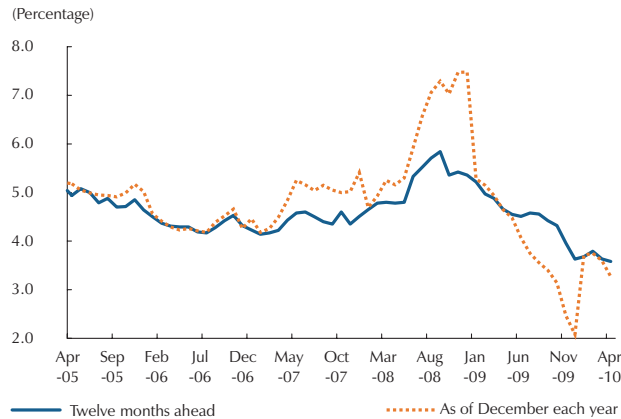
Source: Banco de la República.

## Graph 35
### Annual inflation forecast without food, according to banks and brokerage firms

(Percentage)



— As of December each year   ·····  Twelve months ahead
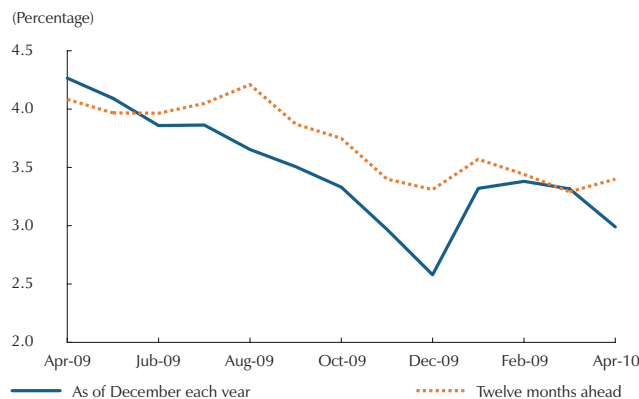
Source: Survey, Banco de la República.

## Graph 36
### Forecast of implicit food inflation, according to banks and brokerage firms

(Percentage)



— As of December each year   ·····  Twelve months ahead
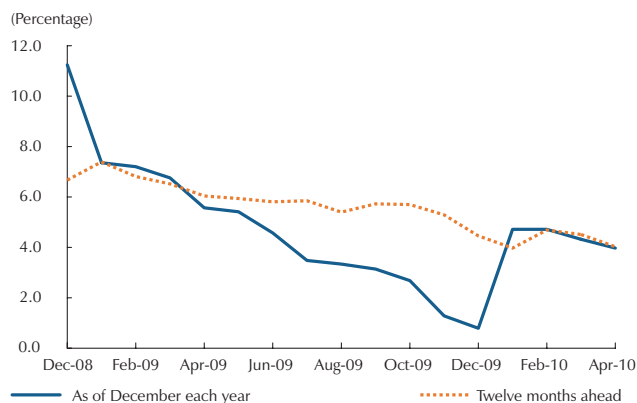
Source: Survey, Banco de la República.

shown a significant reduction as opposed to what was analyzed in the previous quarterly report, and to this date they are established within the long-term target range, with the exception of the ten-year term figures. It is worth noting that this expected inflation indicators may be distorted by the liquidity premiums of the fixed-rate and real value unit ("UVR") certificates, and the inflation risk premium.

## Graph 37
### One, five and ten-year breakeven inflation[a]

(Monthly Average)



— 1 year   ·····  5 years   — 10 years
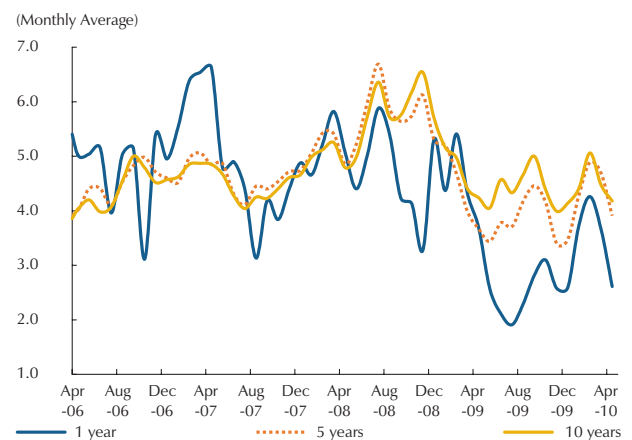
a/ Nelson & Siegel Methodology.
Source: Survey, Banco de la República.

Box 1
DISPOSABLE INCOME IN COLOMBIA IN A LOW-GROWTH YEAR

Carolina Arteaga-Cabrales[*]

In 2009, Colombia confronted one of the harshest international crises in the past few years. Notwithstanding, production grew slightly, no detriment in the Government's fiscal position was suffered, and the exchange rate did not experience major adjustments. In this context, the performance of the national income at the aggregate level and by economic agents is assessed in this box, for the purpose of analyzing its link with aggregate demand and inflation.

The National Disposable Income (NDI) , which is equal to the GDP plus current transfers and the net factor income[1], continued decelerating in 2009, just as it had been occurring since 2008, this being the result of deterioration in economic activity in both Colombia and the rest or the world (Graph B1.1 and Table B2.1). The declining world demand and a drop in external financing led trade to contract. Loss of confidence among both consumers and businessmen and entrepreneurs translated into a decrease in investments and a weak consumption growth. In turn, the high unemployment levels of the advanced economies and a plunge in production prompted a 14% contraction in workers' remittances in dollars[2]. All this led to the weakening of domestic demand in the previous year, and the lowest annual growth registered by consumption in the entire decade. In per capita terms, both the NDI and consumption fell in 2009 at an annual rate of 1%.

When analyzing the NDI for the different economic agents (households, enterprises and Government), a generalized deceleration is seen in 2009. On the household side, the negative effect on income given higher unemployment and due to remittance reductions, exceeded on average real salary increases, yield on shares, and major Government transfers. On the enterprise side, the drop of internal and

external sales along with real salary increases reduced profits despite lower costs. Finally, though this diminished economic activity translated into lower tax collection, this situation was offset by the good performance of public enterprises, and the growth of fiscal income was positive[.]

Graph B1.1
National disposable income and consumption
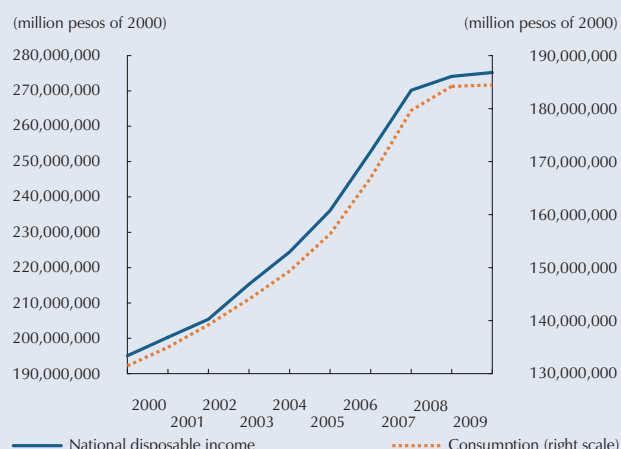


Sources DANE and Banco de la República.

## 1.     Households

Household disposable income is the sum of job remuneration, savings yields and investments, Government cash transfers and private transfers, less taxes (Jenkis, 2000). On the labor remuneration side, which accounts for about 70% of the total household income,[3] opposing results are obtained between the price channel (salaries) and the amount channel (unemployment). With respect to wages and salaries, a lower inflation than expected in 2009 generated a significant increase of the minimum wage in real terms and, in turn, in other industry and commerce salary indicators (Graph B1.2). This betterment in the purchasing power, particularly low-income workers, contributed to the reactivation of non-durable consumption registered by the end of 2009[4].

Nevertheless, deterioration in the labor market reduced household income. Between 2008 and 2009, the average

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[1]    Currently, the DANE has no estimates for the last two items. For this reason, data used in this box come from the balance of payments, expressed in US dollars. In order to translate this information into constant pesos, the average exchange of each year was used, and the transfer and net factor income were respectively deflacted with the CPI and the PPI.

[2]    In current US dollars

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[3]    Pursuant to the quality of life survey by the DANE.

[4]    According to the National Planning Department (DNP in Spanish), as a result of the low prices of foods, among other things, 500,000 people came out from extreme poverty by shifting from 7.7 million in 2008 to 7.2 million in 2009.

Table B1.1
National Disposable Income
(constant prices 2000)

| | 2008 | 2009 | Variation | Share (Percentage) | Contribution |
|---|---|---|---|---|---|
| IND (A + B + C + D + E + F + G) | 274,507,927,4 | 274,777,765,9 | 0.1 | | 0.1 |
| Investment (A) | 76,614,652,0 | 72,632,340,9 | (5.2) | 27.9 | (1.5) |
| Expenditure (B) | 50,729,974,0 | 52,179,093,0 | 2.9 | 18.5 | 0.5 |
| Consumption (C) | 184,206,074,0 | 184,448,516,0 | 0.1 | 67.1 | 0.1 |
| Exports (D) | 51,903,646,0 | 47,668,797,1 | (8.2) | 18.9 | (1.5) |
| Imports (E) | 83,085,515,0 | 75,561,437,0 | (9.1) | (30.3) | 2.7 |
| Transfers (F) | 6,718,799,6 | 6,056,826,2 | (9.9) | 2.4 | (0.2) |
| Net factors income (G) | (12,579,703,3) | (12,646,370,3) | 0.5 | (4.6) | (0.0) |

Sources: DANE and Banco de la República.

unemployment rate of the national total shifted from 11.3% to 12.0% and, in the family heads' subgroup, which is likely to obtain better income than others, unemployment

Graph B1.2

A.      Real minimum wage increases

(Percentage point)



B.      Real wages/salaries

(Index of January 1999 = 100)



■ Real minimum wage     ■ Real industry wage     ■ Real commerce wage
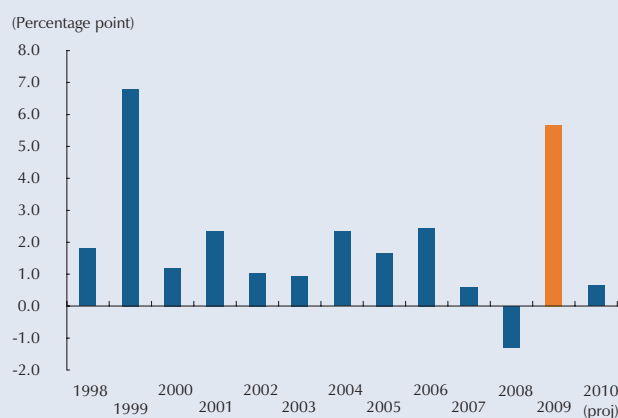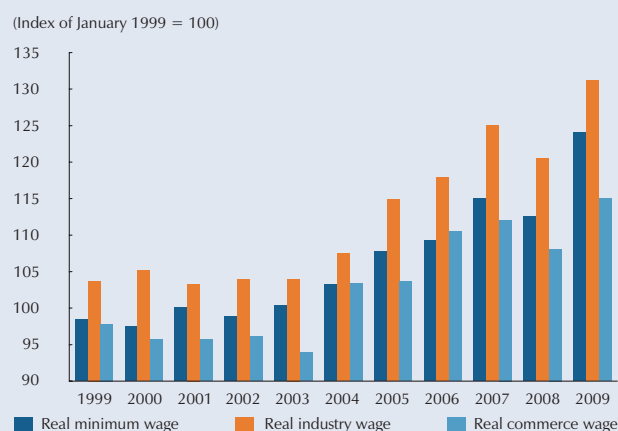
(proj) projected.
Source: DANE; calculations by Banco de la República.

recorded its highest figure in the five past years: 6.1%. Deterioration in the labor market concentrated in urban zones where average unemployment shifted from 11.5% a 13.0%, while in the rural zone showed a 0.3 pp reduction, with a 7.8% average. Another fact occurring since halfway through this decade is non-salaried employment increase (Graph 17 Chapter I). This type of lower-quality occupation with little access to social security leads to a loss of confidence and reduces household consumption, due to less income stability.

In 2009, household income was also affected by the fall in private transfers, mainly from those representing their 80%, since they experienced a fall of 8% in real terms[5], thus plunging to levels nearing those registered in 2002 (Graph B1.3).

Graph B1.3
Workers' remittances [a/]

(million pesos of 2000)
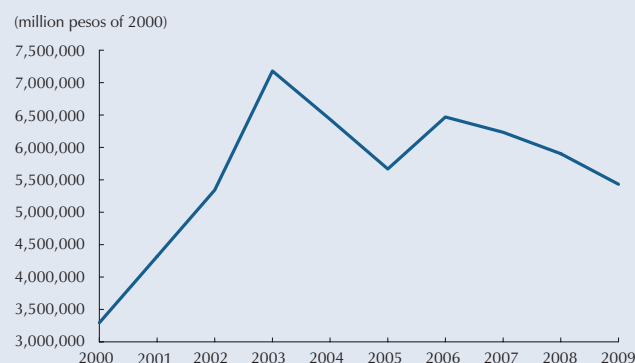


a/ In order to convey the information about remittances in dollars to constant pesos, the average exchange rate of every year was taken and the CPI was used as a deflator.
Sources: DANE and Banco de la República.

5      73% of remittances come from Spain and the United States; both countries confronted strong plunges in both wealth and employment during 2009.

On the Government side, cash transfers to households, the resources from the "Familias en Accion" (Families in Action) program[6] increased by 19.3% and the program's coverage shifted from 34% to 48% of the homes pertaining to the so-called "Sisben"1 (a classification that gathers the most needy population sector which, in 2009, amounted to 19.2 m people). The impact of this subsidy has been growing in a significant manner and the number of favored households shows a seven-hold increase, according to the Colombian Presidency's Social Action. (Graph B1.4).

Sources: Presidency of Colombia (Social Action): calculations by Banco de la República

Finally, last year, households with investments in the Colombian Stock Exchange obtained, on average, a yield above 50%. This, apart from generating a wealthy effect, has as well an income effect by means of dividends paid by some shares (see Graph 60A Chapter II).

In brief, household income during the previous year was intensely affected by the labor market deterioration and remittance reduction. Increases in Government transfers, real salary increments and returns from savings and investment did not offset this fall; for this reason, the families' income was contracted by 2% as compared to 2008, according to the estimations of the Mission for the junction of the employment, poverty and inequality series.

## 2. The Enterprises

In 2009, as a consequence of the international crisis, trade fluxes and world production were respectively reduced by 11% and 1.9. This situation, from which Colombia was not excluded, affected consumer confidence, reduced external and internal demand, and caused a drop in the enterprises' income. Last year, in real terms, exports fell

8.2%, industry sales contracted 5.4% on average, and retail commerce sailes decreased 2.%, on average (see Graphs 11 and 13, Chapter II).

Generally, drops in sales and exports reflected on operational income and profits of the managerial sector. According to the Superintendency of Companies, the reduction of enterprises' operation income in 2009 was 0.01%[7], while in 2008 they had increased 9.2% and 13.4% in 2007.

The enterprises with larger commercial relations with Venezuela suffered a plunge of about 8.7% in their operational income. As for profits, these fell at an annual rate of 4.1% while in 2008 and 2009 their increase was 9% and 23% respectively. This decrease may be connected with the weak growth of operational income, and the real salary increase; nonetheless, it did not worsen thanks to fewer costs incurred by enterprises due to a reduction in raw material prices, along with personnel cuts. On the other hand, operational profit decreased 10.5%, this being explained, according to the Superintendency of Companies, by the efforts of entrepreneurs to keep selling the same but at lower costs.

By sectors, construction stands out for showing the highest growth in operational income with an increment of 11.8%, followed by the service sector with 5.4%, farming with 4.4%, and commerce with 2.6%. Mine working and the manufacturing sector saw their income reduced by 13.5% and 3.2%, respectively (Table B1.2).

Table B1.2
Percentage variation of operational income

| Sector | 2007 | 2008 | 2009 |
|---|---|---|---|
| Construction | 30.93 | 21.74 | 11.80 |
| Services | 13.89 | 10.84 | 5.44 |
| Framing | 10.50 | 14.21 | 4.40 |
| Hotels and restaurants | 15.51 | 12.09 | 3.48 |
| Commerce | 14.08 | 5.92 | 2.64 |
| Manufacturing | 12.12 | 5.83 | (3.24) |
| Mine development | 9.31 | 41.94 | 13.54 |
| **Total** | **13.44** | **9.23** | **(0.01)** |

Source: Superintendence of Companies.

Last year was particularly hard for industry worldwide. In Colombia, production fell 5.7%, the contraction of

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6   "Familias en Acción" (Families in Action) is the most important program with cash transfers in the country.

7   Estimate made for 19,946 enterprises, for data comparison purposes.

sales was 5.4%, and the industrial sector's exports in dollars decreased 20.3%. The hardest-hit sectors were those having the closest links with the international market, and particularly with Venezuela. In foods and beverages, production fell 1.8%, sales 2%, and exports 14%. Textile, garments, leather and leather by-product manufacturing, which suffered intensely the restrictions to trade with Venezuela, together with the weakening of their domestic demand, showed, respectively, reductions of 13%, 16% and 11% in their sales and of 35%, 50%, and 57% in their exports. Sales of vehicles and spare parts fell 8%, while exports decreased 53%. On its side, the construction sector exhibited the highest economic growth with a 12.8% increase mainly from civil works. Building construction dropped, especially with respect to offices, commercial locals, and warehouses.

### 3. The Government

In 2009, the total income of the non-financial public sector (SPNF in Spanish) grew 6.2% (Graph R1.5). Fiscal revenues, which account for 62% of the total, scarcely increased at a rate of 1.7% as a result of the economic slowdown both national and international. Non-fiscal revenues, which contributed 32% to the total, had and increment of 11.8% due to the good performance of the state enterprises and the departments. Capital income, which accounts to 6% of the total, increased 29.4% originating in the financial surplus of public enterprises and Ecopetrol's profits.

As for the national central Government (GNC in Spanish), total income increased 2.8%, mainly owing to good behavior of the income tax, thus offsetting the falls suffered in the remaining taxes.

Graph B1.5
Non-financial public sector income



Source: Ministerio de Hacienda y Crédito Público (Ministry of Finance and Public Credit).

The GNC income of fiscal origin only increased 1.3% as a result of economic deceleration on VAT collection, the burden imposed on financial movements (GMC in Spanish), and the gas tax, among others. The collapse of international trade generated a contraction of 11.8% in the external VAT, and tariffs recorded 6.8% decreases. In spite of the crisis, as already mentioned, the income tax exhibited a 13.9% growth, largely due to the amount of Ecopetrol' fiscal contribution, which reached a value equal to 0.8% of the GDP (Graph R1.6). This was the consequence of the steep increase in the international oil price in 2008 that incremented its income by 46.7% and its profits by 124%.

The non-fiscal income of the SPNF exhibited favorable dynamics by shifting from COP$39,961 mm in 2008 to COP$44,664 mm last year. This was due to the good behavior of enterprises with public share, such as EPM and Isagen, since both increased their profits in 2009 by 27.5% and 25.2% respectively, while their operational income grew 21% and 15.1%. The social security enterprises recorded a good performance at the end of the year, with a surplus (1.3% GDP). Although less outstanding, ISA's profits and operational income increased by 4.7% and 12.2%, respectively. On its side, Emcali recorded losses in 2008, despite an 8% increase in its operational income. With respect to the GNC capital resources, they experienced a 13.8% growth due to the payment of public companies' financial surpluses, mainly from Ecopetrol, this entity having drafted dividends for COP$$7.905 mm, as well as the transfer of the savings and oil stabilization fund -FAEP, equal to 20% of this fund's balance.

As for the territorial entities, the income growth of the departments was 16% and they maintained their fiscal surplus of 0.13% of GDP. This good behavior of income was the result of a surplus in social security, particularly pensions. Moreover, the municipalities' income increased 9.4%, while their expenses grew by 17%; consequently, the fiscal result was negative.

In brief, 2009 was a year marked by a weak private domestic demand as the consequence of less resource income from exports and transfers, as well as loss of consumer's confidence. Household income was extremely affected by the labor market deterioration, particularly in urban areas, aside from the reduction in remittances. Increments in Government transfers, raises in real wages and salaries and savings as well as investment returns did not offset this fall; for this reason, family income contracted 2% in real terms. The crisis was less felt by enterprises since they managed to sustain their income in current pesos, while both internal and external demand was depressed. Finally, and despite deceleration

**Graph B1.6**

**A.    VAT and Income Tax evolution**

(Billion pesos)



| Income | Domestic VAT | Foreign VAT |
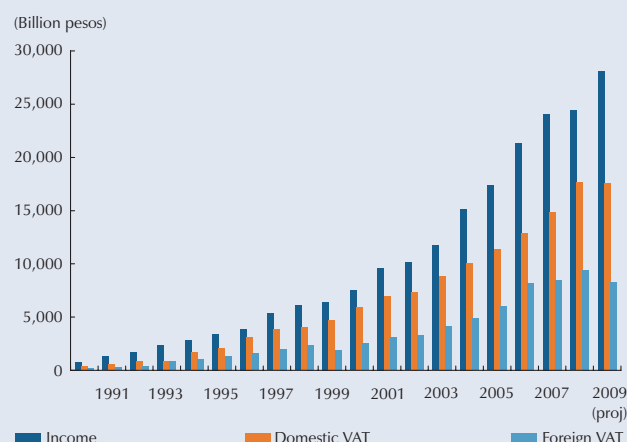
**B.    Fiscal income composition**



27.0%
13.0%
6.0%
2.0%
5.0%
1.0%
3.0%
43.0%

| Income | Domestic VAT | Foreign VAT |
| Tariff charge | Overtax on gasoline | GMF (charge on financial movements) |
| Stamp | Wealth | Remainder |
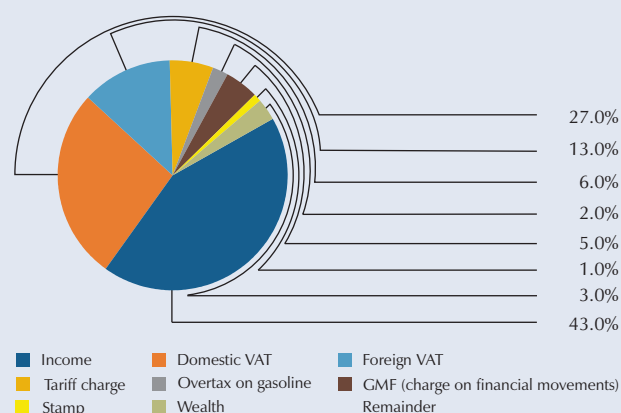
**C.    GNC [National Central Government] fiscal income growth**



(Percentage)
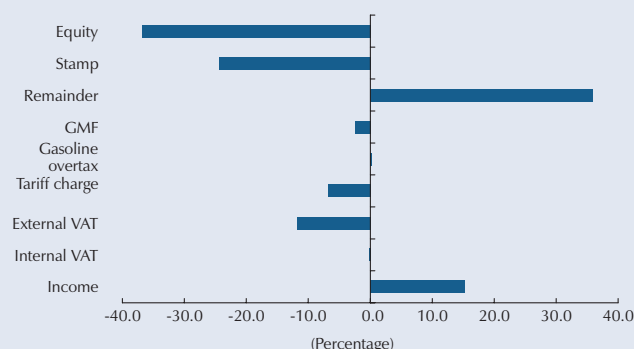
Source: Ministerio de Hacienda y Crédito Público.

and its effects on tax collection, the Government had a 6.2% growth in its nominal income.

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Box 2

# RETROSPECTIVE ANALYSIS OF THE COLOMBIAN ECONOMY BEHAVIOR IN 2009, ACCORDING TO THE PATACON MODEL

Luis Eduardo Rojas[*]

In this box, a brief analysis is offered of the behavior of the Colombian economy during 2009, in the light of a model under the responsibility of the Macroeconomic Modeling Department, currently being constructed at the Central Bank, known by its English acronym *Patacon* (*Policy Analysis Tool applied to Colombian Needs*). In particular, this model is used to identify and quantify the forces having determined GDP growth and the inflation rate in 2009. To carry out the exercise, the following series are used: GDP, total consumption, exports, imported raw materials, investment, total inflation according to the CPI, external interest rate, domestic inflation, wages/salaries, transfers, interbank rate, the price of imported raw-material, and the price of imported consumption and investment goods, as obtained from the National Administrative Department *of* Statistics - DANE, the Central Bank, and the National Tax and Customs Office - DIAN. Likewise, data on imported consumption and investment goods and GDP of trading partners are employed, as constructed following the proposition of Mahadeva and Parra (2008). All the series have a quarterly frequency from the second quarter of 2001 through the fourth semester 2009.

The shocks that generate fluctuations in small and open economies like Colombian economy can be classified into two groups: external and internal. The external shocks affecting the Colombian economy during 2009, as well as their effects on the GDP growth paths, are described below.

GDP variations and the consumer price index unexplained by external shocks shape the component associated to internal shocks, which will be explained later.

The importance of both internal and external shocks is measured from their effect on the quarterly GDP growth rates (during 2009) and the annual growth rate of the quarterly GDP of the fourth quarter of 2009. For the inflation case, both the 2009 quarterly and annual inflations are taken into account.

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## 1. External Shocks

According to the breakdown resulting from the model, external shocks affecting the dynamics of the economy in 2009 were changes in the prices of imported raw materials, changes in the prices of the imported final goods, and changes in the GDP of the trading partners. The dynamics of these three series for years 2008 and 2009 are showed in Graph B2.1.

2008 ended with a rise in the price of raw materials, which then fell in 2009 to negative levels below 10%. The change suffered by imported final good prices was negative in the third quarter of 2008; it increased in 2009 and reached its top in the second quarter. Subsequently, it dropped during the last two quarters of the year. As for the trading partners' GDP, it began showing negative growth rates from the first quarter of 2009.

Graph B2.2 shows the effect these variables have on the quarterly GDP growth during 2009 and the annual growth for the fourth quarter. Data are found in deviations of their long-term level (annual GDP growth of 3.5%). Bars located in the positive part reflect expansive effects on the GDP growth in that period, propelling it to grow above its long-term level. Bars in the negative zone account for shocks with a contractive effect. The GDP growth path observed corresponds to the continuous line.

From the above, it is possible to conclude that the high positive variation of raw-material prices seen at the start of the period had contractive effects in the first quarter of 2009, while is subsequent fall had expansive effects mainly in the second and third quarters in the same year. The net effect of the annual growth rate was positive.

The *Patacon* model predicts that an increment in the price of imported goods generates an increase in the cost of the imported consumption and investment goods, this implying a negative income effect for households. Imported goods and domestically produced goods are not perfect substitutes; for this reason, the substitution effect face to a change in relative prices does not fully counteract the aforementioned income effect. In this manner, the increase in the variation of imported goods in the second quarter of 2009 had contractive effects on the GDP in equal period. Nevertheless, face to its fall in the third and fourth quarters, the effect of this variable on the annual growth was positive.

## Graph B2.1

### A.    Quarterly price variation in mported raw materials

(Percentage)



### B.    Quarterly price variation of imported goods
(Percentage)

(Percentage)
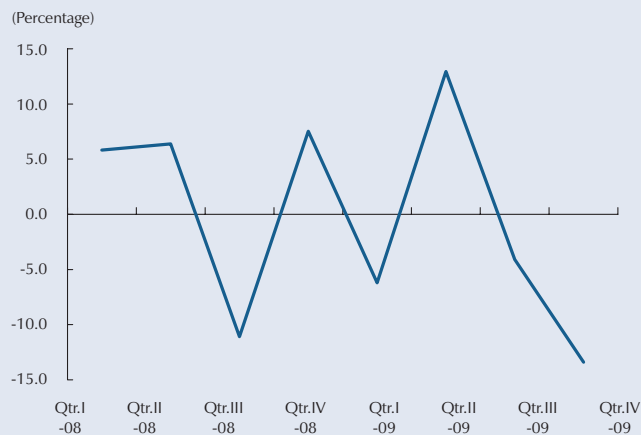


### C.    Quarterly growth rate of commercial partners' GDP

(Percentage)
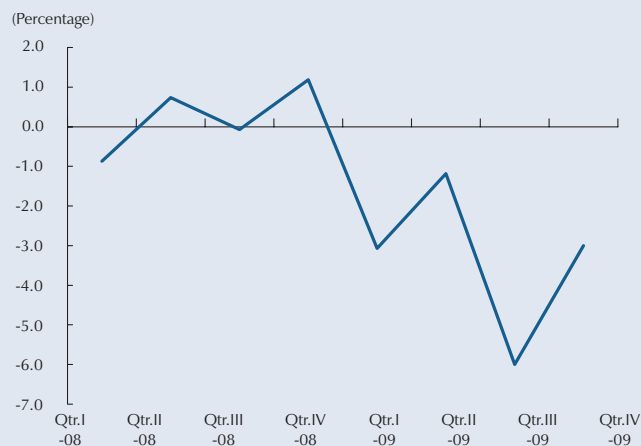


Sources: Calculations by the author.

## Graph B2.2
## GDP breakdown by shock type



| | |
|---|---|
| Raw materials price | Demand shocks |
| Imported goods price | Technological shocks (supply) |
| External demand | Permanent supply shocks |
| External inf. | Policy shocks |
| External i.r and transfers | |
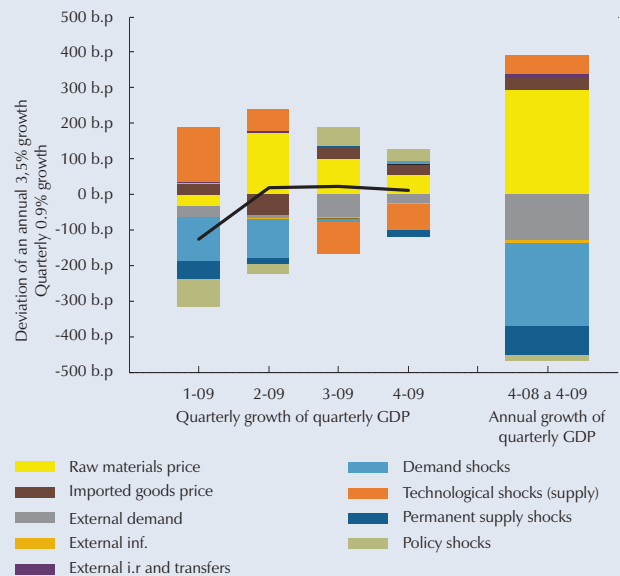
Sources: Calculations by the author.

As for the fall in the trading partners' GDP due to demand contraction for Colombian exports, it also had negative effects on GDP growth, mainly seen in the third quarter growth.

In Graph B2.3, an equivalent breakdown is shown for the case of the total inflation series. Data can be found in deviations of their long-term level (annual inflation of 3.0%). To construe the differences between GDB and inflation answers, it is important to consider that prices do react to shocks more slowly and with lags, due to the nominal rigidities present in the model.

Although the high positive variation in the price of raw materials as registered in the last two quarters of 2008 had enormous inflationary effects on the economy that were transferred to the CPI during the first semester of 2009, it was found that its subsequent fall had deflationary effects. This component reduced inflation, mainly during the third and fourth quarters of 2009. In the annual aggregate, the variation in the price of raw materials reduced inflation to levels below 3%.

On the other hand, the reduction in the price of imported goods at the end of 2009 contracted CPI inflation downward, mainly in the fourth quarter. Another external variable was the foreign interest rate, since during 2009 it recorded an increase that generated inflationary pressures. One of the channels of transmission of this rate to inflation is via its effect on the exchange rate and the transfer of this rate to inflation.
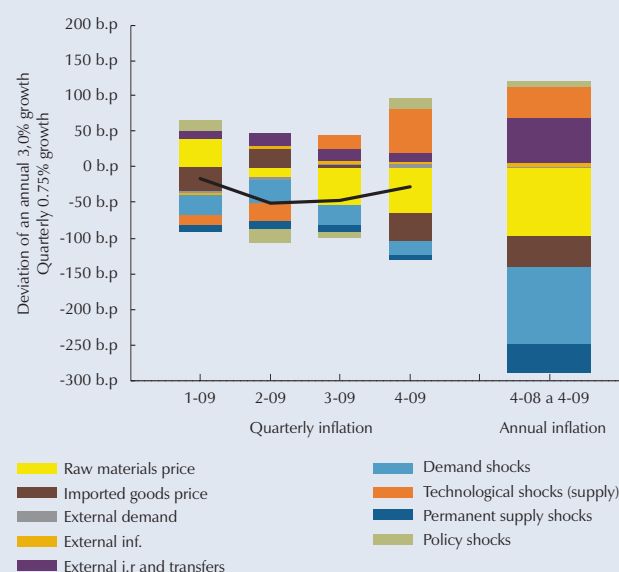
Sources: Calculations by the author.

## 2. Internal Shocks

From available data, the most likely internal shocks occurring in this period were identified. These can be grouped in three different types: supply shocks, demand shocks, and monetary policy shocks.

With respect to supply shocks, they can, in turn, be of two types: cyclical shocks – temporary movements in the productive system (for example El Niño for the agricultural sector) – or permanent shocks, i.e. changes in the growth rate of the total factor productivity (TFP), which could be associated to shocks to the potential or long-term GDP. The *Patacon* model identifies the fact that during 2009 both shock types took place. On one side, a fall in the potential GDP growth (TFP) and, on the other, temporary positive supply shocks were identified during the first half of 2009, which became negative in the second quarter.

The effect of permanent supply shocks is shown in Graph B2.3 for the the GDP, and in Graph B2.2 for inflation. It is observed that the fall in the growth of the potential GDP had contractive effects on the annual growth rate, mainly in the first two quarters of the year. In turn, since demand reacted immediately to these permanent shocks, and supply did the same though at a slower pace, the TFP downturn served to contract demand to a larger extent (with respect to supply); then, inflation was reduced for this reason.

(Temporary) supply shocks identified by the model in the first quarter of 2009 had deflationary effects in those

lapses. Once these shocks were reverted in the second semester of 2009, an inflationary effect was observed in the last two quarters of 2009. In the annual aggregate, and because the magnitude of the deflationary effect of the first two quarters was smaller than the inflationary effect of the other two, the transitory supply shocks increased inflation. In the case of GDP, the net contribution of supply shocks in annual growth was positive, due above all to their positive effect in the first quarter.

Supply shocks identified by the model might be partially explained by the annual inflation path for foods, which reached levels above 12% in 2008 only to fall down to 2.8% in the second quarter of 2009. The foregoing would be captured by the positive supply shocks during the first semester of 2009 along with the already mentioned fall in the price of imported goods.

As well, the model did identify negative demand shocks during the study period, this owing to the strong fall registered in consumption and investment, not fully explained by the external factors and supply shocks. These negative shocks were a fundamental factor leading to GDP growth and downward inflation in a persistent manner during 2009, as shown in Graphs B2.2 y B2.3.

Face to shocks generating an income drop as the fall taking place during the study period, agents usually make decisions permitting them to adjust themselves to that change, looking for the smallest loss of wellbeing possible. One of the mechanisms available to them is consumption softening. Demand shocks can capture household deviations in their investment and consumption decisions with respect to a hypothetic softening path, if only the shocks already mentioned in previous paragraphs are considered.

The negative demand shocks identified by the model imply less softening than that of the hypothetic path. This could be explained by two factors that are determinant of the softening degree. Firstly, the expectations on the conditions of the economy by the agents: the worst perception they have of future conditions and the more they consider the persistence of negative shocks, the more they will reduce their consumption and investment. The consumer confidence index constructed by Fedesarrollo permits a partial capture of this component. A strong fall of this indicator was seen during the study period; therefore the agents were expecting a slow recovery. The minimum level took place in the second semester of 2009.

As a second factor, it is necessary to take into account the means agents have, enabling them to materialize consumption softening. On the one hand, they may increase their work amount. On the other, they can resort to credit. In both cases, these tools became more

restrictive in the course of 2009. With respect to the first means, it was observed that the likelihood of getting a job had decreased substantially, owing to an increasing unemployment rate. As for the second means, the Report on the Credit Situation in Colombia ("*Reporte de la Situación del Crédito en Colombia*")  of December 2009, prepared by the Central Bank, shows how a high percentage of banks stepped up month after month their requirements to assign new credits. For instance, in the case of consumer credits, these requirements were redoubled and tightened by about 90% of the surveyed banks, in December 2008.

Finally, policy shocks refer to deviations of the Bank's interest rate, according to what a policy rule would have suggested[1]. During 2009, this rate was reduced faster and at lower levels than those implied by the Taylor rule. This translated into higher GDP in the second quarter of 2009, and higher inflation in the last quarter.

### References

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González, Andrés; Mahadeva, Lavan; Rodríguez, Diego; Prada, Juan David. "Patacon: Un modelo de equilibrio general dinámico y estocástico para Colombia", Borradores de Economía, mimeo., Banco de la República (Central Bank), 2010.

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1        The policy rule considered by the model takes into account the inflation deviations expected with respect to the four-quarter target, the contemporaneous GDP deviations face to its log-term level, and a softening component in the interest rate.

# II. FINANCIAL MARKETS

**The high public debt of Greece and the uncertainty** about its sustainability have generated a crisis in its economy that threatens to extend to other countries in the region. This has increased the financial market volatility in the developed economies, while its effect was mild on the emerging markets.

**The first quarter of 2010 was characterized** by a stable annual growth in monetary aggregates and a portfolio still in the process of recovering in a slow though continuous manner.

**Less inflation and the downturn in its expectations** and forecasts, together with an output gap remaining in negative terrain justified the reduction applied to the Bank's reference interest rates.

## A. EXTERNAL MARKETS

During the first semester of the year, financial markets worldwide were again affected by increasing uncertainty and risk perception. In this occasion, most volatility was caused by fears arising due to the high indebtedness of Greece and other countries of the European Union (i.e. Portugal, Spain, Ireland, and Italy). Volatility was concentrated mainly in developed economies, while its effect on emerging markets was mild.

The growing agitation in financial markets is a symptom that some of the sequels of the world financial crisis that had been identified in previous inflation are materializing. In particular, though it is true that in the short-term policies carried out by the governments allowed the stabilization of the financial system along with economic reactivation, it is also true that macro-structural unbalances (high private indebtedness levels) are not yet resolved; for this reason, these policies may be threatening the macroeconomic stability

of some developed countries in the mid-term. This is particularly true for those countries that, just like Greece, had a high initial debt accumulated, since their vulnerability increased in an environment like the current one, which is characterized by strong economic contraction in 2008 and 2009, and low growth perspectives towards the future.

Due to the interconnection of financial markets in Europe, the problems in Greece tended to nurture fears of contagion likely to affect other highly indebted economies already beginning to exhibit sustainability problems. Therefore, in the past few months, in these countries a generalized and simultaneous deterioration has been witnessed with respect to various macroeconomic indicators reaching similar or even higher levels than those observed in many emerging economies in previous crises (Table 4). As a result, these countries traditionally deemed stable would now see their credit rating affected. In the case of Greece, for example, the debt has lost its investment grade in early April, while Portugal's suffered a significant drop.

In the above context, investors have liquidated risky positions, not only of variable income but also of public debt bonds from European countries, and shifted to other assets deemed safer, such as US debt securities (Graph 38). This has upturned interest rates at which the governments of the indebted

Table 4
Recent debt crisis in developed markets (DM) against high deficits in emerging markets (EM)
(selected indicators)

| | Government debt (GDP percentage) | Government balance (GDP percentage) | Exports/GDP (percentage) | Inflation (percentage) | GDP growth (percentage) |
|---|---|---|---|---|---|
| Argentina 2001 | 63.1 | (3.7) | 11.5 | (1.1) | (4.4) |
| Ecuador 1999 | 101.2 | (0.6) | 31.5 | 52.2 | (6.3) |
| Indonesia 1998 | 66.6 | (2.2) | 46.0 | 58.4 | (13.1) |
| Pakistan 1998 | 78.2 | (6.7) | 15.9 | 6.2 | 3.1 |
| Russia 1998 | 75.4 | (6.0) | 31.2 | 27.7 | (5.3) |
| Ukraine 1998 | 37.6 | (2.8) | 42.1 | 10.6 | (1.9) |
| Uruguay 2001 | 39.1 | (4.9) | 18.3 | 4.4 | (3.4) |
| **EM Average** | **65.9** | **(3.8)** | **28.1** | **22.6** | **(4.5)** |
| | | | | | |
| Greece 2009 | 113.4 | (12.7) | 6.3 | 1.1 | (1.2) |
| Ireland 2009 | 64.5 | (11.7) | 50.6 | (1.6) | (7.5) |
| Italy 2009 | 115.1 | (5.3) | 19.7 | 0.8 | (4.8) |
| Portugal 2009 | 69.7 | (3.9) | 19.1 | (0.6) | (0.8) |
| Spain 2009 | 55.2 | (11.4) | 14.8 | (0.3) | (3.6) |
| United Kingdom 2009 | 71.0 | (6.8) | 16.0 | 2.2 | (4.8) |
| Japan 2009 | 189.3 | (3.2) | 11.6 | (1.3) | (5.2) |
| United States 2009 | 83.9 | (9.9) | 7.5 | (0.3) | (2.4) |
| **DM Average** | **95.3** | **(8.1)** | **19.9** | **(0.2)** | **(3.8)** |

Note: 2008 data for Ireland; fiscal year 2008 data for Japan.
Source: European Central Bank; Haver Analytics: De Paoli, Hoggarth and Saporta "Costs of Sovereign Default", Financial Stability Paper, number 1, July 2006: GsGlobal ECS Research.

## Graph 38
### Aversion to risk index (VIX) and short-term treasuries in the United States

(Percentage)                                    (Index)

| | |
|---|---|
| 3-month T-bill | 2-year Treasuries | VIX Index (right scale) |
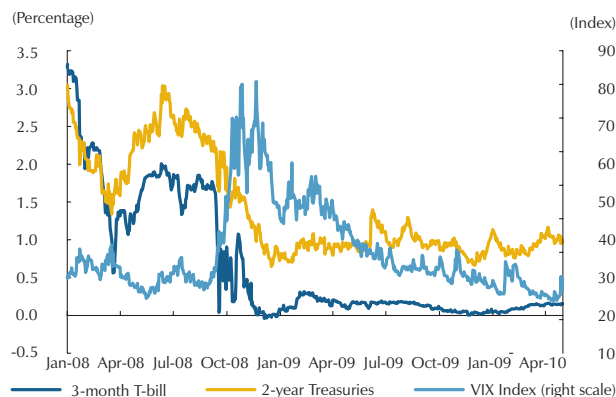
Source: Bloomberg.

## Graph 39
### Credit default swaps (CDS) in some developed economies[a]

(Basis points)                                 (Basis points)

| | | |
|---|---|---|
| Germany | Japan | France |
| United States (right scale) | | |
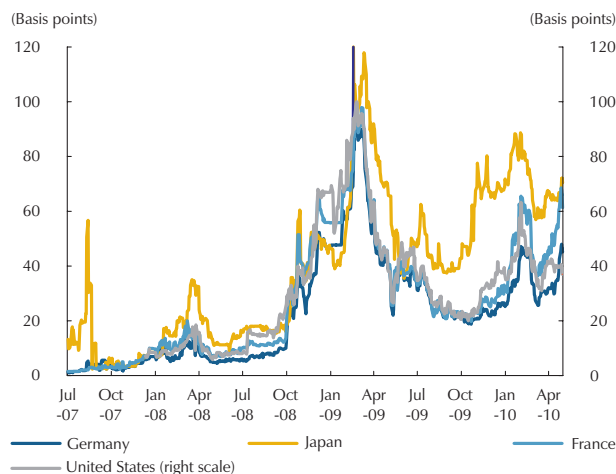
a/ CDS of Germany, Japan, and France are associated to the dollar, while CDS of the United States are associated to the euro.
Source: Bloomberg.

## Graph 40
### MSCI[a]  Shares Indexes in developed countries

(January 2009 = 100)

| | | | |
|---|---|---|---|
| United States | United Kingdom | Euro Zone | Japan |
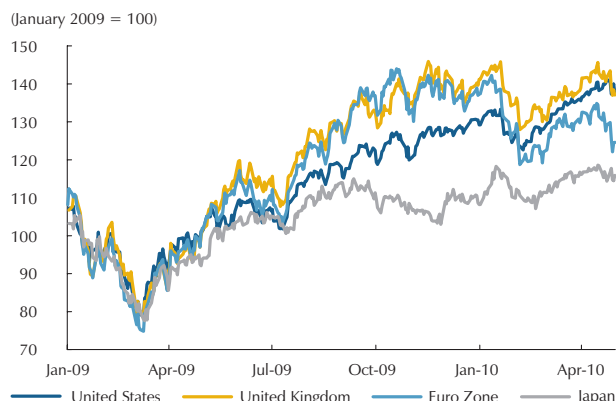
a/ MSCI: Morgan Stanley Capital International. The index pertains to data expressed in dollars.
Source: Bloomberg.

countries have to finance themselves, and hit even harder their solvency level, particularly with respect to Greece.

On the side of the soundest development economies like the United States, Japan and Germany, the yield curves for public debt have remained steep (curve differential between ten-year and two-year rates), although in the middle of April some flattening could be observed. In particular, increasing stress in the financial market raised demand for liquid short-term securities introducing some slides in this tranche of the curve, taking place simultaneously with increases in long-term rates, given a higher risk perception owing to the fiscal crossroads. Likewise, since the middle of February, a significant rebound was noticed in sovereign risk premiums of Germany and France, due to the problems endured by their European neighbors (Graph 39).

As a result of the above, in stock exchanges of most European countries, drops were suffered so far in the year. Nonetheless, until the end of April in the case of the United States, these declines had been temporary thanks to enhanced dynamism and better perspectives in their real sector. In fact, in the fist four months, net gains were observed in the US stock market indexes (Graph 40).

Due to the numerous interconnections existing among countries and banks, one of the major effects of uncertainty most acutely felt in Europe has been the increasing doubts about the stability of the euro. The reticence of certain governments to contributing resources in order to facilitate liquidity to the Greek tax office resulted in the weakening of the euro against the US dollar and other currencies: the euro depreciation was about 12% face to the dollar between January and April, and 11% with respect to the yen (Graph 41)

Apart from the European debt issue, financial markets continued to suffer from the credit freeze unleashed since the beginning of the 2008 crisis. Although the most recent surveys performed by central banks on the standards required for commercial banks to grant loans have been

## Graph 41
### Euro behavior[a/] shares Indexes in developed countries

(January 2009 = 100)



a/ A sudden rise in the index implies a depreciation of the euro.
Source: Bloomberg.

## Graph 42
### Real commercial and industrial credit in the United States

(Billion dollars of 2000)          (Percentage)



Billion dollars of 2000 — Annual variation (right scale)
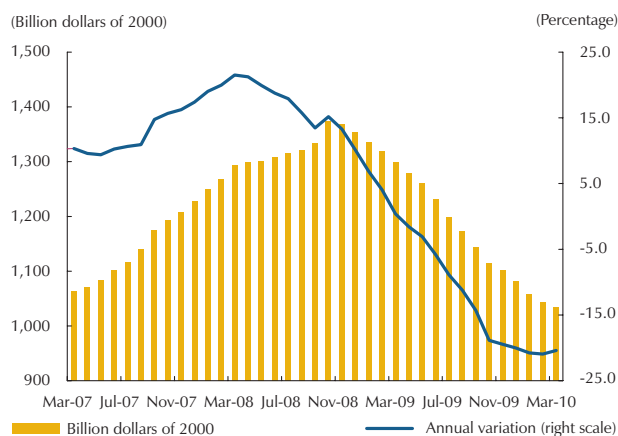
Source: US Federal Reserve.

## Graph 43
### Real consumer credit in the United States

(Billion dollars of 200)          (Percentage)



Billion dollars of 2000 — Annual variation (right scale)
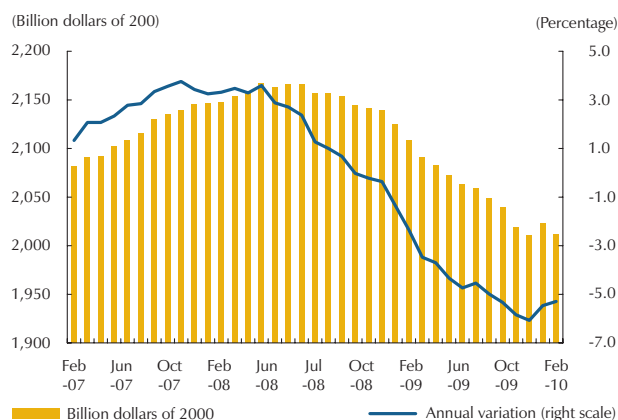
Source: US Federal Reserve.

improving, and in spite of the significant rebound witnessed in the issue of corporate bonds, the credit channel remains deteriorated. In particular, during the first months of the year in the United States, loans destined to consumption and commercial and industrial activities contracted at 5% and 20% rates, respectively (Graphs 42 and 43). Should this situation persist, it may undermine economic recovery.

However, not everything has been negative, since (interbank) money markets continued to show stability signs. It is worth remembering that liquidity restrictions occurring by the end of 2008 in the very middle of the financial crisis were overcome thanks to the several support programs offered by the central banks to the financial systems. Liquidity risk indicators (such as the Libor-OIS spread[1]) have been at acceptable and relatively low levels for six months (Graph 44). In addition, since the end of 2009, it was observed that banking institutions have gradually resorted less to these programs: for instance, banks had a decreasing involvement in the fund auctions of the so-called term auction facility (TAF) of the US Federal Reserve between December and its expiration (on 8th March 2010).

Despite the improved liquidity conditions, central banks are likely to keep for a longer period their very loose current stance of monetary policy. In this way it is very possible that the Fed interest rate will continue to be at 0.0% to 0.25% levels until the end of the year. A similar behavior is expected from the European Central Bank (E.C.B.).

As regards financial markets, unlike the developed nations, risk premiums in the emerging countries remained relatively stable and even tending to

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1        This indicator is the difference between the interbank loan interest rates (Libor) and the overnight index swap (OIS). The latter is an exchange of flows between the fixed and the variable rate (swap) with the floating rate tied to a reference overnight index – in the United States it is the effective federal funds rate -. The OIS rate is the best measure of the expectations of investors with respect to the federal funds rates (the Fed's monetary policy objective). The differential between Libor and OIS shows the gap expected between the reference market rate and the interbank indebtedness during the swap term.

## Graph 44
### Interbank markets rate differentials
### Libor vs. OIS three months

(Basis points)



| Zona del Euro | Japan |
| United Kingdom | United States |
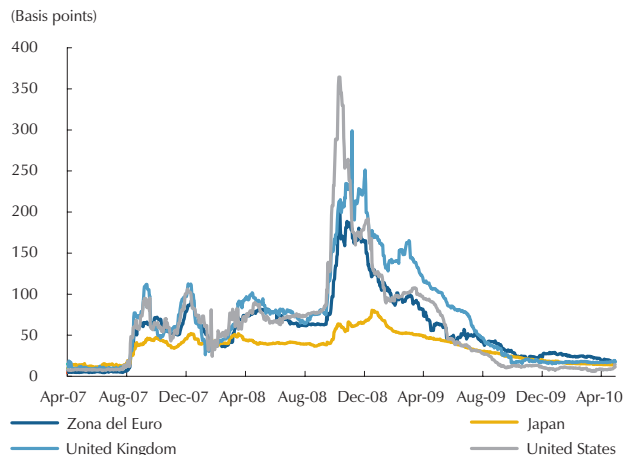
Source: Bloomberg.

## Graph 45
### Emerging market bond index (EMBI+) Latin America

(Basis points)



| Colombia | Brazil | Mexico |
| Peru | Chile | |
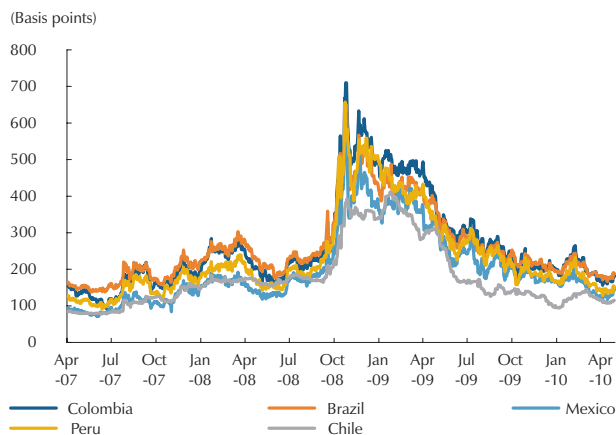
Source: Bloomberg.

## Graph 46
### 5-year Credit Default Swaps (CDS) in Latin America

(Basis points)



| Brazil | Chile | Colombia |
| Mexico | Peru | |

Source: Bloomberg.

decrease especially in April, in harmony with their improved economic perspectives. In Latin America, including Colombia and even though most governments carried out countercyclical tax policies, this fact did not led to an acute deterioration of their balances; therefore, risk premiums have kept stable and at the levels shown prior to the Lehman Brothers bankruptcy (Graphs 45 and 46). The degree of confidence granted to the region can be explained by its decreasing macroeconomic imbalances, the low exposure of its banking systems, and a lower indebtedness level in consumers, enterprises and governments. Something similar occurs in other emerging economies such as the Asian countries.

Equity markets in the emerging economies and Latin America were a little more affected than debt markets by the European turbulence. Notwithstanding, their performance particularly in Brazil and Colombia broadly surpassed their behavior in the developed countries (Graph 47). Something similar, though to a lesser degree, was observed in the Asian countries (Graph 48).

With respect to emerging countries' currencies, they have shown a mixed conduct so far in this year. In Latin America, Brazil and Chile currencies have been depreciated, while those of Mexico and Colombia were appreciated. In the case of the

## Graph 47
### MSCI[a] share index by regions

(January 2008 = 100)



| Latin America | Emerging Asia |
| Emerging Europ | Developed |
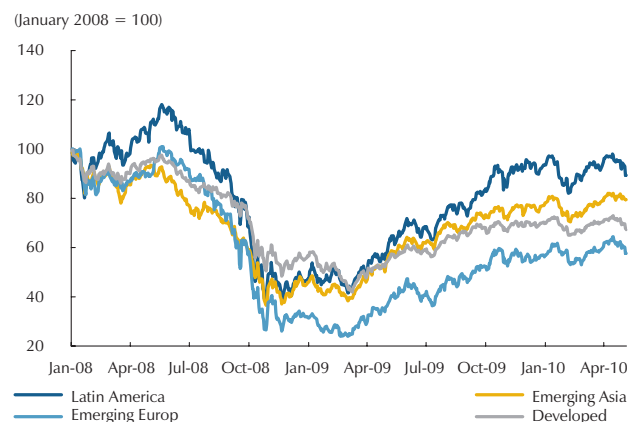
a/ MSCI: Morgan Stanley Capital International. The index relates to data expressed in dollars.
Source: Bloomberg.

Graph 48
Dollar behavior through the year

(Dollar depreciation)        (Dollar appreciation)

Malasia
Mexico
Korea
India
Colombia
Peru
Turkey
Japan
New Zealand
Brazil
Russia
Chile
Australia
Pound
Euro

-8.0   -6.0   -4.0   -2.0   0.0   2.0   4.0   6.0   8.0   10.0
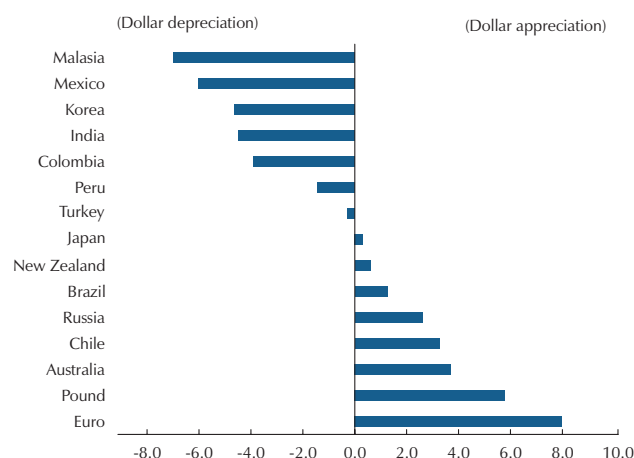
Source: Bloomberg.

Colombian peso, its revaluation face to the US dollar climbed to 4.2% between December 2009 and April 2010, even though in April the trend was partially reverted.

Given the foregoing, estimated risks falling on certain developed economies have increased at the time of this report. Greater uncertainty due to the European situation may have its repercussion in an increase of interest rates for public debt issues, even if some kind of rescue is decided by the IMF and the ECB in favor of the most affected economies (like Greece).

On the other hand, not to be dismissed is the fact that, in the future, increased finance needs of the developed economies may end in a reduction of capital flows toward emerging economies, and an upward trend of their financing costs. Nonetheless, this trend could be counteracted by a relative improvement of risk perception with respect to these emerging economies.

## THE SOVEREIGN DEBT CRISIS IN GREECE AND ITS IMPACT IN EUROPE

Economic deterioration and pressures upon the national treasure in Greece, a country having reached a fiscal deficit of 12.7% in 2009, led the European Community to demand from it the development and implementation of a wide set of structural measures[1] to correct the excess deficit. For many years, this country had been in breach of the Maastricht Treaty whereby it is established that the members of the euro zone must aim to keep fiscal deficits below 3% in order to avoid endangering the region's stability.

Notwithstanding the Greek government's commitment and adjustment announcements, investors' confidence with regard to its finance persisted and led risk-rating agencies to lower their credit qualification to the point of loosing the investment grade. This triggered the sovereign-risk premiums to significantly high levels, and generated pressures on the long-term interest rates for their public-debt bonds (Graphs A and B).

Simultaneously, debts extended to other countries with similar high debt levels (i.e. Portugal, Spain, Ireland, and Italy). Their risk premiums were affected as well. In some cases, like those of Portugal and Spain, they saw their credit rating diminish. This exerted strong pressure on the Government of Germany and France (the two largest economies in the eurozone), the European Central Bank (ECB), and some multilateral agencies like the International Monetary Fund (IMF) to endeavor to hold

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1    These measures includes reforms to public salaries, and social security, as well as improving th efficiency of the public administration. Furthermore, it was accorded to reduce public expenses and freeze public salaries and public employers pensions.

(Basis points)



Source: Bloomberg

(Percentage points)                (Percentage points)



Source: Bloomberg

back the situation and prevent a greater contagion and instability in the region, particularly with respect to the currency.

At the time this report was being prepared, the European Community, the ECB and the IMF were agreeing on an aid plan for Greece of about US$145 mm. In addition, the ECB decided to suspend the application of the minimum credit rating threshold for the guaranty requisites in the Eurosystem credit operations, this in order to be able to receive the Greek debt bonds having lost their investment grade.
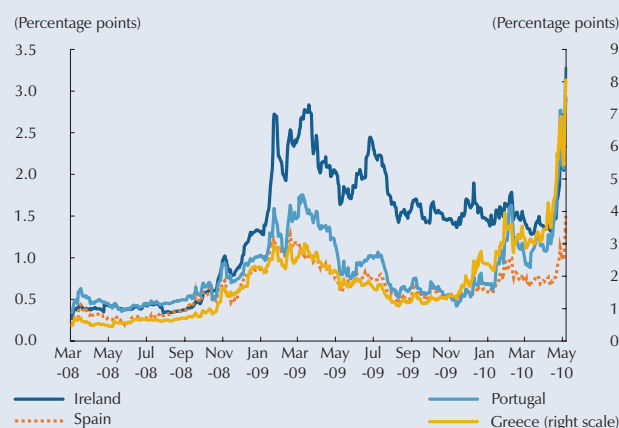
## B.     INTERNAL FINANCIAL MARKETS

The first quarter of 2010 was characterized by a stable annual growth of the broader monetary aggregate (M3) close to 7%, and a total gross portfolio in national currency ("M/N" in Spanish) still undergoing a slow though continuous recovery process.

The average growth of liabilities subject to the minimum legal cash reserve requirements ("PSE" in Spanish) has been driven by more liquid money raisings: saving and current accounts. On the contrary, the annual increase of the term deposit certificates (CDTs in Spanish) plus bonds showed a strong deceleration and sank into negative terrain. Therefore, in said quarter, PSEs maintained annual growths similar to those of the M3 and above the estimated raise of the nominal GDP of the current year.

So far in this year until March, the recovery of the M/N portfolio has been led by housing credits, particularly for home (mortgage) buyers and, to a lesser extent, by the slow acceleration of the consumer portfolio. Within the same period, the recovery process being recorded by the commercial portfolio reverted in early April, as partly explained by prepayments of real sector bonds by large

companies, and due to the Holy Week seasonal change[2]. Any way, for the rest of the year, surveys about credit availability are favorable and, both suppliers (banks) and applicants (consumers and real sector) suggest that it will continue on the reactivation path.

As regards interest rates, passive and commercial rates having been reduced in 2009 at a faster pace than that registered by the Bank's intervention rate, tended to show a stabilization since March 2010. Consumer credit interest rates continued to fall while mortgage rates have shown less deceleration, even less than the cumulative cut in the Central Bank's reference rate. When inflation without foods is deducted from active rates, it can be seen that all of the rate modalities went up in March, after having fallen in the first two months of the year.

Financial asset prices (the Colombian government treasury bonds or public debt certificates - TES - and the General Index of the Stock Exchange of Colombia ("Indice General de la Bolsa de Valores de Colombia - IGBC", also known as the General Index), continued to increase in value throughout the first quarter of 2010[3]. In the case of TES, despite the foregoing, the real interest rates of their most liquid references were incremented[4] and, by the end of March, they were already above the minimum levels attained in 2006. On the IGBC side, by mid-April it was at its highest historical level, in line with the appreciations taking place at the variable income markets in other emerging countries.

Consequently, in the first quarter of 2010, the soundness of the Colombian financial system remained stable, and credit continued to recover. The average nominal active interest rate[5] fell again, but it increased in March in real terms due to an unexpected decrease in inflation. Indeed, as mentioned in Chapter I, another fact serving to characterize the first quarter of 2010 was less inflation observed with respect to the projections of the Central Bank's technical team and the average market analysts.

Inflation overestimation was partly explained by a better behavior in food prices than expected. In addition, the CPI without foods decelerated along with the other basic inflation measures traditionally calculated by the Central Bank. In particular, tradables without food, nor regulated prices, with an annual increasing rate below projections, was the group that contributed most to the

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2      In annual growth terms, ordinary commercial credit disbursements for housing construction and treasury fell as well. Preferential credits are growing at a good pace

3      This analysis was prepared and submitted to the BDCB prior to April 30. To that date, the great stock market crash and currencies depreciation generated by the fiscal problems in Greece had not taken place.

4      Constructed from zero coupon rates and deflacted with the CPI without foods.

5      Weighed average, according to Central Bank methodology

drop of both market expectations and inflation forecasts for the current and following years.

With regard to growth, the results of the real GDP for the last quarter of 2009 and so far the different economic activity indicators show that the economy is recovering faster than expected. As it will be explained in next chapter, this meant widening the growth forecast for 2010 and taking it to the midpoint of the interval (between 2% to 4%). This scenario is more positive than in the previous report where it was predicted that the most feasible GDP increase would be set at the lower part of that range. Despite reactivation, the output gap would remain in negative terrain and unlikely to be filled before halfway through the following year.

Lesser inflation observed and decreasing expectations and forecasts, together with a output gap remaining in negative terrain, suggested a laxer monetary policy without jeopardizing the inflation target of 2010 and 2011, neither the financial system stability. For these reasons, in their session of last 30th April, the BDCB decided to reduce the reference interest rate by 50 bp in order to establish it at 3.0%. This reference rate level is expected to continue to encourage economic growth in an environment characterized by a healthy financial system. It announced, as well, that owing to higher deposits by the General Treasure with the Central Bank, it suspended the sales of the TES bonds that were being made in order to sterilize international reserve purchases[6].

## 1.    Monetary Aggregates

In harmony with its seasonal behavior, during the first quarter of 2010, the monetary base was reduced subsequently to the expansion undergone at the end of the year. As of the quarterly closing in March, base money exhibited a balance of COP$36.2 t, therefore lower by COP$3.3 t than in December. This contraction was equal to the increment in the National Government deposits with the Central Bank for an additional COP$3.4 t. This availability accumulation process is usually carried out by the National Treasury in the first quarter in order to secure the performance of all its annual obligations. The remaining Central Bank's liquidity operations were offset and had no impact on the monetary base supply. For example, the expansionist effect for COP $764 mm owing to daily purchases of reserves for US$20m (announced on March 3) was sterilized by means of the redemption and sale of TES bonds at the secondary market in February and March, which accounted for a COP$802mm contraction (Table 5).

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6          Beginning on 35d March 2010, and until the end of the first semester, the BDCB reactivated the international reserve accumulation by means of competitive daily sales for US$20 million.

| Description | 2009 IV Qtr. | 2010 I Qtr. |
|---|---|---|
| **I. Government** | **6,424,4** | **(3,363,5)** |
| Transfer of profits[a] | 0.0 | 0.0 |
| Deposits at the Central Bank | 6,424,4 | (3,363,5) |
| | | |
| **II. TES bonds regulation** | **2,967,9** | **(804.7)** |
| Final purchases | 2,999,9 | 0.0 |
| Final sales | 0.0 | (800.0) |
| Expiration | (32.1) | (4.7) |
| | | |
| **III. Central Bank's liquidity Operations** | **(3,067,9)** | **(157.5)** |
| Expansion [b] | (4,075,4) | 525.5 |
| Contraction | 1,007,5 | (683.0) |
| | | |
| **IV. Foreign currency** | **0.0** | **764.1** |
| Direct purchase auction | 0.0 | 764.1 |
| | | |
| **V. Others [c]** | **137.2** | **238.5** |
| Total base variation | 6,461,6 | (3,323,1) |
| Monetary base balance | 39,540,0 | 36,221,7 |

a/ On 27th February 2009, profits were drafted to the Government in dollars that did not have a monetary effect (US$320.4 m, equal to COP$818,6 b.
b/ Includes 1-day, overnight, and mid-term repos.
c/ Operations with international agencies are not included.
d/ In "Others", the monetary effect of the "PyG" (P&L) of the issuing bank, as well as the monetary effect of indebtedness deposits and external portfolios.
Source: Banco de la República.

In terms of annual growth, the growing trend of base demand already beginning to become apparent in the previous report was consolidated so far in the current year. This was explained by increased growth of sight deposits, which is a category subject to a higher legal bank reserve ratio[7]. Indeed, during the first quarter and in their order, both current accounts and savings deposits had an accelerated growth from 11.5% to 16.2% and from 11.0% to 20.2%; in the meantime, the term deposit certificates (CDTs) plus bonds drop from 5.6% to -5.7%. Therefore, between December and March, the base growth rate increased from 5.2% to 8.3%, as driven by the legal bank reserve ratio which shifted from de 4.9% to 12.9% (Graph 49).

The broader monetary aggregate composed by cash and the "PSE" (liabilities subject to the minimum legal cash reserve requirements) recorded a relatively

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7　　　Legal cash reserve ratios: 11% for current accounts, savings deposits and the other sight deposits, and 4.5% for Term Deposit Certificates (CDT) and bonds with an issue term of less than 180 days (JDBR [BDCB], External Resolution 11 of 2008).
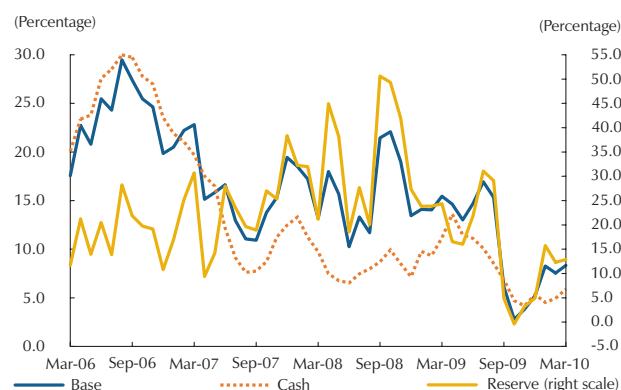
Source: Superintendencia Financiera de Colombia; calculations by Banco de la República.

Graph 50

A. Monetary aggregates
(Annual variations in weekly data)
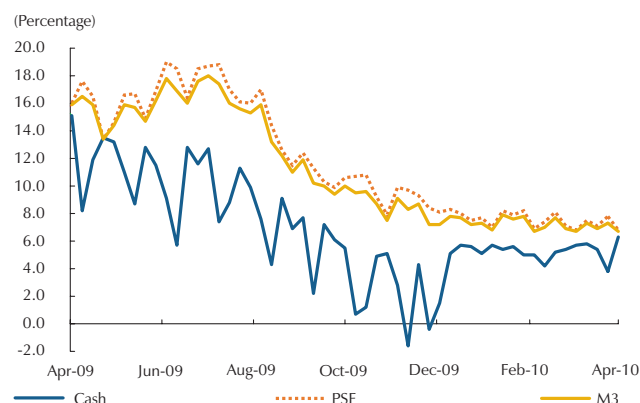


B. Real M3
(Real annual variation with CPI without food)



Source: Superintendencia Financiera de Colombia; calculations by Banco de la República.

stable annual growth nearing 7.2%, throughout the first quarter. This performance was led by the PSE (accounting for 88% of M3), with an average annual growth of 7.5% (Graph 50, panel A). In the same period, cash increased 5.2%, on average. In real terms, the M3 recorded an average quarterly growth of 4.3%, higher than the estimated growth of the economy for the current year (Graph 50, panel B).

## 2. Credit

The slowdown of the gross portfolio in national currency ("M/N") suffered throughout 2009 reverted in the first quarter of 2010, and recorded a modest recovery in its growth rate by shifting from 4.6% to 5.2%. This event was led by household credits, and particularly by the momentum experienced by the mortgage portfolio[8] (initiated in September last year) and by the consumer portfolio reactivation. In their order throughout the year, its annual growth rate shifted from 15.5% to 18.0% and from de 1.3% to 4.8% (Graph 51). In real terms, given the inflation reduction, this recovery became more visible; thus, the annual increase in the total portfolio was 188 bp, 338 bp in the mortgage portfolio, and 304 bp in the consumer portfolio.

In the quarter, the gross commercial portfolio in national currency (M/N), which accounts for almost 58% of the total, grew at an annual average of 4.1%, a rate that can be deemed low[9]. Nevertheless, in the same period, the several placings of securities issued by the real sector amounted to COP$1.5 t, this amount being higher by 50% than the previous year's figure. If the net effect of such issues is added to the commercial portfolio, its aggregate in the quarter would pass

---

8    Explained, partly by the Government-subsidized interest rates for mortgage credits

9    As for commercial disbursement, the worst behavior was seen in ordinary and housing-construction lines of credit recording negative 0.84% and 12.9% variations. In contrast, preferential-type and treasury credits increased by 30..9% y 31..2%, respectively.

Graph 51
Gross portfolio with leasing (M/N)
(Annual variations in weekly data)
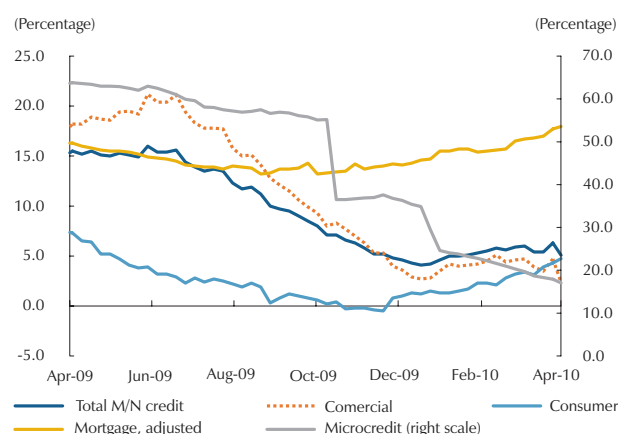
Source: Superintendencia Financiera de Colombia; calculations by Banco de la República.

Graph 52
Commercial M/N portfolio plus corporate debt



(Annual percentage variation)
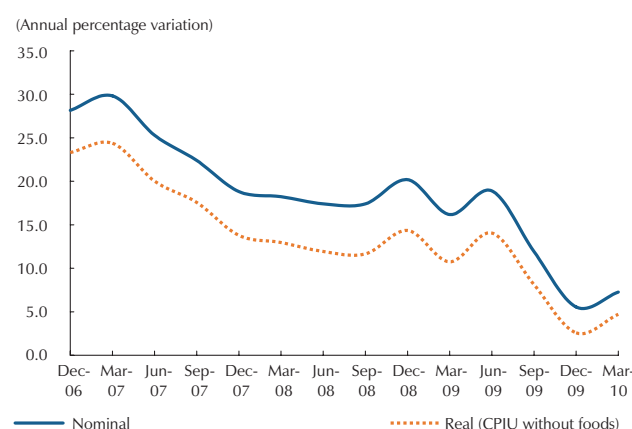
Source: Banco de la República and Superintendencia Financiera de Colombia.

Graph 53
M/E portfolio aggregate and external indebtedness of
the private non-financial sector
(monthly data)
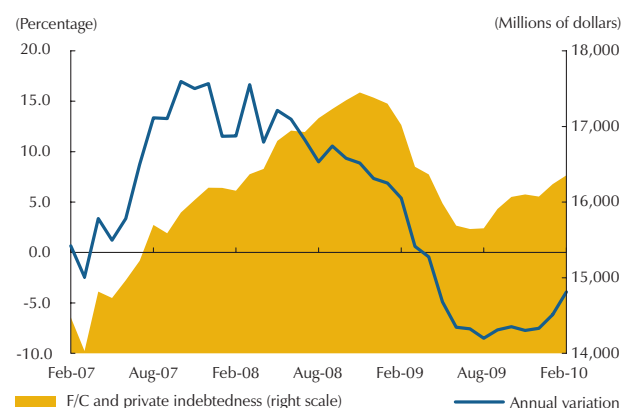


Sources: Superintendencia Financiera de Colombia and Banco de la República; calculations
by Banco de la República.

from growing from 5.5% to 7.3% and, in real terms, from 2.6% to 4.7% (Graph 52).

As for the foreign currency financing for the non-financial private sector[10], its level continued to improve. Between January and February, it balance grew by US$280m, and this dynamics is likely to continue. In March, in fact, foreign currency denominated credits that were granted by local banks increased by US$144 m. Despite this recovery, the annual growth rate remains in negative terrain, though on an upward path; indeed, it was -3.9% in February, i.e., 225 bp higher than in December (Graph 53).

Table 6 shows a summary of credit entities' uses and sources for the first quarter of 2010. As it can be seen, total financing availabilities or sources amounted to COP $2.6 t, due to the increment of the PSEs (COP $2.6 t). 88,8%[11] (COP $2.4 t) of this amount was destined to finance the portfolio. Investment accumulation in 2010, amounting to COP$3,1 t, was funded, on the one hand, with a release of bank reserve (COP$1 t) and, on the other hand, with other net assets[12] (COP$2 t).

The above suggests that credit intermediaries are in a favorable position to meet credit demand increases; firstly, because investments are sufficient to grant (collateral) liquidity traditionally granted by the Central Bank to the interest rates of the expansion repos. Moreover, the total portfolio quality has remained stable, owing to both default and risk indexes. Since mid 2009, the performance of the consumer-destined portfolio, which had shown the worst deterioration, has improved. In addition, a total high (provisions) coverage level exceeding 50% was attained (Graph 54, panels A and B).

Likewise, surveys suggest a credit recovery outlook. On the demand side, the results of the survey as

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10    Includes foreign currency portfolio of the local financial system, and direct indebtedness obtained abroad

11    In 2009, the ratio had been 82.2%.

12    They pertain to owned resources from net appreciation of the securities portfolio, and net financing with other entities

Table 6
Principal Account Balance of Credit Entities
(Thousand millions pesos)

| Description | April 9 2010 | Año Year elapsed so far | | Annual | |
|---|---|---|---|---|---|
| | | ABS | Percentage | ABS | Percentage |
| Assets | 174,750 | 2,616 | 1.5 | 8,566 | 5.2 |
| 1. Own cash position a/ | 1,266 | 89 | 7.2 | (1,647) | --- |
| 2. Bank reserve | 12,759 | (995) | (7.2) | 1,267 | 11.0 |
| 3. Deposits remunerated at the Central | 751 | 5 | 0.7 | 124 | 19.8 |
| 4. Gross portfolio with leasing (M/L) | 150,025 | 2,379 | 1.6 | 7,043 | 4.9 |
| Traditional credit | 136,683 | 2,338 | 1.7 | 6,466 | 5.0 |
| Financial leasing | 13,342 | 41 | 0.3 | 576 | 4.5 |
| 5. Investments | 49,514 | 3,149 | 0.0 | 9,405 | 23.5 |
| 6. Other net assets | (39,566) | (2,011) | 5.3 | (7,627) | 23.4 |
| Liabilities | 174,750 | 2,616 | 1.5 | 8,566 | 5.2 |
| | | 0.0 | --- | 0.0 | --- |
| 1.  Central bank's repos | 378 | (62) | (14.1) | (4,055) | (91.5) |
| 2.  PSE with trustees | 174,371 | 2,679 | 1.6 | 12,621 | 7.8 |
| PSE without trustees | 170,094 | 2,445 | 1.5 | 12,175 | 7.7 |
| Trustees | 4,277 | 233 | 5.8 | 445 | 11.6 |
| Memorandum item | | | | | |
| Expansion OMA (Open Market Operations) b/ | 2,255 | 1,796 | 390.7 | (2,215) | (49.5) |
| Deposits remunerated at the Central Bank b/ | 881 | 51 | 6.2 | 224 | --- |

a/  Stock brokers are not included. Absolute variations relate to variations in dollars multiplied by the period average exchange rate.
b/   They include fiduciary entities, stockbrokers, insurance companies, pension and severance funds, and other financial auxiliaries having deposit accounts with the Central Bank. Deposits at the contraction are included.
Note: The trustees correspond to bank collection services.
Sources: Banco de la República and Superintendencia Financiera.

applied to industry, commerce, transport and other sectors of the economy[13], account for a credit availability at historically high levels. On the supply side, the credit survey applied to the intermediaries lets perceive an increasing access to credit for businesses, particularly medium-sized enterprises. (Graph 55, panels A and B).

## 3.    Interest Rates

Between November 23 2009 and April 30 2010, the Central Bank's reference interest rate remained stable at 3.5%. It was at the session held on April 30 that the BDCB decided to reduce that date to 3.0%, completing in this way,

13        Carried out by the Central Bank of Colombia, and including as well unions and analysts of the financial sector.

Graph 54

A.    Portfolio at risk/gross portfolio

(Percentage)
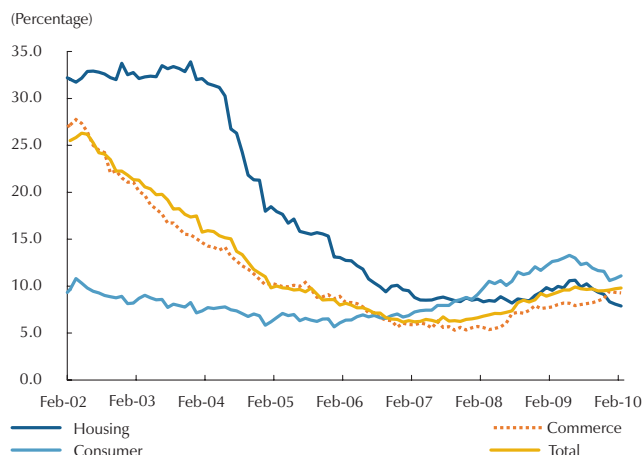


B.    Risk coverage
      (provisions/portfolio at risk)

(Percentage)
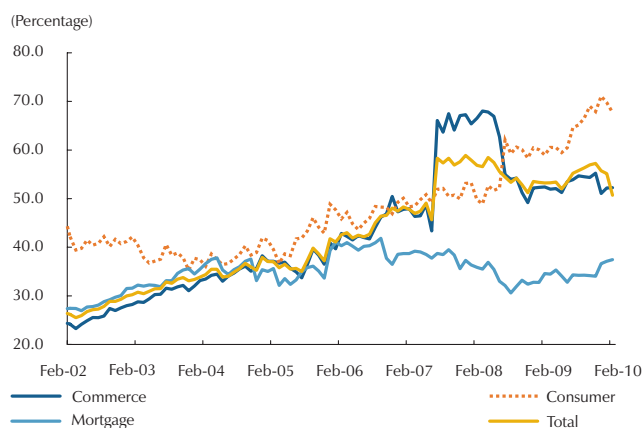


Source: Superintendencia Financiera de Colombia; calculations by Banco de la República.

since December 2008, a 700 bp cut. Despite the fact that the reference interest rate remained unchanged in the first quarter of 2010, market rates continued to decline.

Since December 2009, the one-day interbank rate (IB) was kept below the policy rate, and only in April it converged towards the latter. The Bank's net debtor position with the financial systems and the disqualified auctions of remunerated deposits not constituting legal cash reserves explain most part of this behavior. By reason of the foregoing, in order to bring the interbank rate level closer to the policy rate, these auctions were reopened since January 2010; as a result, their deviation was corrected in a significant manner (Graph 56).

The interest rates for term funding continued to drop, and they accumulated falls similar to those registered by the policy interest rate (Table 7). In March 2010, the 90-day funding indicator known as the "DTF" (Fixed Term Deposit) was established at 3.93% and the average interest rate for the total "CDT" (Term Deposit Certificate) was set at 4.16%, these being lower levels by 19 bp and 17 bp as compared to the ones observed by the end of 2009. On the other hand, in March 2010, the interest rate for savings deposits was 2.2%, a lower figure by 8 bp as opposed to last December's record (Graph 57). Therefore, it is possible to expect that the new 50 bp reduction in the reference interest rate will continue to be passed on to these rates.

As for interest rates for household-destined credits, which were those least decelerated in 2009, they have shown so far this year a stronger decline pace (Table 7). In March 2010, consumer and credit card rates, in this order, were established at 19.31% and 23.84%, this figures being lower by 112 bp and 164 bp than last December records, and lower by 623 bp and 720 bp face to the December 2008 levels. The reduction in the profiteering rates contributed to this behavior. In the first quarter, interest rates for home purchase financing were reduced by 36 bp, this being the rate modality having experienced the smallest fall since the initiation of the policy interest rate cut (-370 bp in the period)

In commercial credits, treasury and preferential interest rates are those showing the most pronounced reductions in the quarter: -45 bp and -43 bp, respectively. Among active rates, these modalities are those with cumulative reductions in their interest rates even more significant than the decrease seen in the

## Graph 55

### A. Credit access perception
(survey applied to banking entities)

(Net percentage)
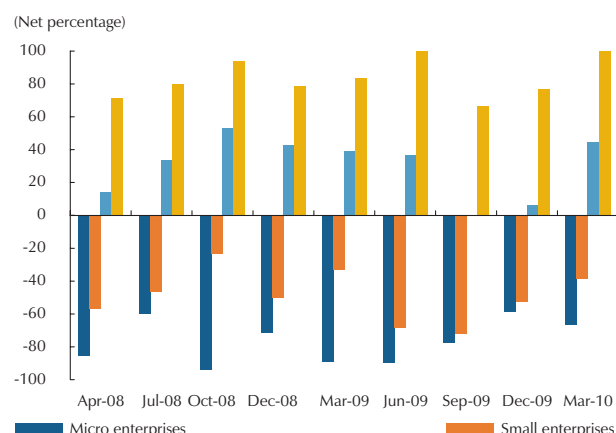


Source: Quarterly survey of credit situation, Banco de la República.

### B. Current perception of credit availability

(Percentage)
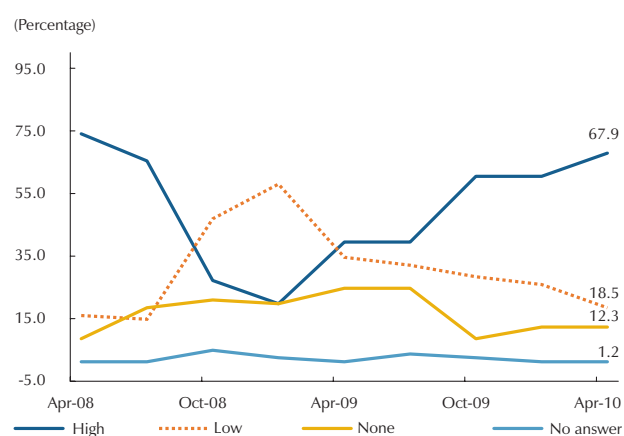


Source: Quarterly survey of economic expectations, Banco de la República.

## Graph 56
Policy rate, a/ "IBR" (bank reference indicator) and "TIB" (Interbank Rate)
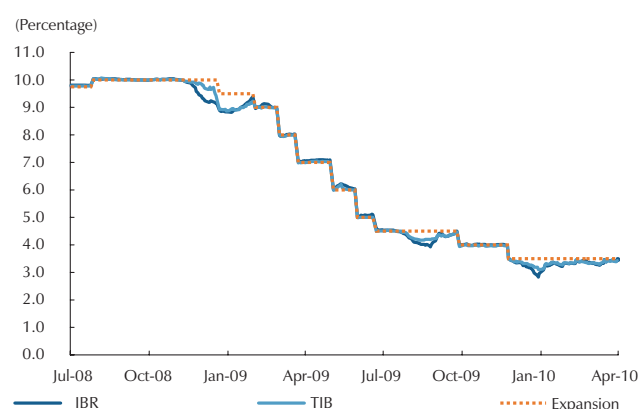
(Percentage)



a/ Bank reference indicator.
Source: Superintendencia Financiera de Colombia; calculations by Banco de la República.

policy interest rate[14]. On the side of ordinary and housing-construction-destined loans, they showed reductions of 7 bp and 12 bp, and accumulated 724 bp and 607 bp during the monetary momentum period (Table 7).

In real terms, also active interest rates have recorded important reductions although, with the exception of ordinary credit, the other modalities exceed the minimum records in the decade. (Graph 58, panels A and B).

## 4. Asset Prices

Fixed-rate public debt certificates (TES) issued by the National Government, on average showed depreciation during December 2009 and February of the current year. These depreciations were more pronounced for the middle tranche of the curve (five-year duration) and not so strong in the short tranche (one-year duration). This behavior was led by fundamentals, in both the international context as defined in the beginning of this section, and the local

## Graph 57
Passive nominal interest rates
(weekly data)

(Percentage)                                    (Percentage)
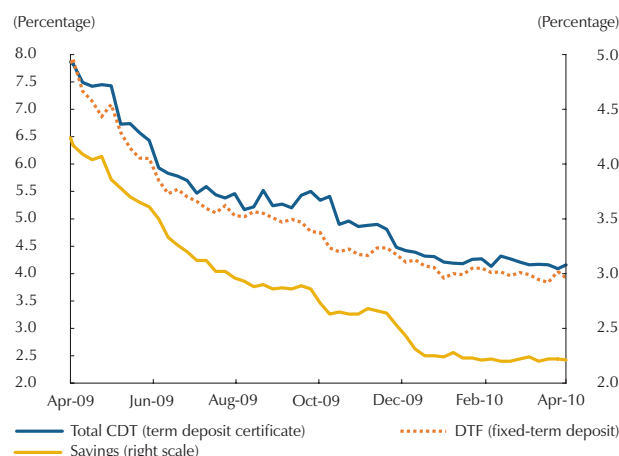


Source: Superintendencia Financiera de Colombia; calculations by Banco de la República.

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14    It is necessary to explain that, between September and December 2008, the increment in international risk due to the Lehman Brothers bankruptcy had generated a rise in the interest rate of this modalities. This explains as well why their cumulative reduction is higher than the Central Banks' reference rate.

Table 7
Nominal Interest rates

| | December, 19 2008 (percentage) | December, 2009 (percentage) (average | March, 2010 (percentage) (average) | Variation (basis points) | |
| --- | --- | --- | --- | --- | --- |
| | | | | I Qtr. 2010 | Accrued since December, 19 2008 |
| Interbank market | | | | | |
| Policy rate | 10.00 | 3.50 | 3.50 | 0.00 | (650.0) |
| TIB | 9.30 | 3.29 | 3.37 | 6.42 | (592.7) |
| IBR a/ | 9.14 | 3.18 | 3.41 | 21.86 | (572.7) |
| Deposits market | | | | | |
| Total CDT | 10.66 | 4.33 | 4.16 | (16.76) | (649.7) |
| Corporate CDT | 11.20 | 4.26 | 4.08 | (17.82) | (712.1) |
| Offices' CDT | 9.77 | 4.42 | 4.28 | (14.22) | (549.1) |
| DTF | 10.33 | 4.12 | 3.93 | (18.70) | (639.9) |
| Savings deposits | 4.97 | 2.30 | 2.22 | (7.84) | (275.1) |
| Credit market | | | | | |
| Commercial portfolio | | | | | |
| Ordinary credit | 17.75 | 10.59 | 10.51 | (7.41) | (723.8) |
| Preference credit | 16.03 | 7.61 | 7.18 | (42.75) | (884.8) |
| Treasury credit | 15.78 | 7.00 | 6.55 | (45.17) | (922.5) |
| Credit to home builders | 16.85 | 10.90 | 10.78 | (12.00) | (606.6) |
| Household portfolio | | | | | |
| Mortgage credit | 17.32 | 13.98 | 13.62 | (35.79) | (369.9) |
| Consumer credit | 25.55 | 20.43 | 19.31 | (112.06) | (623.2) |
| Credit card credit | 31.04 | 25.48 | 23.84 | (163.90) | (720.0) |
| Usury rate | 31.53 | 25.92 | 24.21 | (171.00) | (732.0) |

a/ Bank reference indicator
Source: Superintendencia Financiera de Colombia.; calculations by Banco de la República.

context. In the latter, the negative impact of the increment in the fiscal deficit projection for 2010 stands out, along with fear of an increased TES supply. Likewise, the fact that the boom of corporate issues would motivate TES position liquidations in order to participate in the auctions of the private ones cannot be ruled out. In addition, face to the potential effect of El Niño on food and regulated prices, it was possible to generate higher demand for TES indexed to the Real Value Unit (UVR in Spanish) face to the fixed-rate TES.

In March and the elapsed days of April, TES prices have been recovering, this taking place in harmony with the new information regarding confidence on the economic performance and the good inflation results, which have reduced as well the expectations about the general price level and increase the demand for longer-duration fixed-rate bonds (Graph 59, panel A). Despite this recent TES valuation, real ten-year zero-coupon rates are above their minimum levels attained in 2006. This behavior is shared by the different tranches in the zero coupon curve (Graph 59, Panel B).

With regard to the variable income market in Colombia, slight depreciations took place at the beginning of the current year due to a growing aversion to market risks owing

Graph 58

A.    Active real commercial interest rates
      (with CPI without foods)

(Percentage)



Ordinary    Preferential    Treasury    Construction
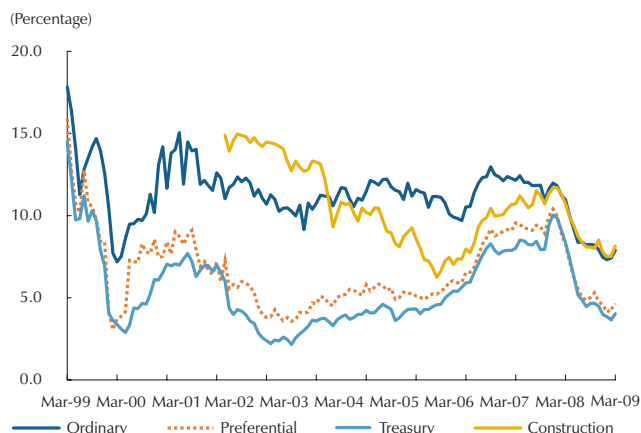
B.    Active real household interest rates
      (with CPI without foods)

(Percentage)



Consumer    Home purchase    Credit card
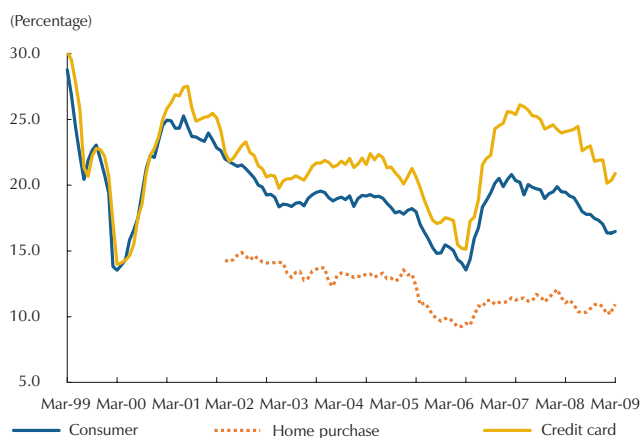
Sources: Superintendencia Financiera de Colombia and DANE; calculations by Banco de
la República.

Graph 59

A.    TES ten-year zero coupon interest rates[a/]

(Percentage)



1 year          10 years
5 years         15 years

B.    Real TES ten-year zero coupon interest rate[a/]

(Percentage)
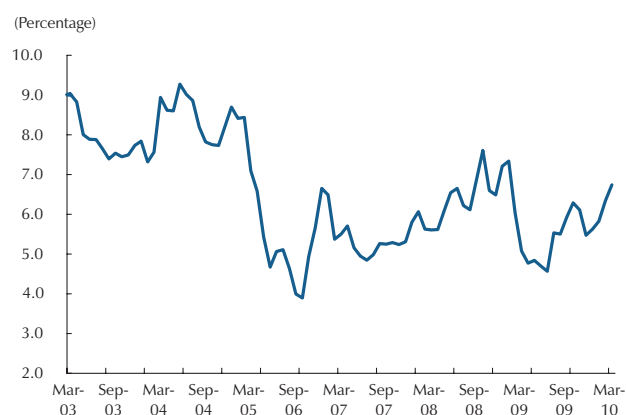


a/  Deflacted by CPI without foods.
Source: Bolsa de Valores (Stock Exchange) of Colombia; calculations by Banco de la
República.

to sustainability problems in the sovereign debt of several Western European countries; this situation hit the markets again at the time this report was being prepared. In this manner, so far this year, the correlation of Colombia's main stock market index (IGBC) to the performance of the variable income market in different regions worldwide has been high. Nevertheless, despite the volatility being observed in the international variable income markets, Colombia has been one of the countries with less variance in the region's stock market.

Since mid February of the current year, the stock market has experienced a marked upward trend reflecting on both the IGBC and other local stock market indexes gathering the twenty shares with larger capitalization and higher liquidity in the market, i.e. Colcap and COL20, respectively (Graph 60, panel A). This behavior has been supported, partly, by the good results of the real and financial sector enterprises in the previous year, as well by new discoveries in the mining sector, particularly with respect to oil.

## Graph 60

### A. Stock Exchange of Colombia General Index (IGBC)

(Index)



COLCAP • • • • • COL20 ——— IGBC

### B. Leverage at the IGBC
(Repos balance in shares/market capitalization)

(Percentage)                                                        (Million pesos)



——— Repos/capitalization B          ▮ Repos (right scale)
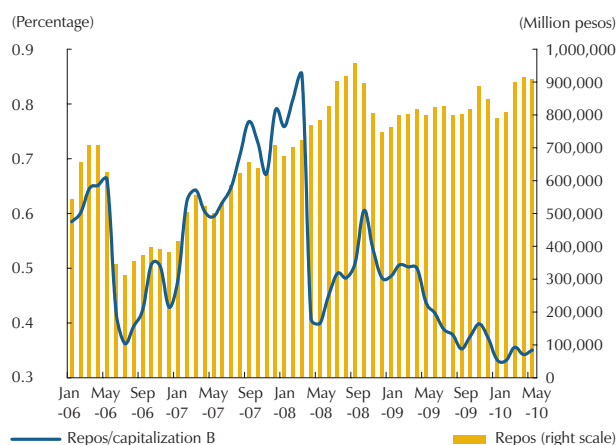
Source: Bloomberg, market capitalization; BVC (Colombian Stock Exchange): repos balance; calculations by Banco de la República.

## Graph 61
### Real housing prices and real mortgage portfolio

(Index)                                              (Thousand millions 1994 pesos)



——— IPVU[a]                          • • • • • Real DNP of Bogota, new housing
——— Mortgage portfolio (right scale)
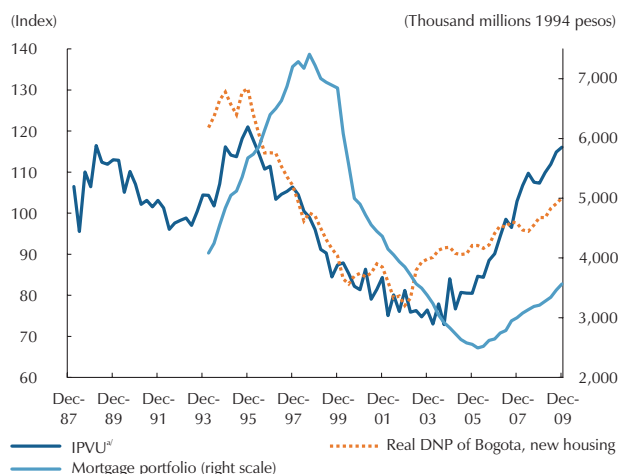
a/ Used housing price index (IPVU) for three cities, as calculated by Banco de la República.
Source: DNP (National Planning Department), DANE, and Banco de la República.

In addition, in the past few months, the new record registers of shares appreciation in Colombia have been accompanied by an increment in the repo operations in shares. These levels are high face to those observed in the past few years, and close to the maximum levels of mid 2008. Notwithstanding, it has to be considered that the participation of these repo operations has lost significance once it is controlled by the behavior of local stock market capitalization (Graph 60, panel B).

Finally, as for housing prices, their indexes in real terms went up in 2009 by 4.8% in the case of new housing in Bogota (index calculated by the DANE), and by 8.2% for used houses as estimated for Bogota, Medellin and Cali (index calculated by the Central Bank). The level of the latter is already comparable with the maximum historical prices attained in 1995 and 1996, while the index calculated by the DANE still remains 25% below the higher values in those years (Graph 61).

Some indicators relating both new and used housing prices to rentals suggest that this relative price is set at high levels with respect to its historical cost[15]. Notwithstanding, this dynamics has taken place with a moderate and much lower leverage than the one observed halfway the 90's. As shown in Graph 62, panels A and B (panels A y B), the mortgage portfolio adjusted as a buildings GDP average, is at its lowest levels. Likewise, if mortgage portfolio disbursements are compared to the buildings GDP, it can be seen that they have increased in the past few years but still remain much lower than the levels of halfway the 1990 decade.

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15      See *Reporte de Estabilidad Financiera* (literally: Financial Stability Report) of March 2010, Box 5, p.76, Banco de la República (Central Bank of Colombia).

Graph 62

A.          Mortgage portfolio/buildings GDP

(Percentage)



B.          Mortgage portfolio disbursements/buildings GDP

(Percentage)
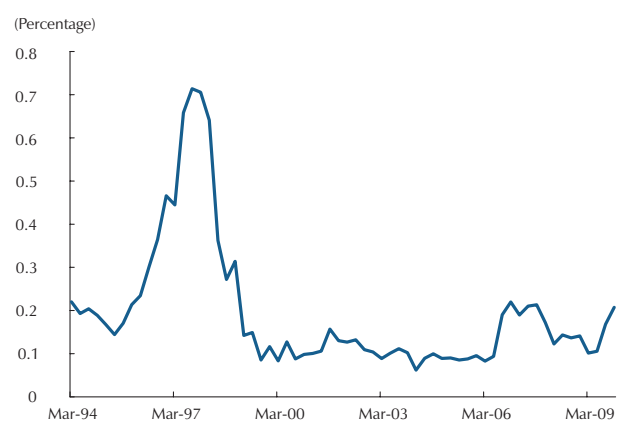


Source: DANE; Superintendencia Financiera; calculations by Banco de la República.

# III.  MACROECONOMIC PERSPECTIVES

**The best economic prospects for both** emerging and some developed economies contrast with increasing uncertainty in European sovereign-debt markets.

**Colombian economy is expected to recover in 2010,** driven above all by domestic demand.

**Growth —between 2% and 4% as anticipated** —suggests that the output gap will remain in negative terrain throughout 2010; therefore, no demand pressures on prices are expected.

**El Niño might still affect food prices;** for this reason, inflation by the end of the year would be close to the midpoint of the target range. For 2011, inflation will notwithstanding end up around 2%.

## A.    THE INTERNATIONAL CONTEXT

World economy continued to recover in the last three months, though at distinct paces in the different countries. The most promising signs came, again, from the emerging countries and, in a lesser degree, from the United States. In Europe, the developed economies were confronting a less favorable situation. Generally, credit restrictions, high indebtedness levels in the private sector, and the deterioration of the labor market, were still the most hindering factors against mid-term and long-term growth in the developed economies.

Although the sovereign debt issues in several European countries tangled the financial outlook in the past few months, it is considered that this circumstance did not succeed in hitting growth figures in the first quarter. Nonetheless, the fact that this situation may have future effects on the economy has not been dismissed. Although this risk had already been envisaged in previous reports, it is beginning to appear more likely today.

Graph 63
Retail sales in developed economies

A.     United States

(Thousands millions dollars)                    (Percentage variation)

| Mar -04 | Sep -04 | Mar -05 | Sep -05 | Mar -06 | Sep -06 | Mar -07 | Sep -07 | Mar -08 | Sep -08 | Mar -09 | Sep -09 | Mar -10 |

◼ Retail sales (w.f.)          ⸺ Annual variation
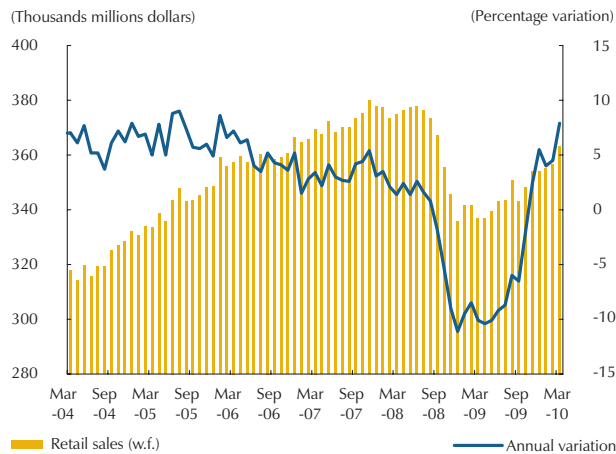
B.     Eurozone (2005 volume = 100)

(Index)                                          (Percentage variation)

Mar-04   Mar-05   Mar-06   Mar-07   Mar-08   Mar-09   Mar-10

◼ Retail sales (w.f.)          ⸺ Annual variation

C.     Japan (2005 volume = 100)

(Index)                                          (Percentage variation)

| Mar -04 | Sep -04 | Mar -05 | Sep -05 | Mar -06 | Sep -06 | Mar -07 | Sep -07 | Mar -08 | Sep -08 | Mar -09 | Sep -09 | Mar -10 |

◼ Retail sales (w.f.)          ⸺ Annual variation
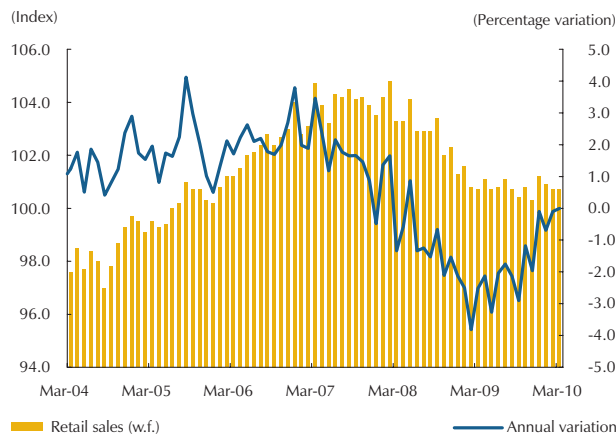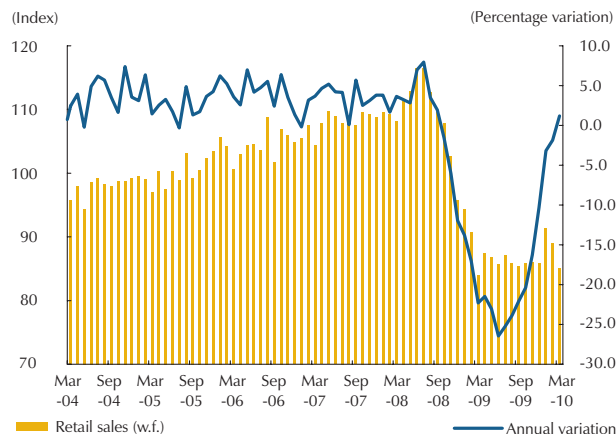
Source: Bloomberg.

In the past few months, information available for developed economies continued to show mixed signs. Industrial and foreign trade output indicators[16] kept improving, though at a slower pace than observed in the previous quarter. On their side, retail sales exhibited distinct performances in the different countries: while they continued to recover in the United States, they came to a standstill in Europe and Japan[17] (Graph 63).

In this environment, the United States GDP increased at annualized quarterly 3.2% growth rate (a/q) in the first quarter of 2010, similarly to what was forecast by the market and after having shown increments of (a/q) 2.2% and (a/q) 5.6% in the two previous periods. Higher household consumption and inventory reposition explain this result (Graph 64).

The performance of other developed economies has been less satisfactory. In the United Kingdom,

Graph 64
Inventory change in the United States

(Thousands millions dollars of 2005)

| Mar -90 | Mar -92 | Mar -94 | Mar -96 | Mar -98 | Mar -00 | Mar -02 | Mar -04 | Mar -06 | Mar -08 | Mar -10 |
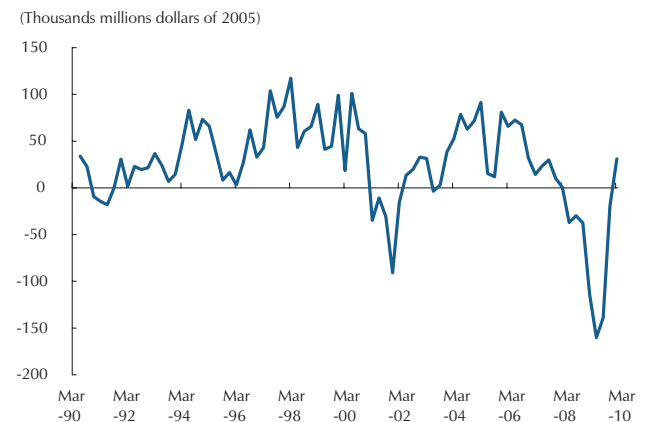
Source: Bloomberg.

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16      The world economic crisis resulted in a 12.2% contraction in the global trade volume, this being its worst setback since the Word War II. According to the WTO, in volume terms, exports of the developed economies are expected to increase 7.5% and those of the rest of the world around 11% in the course of the year. Thus, if trade continues to growth at the current pace, one more year would be necessary for the volumes to exceed their maximum attained in 2008.

17      Retail sales in the United States are growing, following the completion of several state programs for economic encouragement like, for example, the *car* allowance rebate system (CARS) expiring at the end of the third quarter of 2009.

Graph 65
Developed economies' GDP

(Annualized quarterly variation)



Germany  Euro Zone  United Kingdom  France  Japan  United States

■ III Qtr. 09      ■ IV Qtr. 09      ■ I Qtr. 10

Source: Bloomberg.
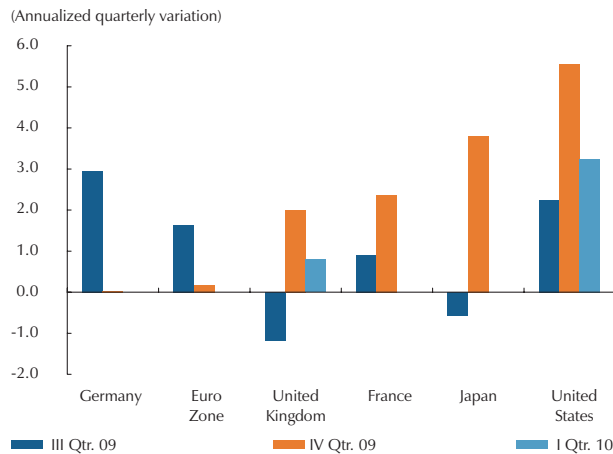
growth took place with preliminary figures of (a/q) 0.8% in the first quarter of 2010 following an (a/q) expansion of 2.0% in the previous period. For Japan and the euro zone, GDP data for the first months in the year are still ignored, but indicators available suggest a sluggish expansion of the economic activity (Graph 65).

For the forthcoming quarters, a relatively low increase in the GDP has been anticipated in several economies, due to the numerous risk still confronted by the developed world. In particular, it is worth highlighting increasing uncertainty with regard to the macroeconomic stability in many countries facing today profound fiscal unbalances and having, for this reason and owing to economic contraction, been forced to accrue significant public debt levels in the past two years. These issues are particularly threatening in Europe where, if they materialize, global growth may be adversely affected, and, especially that of many other developed economies. On the other hand, face to the need of many of these governments to withdraw fiscal aids, doubts and concerns arise with respect to how fast these economies could resume a sustained growth path.

The sluggishness seen in labor market recovery is another hindrance confronted by economic activity in the developed countries. In the case of the United States, although in March and April 250,000 employments were created, the unemployment rate increased in April from 9.7% to 9.9%. In addition, unemployment petitions grew and remained at high levels. Something similar can be observed in other countries.

If production recovery continues taking place without significant job creation, the high unemployment levels seen today will tend to become chronic. This would end up by hitting household and enterprise confidence permanently, while reducing potential growth in developed economies. The increase recorded in the permanent dismissal rate and in unemployment duration, which have reached their maximum levels since this information became available, points in this direction (Graphs 66 and 67).

As for emerging economies, their economic recovery has been led by the Asian countries, mostly by India and China. In China, acceleration of the GDP growth to 11.9% during 2010 stands out, this having taken place after having recorded an expansion of 8.7% in 2009 (Graph 68).

With respect to the trading partners of Colombia in the region, Venezuela showed an impressive setback in its economic activity at the end of the year. Along with trade restrictions, it continued to weaken in a significant manner Colombian sales destined to this neighboring country. It is worth point out

**Unemployment and dismissal rates in the United States**

(As a percentage of active population)



| | | | |
|---|---|---|---|
| Temporary dismissals | | Permanent dismissals | |
| Unemployment rate | | | |
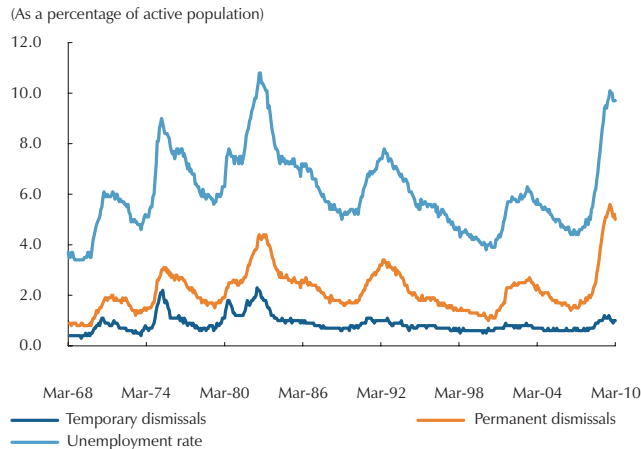
Source: Bloomberg.

Graph 67
**Employment duration in the United States**

(Number of weeks)
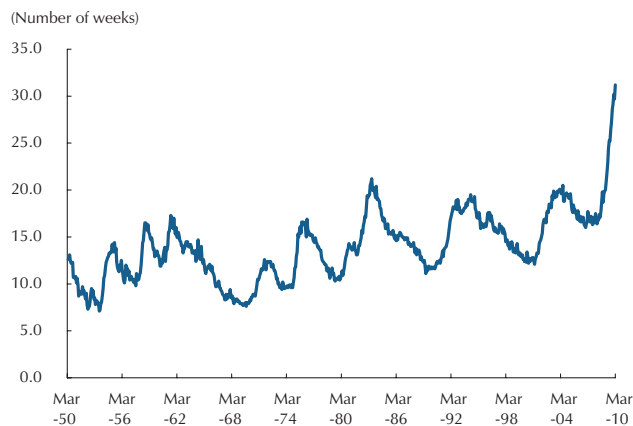


Source: Bloomberg.

Graph 68
**GDP of some emerging economies**

(Annual percentage variation)



| III Qtr. 09 | IV Qtr. 09 | I Qtr. 10 |
|---|---|---|
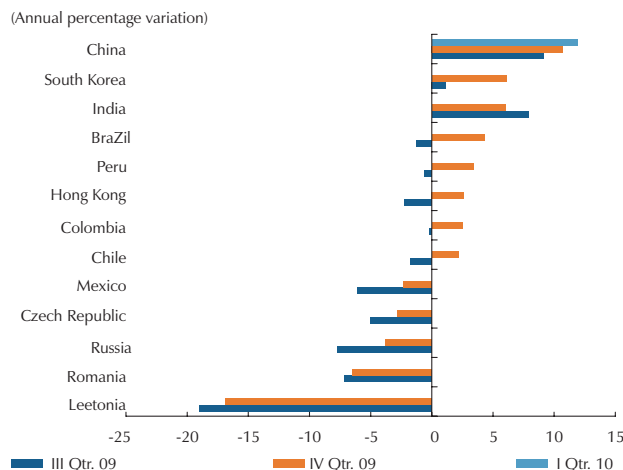
Source: Bloomberg.

that purchases by Venezuela from Colombia have acutely reduced their share face to its total imports since mid-2009 (Graph 69). For the rest of the Latin American countries, some recovery was observed with Brazil showing the most important rebounds.

For this report, given the above, the growth forecasts of some of our trading partners for 2010 were modified upwards with the exception of Venezuela for which a reduction is foreseen. The United States GDP projection range prepared by the technical team of the Central Bank of Colombia is set at an interval between 2.3% and 3.7% for 2010, with a more likely 3.0% scenario (in the previous report, this range was between 1.5% and 3.0%) (Table 8). The forecast for the United States envisages recovery based on the positive effect of the inventory cycle which will tend to decline in the second half of the year. Likewise, it implies a private expense (consumption plus residential investment and in fixed capital) limited by the labor market deterioration and credit restrictions.

For the euro zone, the expected growth would stand between 0.3 and 1.2% in 2010, with a core 0.8% record. This figure is similar to that envisaged in the previous report (Table 8). For Venezuela and Ecuador, the region partners, growth in 2010 would be at -1.0% and 1.5%, respectively.

Graph 69
**Colombian share in Venezuelan imports**

(Percentage)
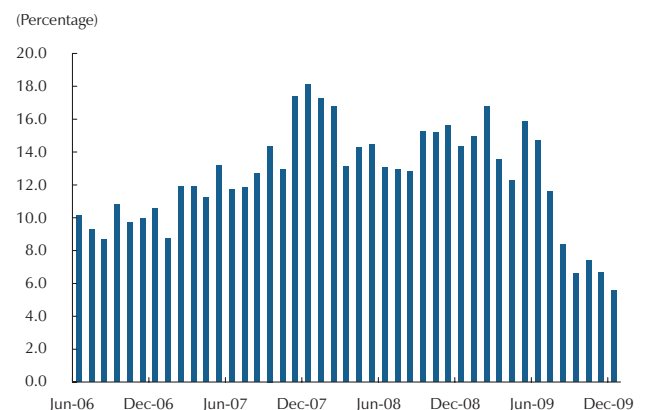


Source: Instituto Nacional de Estadística (National Statisticel Institute) of Venezuela.

Table 8
Developments in real growth forecast for Colombia's trading partners

| | Observed | | | 2010 Projections[a/] |
|---|---|---|---|---|
| | 2007 | 2008 | 2009 | |
| **Major partners** | | | | |
| United States | 2.1 | 0.4 | (2.4) | [2.3 y 3.7] |
| Euro Zone | 2.7 | 0.7 | (4.0) | [0.4 y 1.2] |
| Venezuela | 8.4 | 4.8 | (3.3) | [(2.0) y 0] |
| Ecuador | 2.5 | 6.5 | 0.4 | [1.0 y 2.0] |
| **Other partners** | | | | |
| Japan | 2.4 | (1.2) | (5.2) | 1.7 |
| China | 13.0 | 9.0 | 8.7 | 9.8 |
| Peru | 8.9 | 9.8 | 0.9 | 5.3 |
| Mexico | 3.3 | 1.4 | (6.5) | 4.2 |
| Chile | 4.7 | 3.2 | (1.0) | 4.5 |
| Argentina | 8.7 | 6.8 | 0.9 | 4.6 |
| Brazil | 6.1 | 5.1 | (0.2) | 5.5 |
| Bolivia | 4.6 | 6.1 | 3.4 | 3.8 |
| **Developed countries** | 2.7 | 0.5 | (3.2) | 2.3 |
| **Developing countries** | 8.3 | 6.1 | 2.4 | 6.3 |
| **World total** | 5.2 | 3.0 | (0.6) | 4.2 |

a/ The prediction range is being given by an optimistic scenario (the interval ceiling) and a conservative scenario (the interval floor)
Sources: Datastream, Consensus Forecast, IMF, and Banco de la República.

World demand reactivation, especially in the Asian countries and to some extent in the United States, has caused commodity prices to behave better than expected in the previous quarterly report (Graph 70). Generally, these prices remained high at the end of the first quarter and they are expected to be maintained at these levels in the remaining time of 2010, thanks to the best economic perspectives of the emerging countries and the United States.

Graph 70
International oil price - WTI[a/]

(Dollars per barrel)



a/ WTI: West Texas Intermediate.
Source: Bloomberg, Banco de la República.

In this report, forecasts of international prices were increased slightly face to the previous report. Thus, in the core scenario, an average price of US$80 per barrel for the West Texas Intermediate (WTI) oil is expected in 2010, with a rage between US$75 and US$85 (in the previous report, US$75 was expected for the core scenario). These values are slightly above those observed for the 2009 average. A similar behavior has been foreseen in the prices of other products exported by Colombia, as shown in Table 9.

Due to the slow recovery expected for the developed economies, together with an increasing perception of financial market risk and volatility in the past few months, the central banks of the major economies in

Table 9
International prices

| Product | 2007 | 2008 | 2009 | Projection for 2010 | |
| --- | --- | --- | --- | --- | --- |
| | | | | Scenario A a/ | Scenario B b/ |
| Coffe (ex dock) (dollars per pound) | 1.3 | 1.4 | 1.7 | 1.9 | 2.1 |
| Oil (WTI) (dollars per barrel) | 72.3 | 99.9 | 62.0 | 75.0 | 85.0 |
| Colombian Oil (dollars per barrel) | 66.2 | 90.2 | 56.2 | 66.1 | 76.1 |
| Coal (dollars per tonne) | 50.8 | 83.4 | 80.2 | 75.0 | 90.0 |
| Ferronickel (dollars per pound) | 5.5 | 3.4 | 1.9 | 2.5 | 2.9 |
| Gold (dollars per troy ounce) | 696.9 | 873.0 | 929.0 | 1.045.0 | 1.240.0 |

a/ Balance of parments estimation by April 2010.
b/ Escenaries A and B correspond to conservative and optimistic escenaries, respectively.
Source: Banco de la República.

Graph 71
Total inflation of the developed economies

(Annual percentage variation)
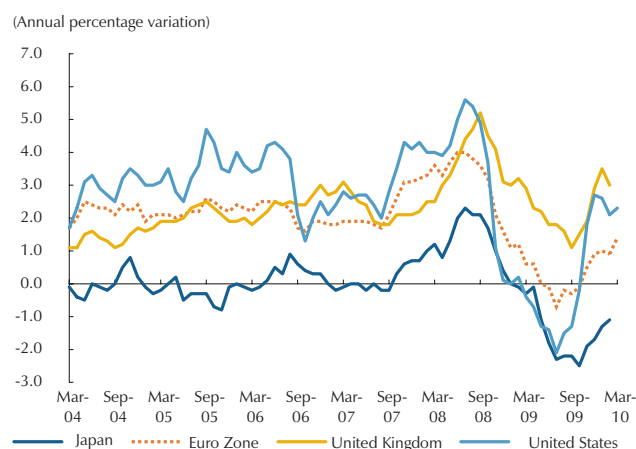


Source: Bloomberg.

Graph 72
Core inflation of the developed economies

(Annual percentage variation)
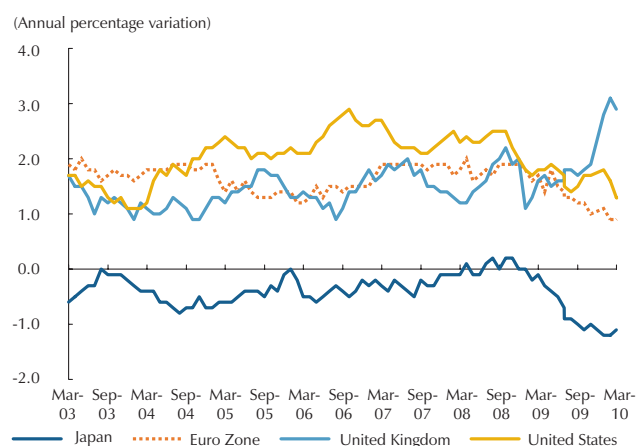


Source: Bloomberg.

the developed world are likely to maintain a widely expansive monetary policy. With regard to annual consumer price inflation, although increases were observed in the last quarter in the industrialized countries, this trend would not last, as suggested by the significant reductions taking place simultaneously in base inflation[18] (Graphs 71 and 72). Therefore, it is considered that in most part of 2010, the central banks of these countries are expected to keep their interest rates at levels close to zero.

In Latin America, inflation has remained stable and at low levels in most countries[19]; for this reason, no abrupt change is expected in the monetary policy stance (Graph 73). The most remarkable exception is Brazil, where its central bank recently increased its reference rates face to possible inflationary pressures. In Asia, an upward trend in inflation has been observed as well, particularly in China, which has forced monetary authorities to restrict liquidity by means of increases in the legal cash reserve requirements. It has been estimated that this upward tendencies are very unlikely to affect prices in Colombia and other countries in the region, at least in the remaining part of 2010.

18    Market consensus foresees in inflation of 2.1% in 2010 and 2% in 2011 for the United States.

19    Venezuela is the big exception as regards inflation; the increase of the annual price closed at 26.9% last year, and the analysts' forecasts indicate that it will be around 34% in 2010.

**Graph 73**
Total inflation in some Latin American countries

(Annual percentage variation)



Brazil — Colombia ··· Mexico — Peru — Chile

Note: Beginning in 2010, a change took place in Chile's methodology.
Source: Bloomberg.
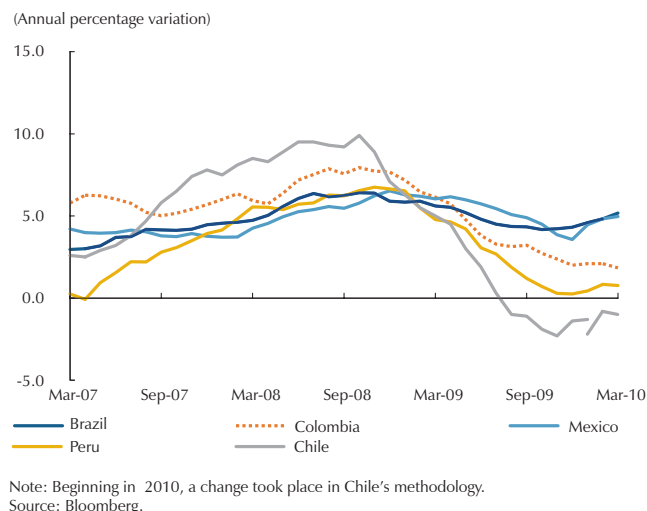
## B.    THE BALANCE OF PAYMENTS

The balance of payments forecasts submitted in the last two inflation reports matched the current account deficit of 2.2% of the GDP (US$5,146 m) registered in 2009. This outcome was given by a stronger fall of current expenditure with respect to income. In this manner, the reduction in the imports of goods (-16.2%) and of expenditures of factor income (-10%) exceeded the reductions of goods exports (-12.2%) and of transfer income (-11.2%). As expected, the behavior of export and transfer income was mostly due to the strong contraction of external sales to Venezuela (-33.5% per annum) and the reduced workers' remittances (-14.4%). As for the capital account, it registered net entries below those of 2008 (despite capital income of US$7,275 m from the public sector), owing to lesser direct foreign investment (DFI) in Colombia and higher Colombian investments abroad.

For 2010, different balance of payments scenarios are considered, depending upon the magnitude of recovery of both the Colombian economy and its major trading partners. The forecasts are taking into account growth between 2% and 4% in the Colombian economic activity (as shown in the following section, and a slight recovery of major Colombian trading partners (between 0.8% and 2.0%), as well as better international prices for the main exported goods with respect to those observed in 2009 (tables 8 and 9).

Consequently, an increase of about 16% in imports is expected, depending on the domestic demand recovery and, likewise, a similar increment in exports, based on both sales to different destination other than Venezuela and the expected rise of basic product prices. In particular, sales to Venezuela are expected to continue falling due to the negative growth forecast for this country, along with a recent depreciation if the bolívar and the commercial restrictions imposed in the middle of the previous year. Likewise, the higher prices of commodities will affect the factor income because of the higher remittance of profits by the foreign companies exporting oil, coal, and ferronickel. On the other hand, a reduction in workers' remittances is expected, likely to be between -10% and -14% in the whole year, this behavior being consistent with what has been observed in the current year through March, when they had dropped by 18%.

On the capital account side, the performance of Colombian economy in 2010 suggests that income from net foreign direct investment will be around US$6,000 m, this being the main source of external finance, together with public sector capital flows. The preceding assumptions imply an external unbalance broadening for 2010, between 2.5% and 2.8% of the GDP (Graph 74).

(Percentage of GDP)



(proj) projection.
Source: Banco de la República.
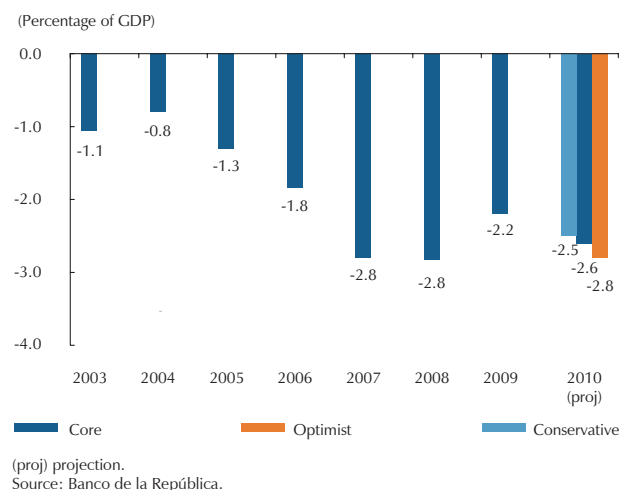
## C. INTERNAL GROWTH FOR 2010

Following its weak performance in 2009, Colombian economy should show an important recovery in 2010 which, nevertheless, will not be sufficient to bring the economy back to its potential growth path. In the course of this year, the country will have better prospects thanks to a larger demand for national products that would also ensure better trading terms.

Despite the foregoing, the outlook is not yet perfectly clear yet. Still significant is uncertainty regarding the takeoff of European economies, particularly those that to a higher degree resorted to fiscal momentum to overcome the crisis. In addition, it cannot be ignored that although the demand for Colombian exports will increase in 2010, the burden of restrictions imposed by Venezuela on binational trade will continue to hold domestic growth back, at least in the first half of the year.

As usual, for the 2010 growth projection, three scenarios were used, where the balance of payment assumptions are taken into account, as well as the different expectations about public spending, investment in civil works, and the evolution of trade restrictions from Venezuela. For fiscal variables, these scenarios envisage:

- for the ceiling: public spending would grow around 3%, at a rate slightly higher than in 2009, while investment in civil works would show rates close to 4.0%.

- for the floor: public spending growth would be lower (about 2.0%), and investment in civil works would show a mild drop in annual terms.

In addition, in the scenarios so proposed it is assumed that the financial system will remain sound and solvent throughout 2010[20]. The stability in this sector in 2009 softened in a very significant way the effect of the international crisis on Colombia and enabled the monetary policy transmission channel to remain active. For 2010, the financial system shall contribute to credit availability and will make it possible for the loose monetary policy effects to continue to be transferred to the agents in the form of smaller financial burden on households, and less expensive financing for entrepreneurs.

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20    See the *Reporte de Estabilidad Financiera* (literally: *Financial Stability Report*) of March 2010; Banco de la República (the Central Bank of Colombia).

So, major results of forecasts for 2010 show that the GDP will be essentially driven by private consumption and, to a lesser extent, by Government spending. With relation to private consumption behavior, gradual recovery is expected in the course of the year, allowing for a significantly higher growth than in 2009, though slightly below its historical average (which is close to 4.0%). By types of goods, the component exhibiting more dynamism in the year would be that of durables. The expansive monetary policy carried out by the BDCB for more than a year ago should play an important role in household spending reactivation.

However, uncertainty around forecasts for private consumption is still high for several reasons, among which the stagnation of salaried work to this date stands out, as well as the increasing degree of labor market informalization. This situation does not contribute to improve consumer confidence, or to ensure more stability in their earnings, which may lead them to postpone their indebtedness and spending decisions. Likewise, the drop in remittances from abroad expected for this years, as pointed out in the previous section, implies an important blow to the available family earnings, which reduces the possibilities of a strong consumption expansion.

With respect to total investment, for 2010 it is expected to be encouraged by a strong stock accumulation and a spending increase by the oil and the mining sectors, relating with a larger FDI (see the preceding section). Civil works growth, as already mentioned, will be low which, nevertheless, can be explained by the historically high record of the previous year. In the case of investment in industry and other production sectors, recovery will be slower and will take place, especially, in the second half of the year. It is worth noticing that, in industry, the utilization of installed capacity is still low and may remain unchanged for some time, given the significant reduction of sales to Venezuela (see Chapter I).

For real exports in pesos, positive though low growth is expected in the whole year, in line with the recovery of world demand, with a significant increase of sales towards Ecuador owing to the end of the trade safeguards and an acute plunge of sales towards Venezuela.

Imports, in turn, will continue to grow in amount terms, as they have been growing since the second quarter of 2009, and at the end of the year they will attain figures similar to those observed in the beginning of the international crisis.

On the supply side, the GDP momentum will come mainly from the mining sector and, particularly, from a significant increase of oil production. However, the share of the mining GDP in the total has not yet reached its historical maximum attained by year 2000 at the time the most important oil fields in the country's history were discovered.

Commerce and industry will show growth rates nearing 4%. For industry, this would mean levels still lower than those observed before the 2008-2009 crisis. A poor dynamics is expected for the housing construction sector, as anticipated by the stagnation of construction or building permits.

The leading indicator of economic activity in Colombia (Imaco) which incorporates diverse sector variables, shows that the economic activity recovery would be maintained throughout the first quarter of 2010 (Graph 75). According to this indicator, if the trend is extended to the second semester, the GDP increment of the whole year might be above 3%. Nevertheless, it is worth notice that the Imaco methodology (already described in the *Inflation Report* June 2009) may not be reflecting completely the effect of the fall of trade with Venezuela, since it does not directly include elements associated to foreign trade.

Based on the above, in this report the forecast range of the 2010 GDP submitted in the previous report was maintained: i.e., between 2.0% and 4.0% (Graph 76). In this occasion, risks are deemed to be balanced and it is considered that the most likely outcome is an expansion around the midpoint of this interval. In the previous report, the bias was downward, and the higher probability was concentrated in the lower half. The increment is due to the best GDP results in the end of 2009 face to what had been expected, this being a favorable behavior of the activity indicators in the first quarter of this year.

In this report, the range spread was not reduced, since uncertainty associated to the forecast remained as it was three months ago. This is due to two factors: i) because the new information available has not reduced the dispersion existing between the forecasts of the different models, and ii) because, for 2010, the DANE will introduce a new calculation basis for *national accounts,* with some methodological innovations: the effects of these changes on the GDP estimation will be uncertain as long as the first quarter figures are unknown.

Graph 75
Imaco: five months leading indicator of GDP

(Percentage)
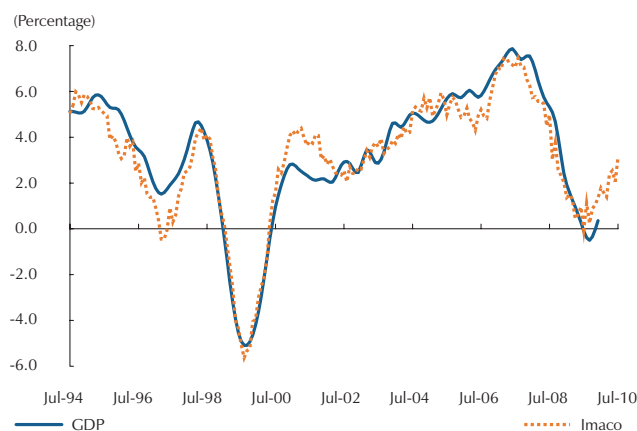


Source: Banco de la República.

Graph 76
Range of GDP Forecast for 2010

(Percentage)



Source: Banco de la República.

## D.    INFLATION PREDICTIONS

### 1.    Forecast

Estimations prepared for this report by taking into account price determinants already discussed in the foregoing sections, and inflation observed in March, led to a reduction in the inflation projections for a

good part of 2010 as compared to those submitted in the previous Inflation Report. The long-term forecasting exercise shows, again, that the achievement of the target set between 2% and 4% is highly probable, even though in this occasion the central path for the projection runs around the floor of this interval, particularly by the end of 2011.

The factor explaining the new results are various, some of them having undergone changes with respect to the previous quarter, as detailed below.

- *The overestimated impact of El Niño event was revised*

  Again, in this report, the inflation central path envisages a temporary shock on food and regulated prices in order to capture the effects of El Niño event. Notwithstanding the magnitude of the expected impact, it had to be reduced in this report by reason of the overestimation it was subject to in the first quarter. This decision was made taking into account that in previous episodes of El Niño, their impact on annual inflation was much more strongly felt during the second and the third quarters of the year, even after rainfall normalization.

- *The cumulative appreciation of the exchange rate has been stronger than expected, and it will exercise increasing downward pressures upon inflation*

  Previous inflation predictions did as well overestimate in a significant manner the annual variation in the tradable CPI without food and regulated prices. This occurred not only because the Colombian peso appreciation was above the revaluation projected three months ago, but also because the effect of a weak domestic demand was underestimated. The combination of both situations curbed price rises and even encouraged leading to a fast drop of tradables. In fact, in the last quarters, more downward flexibility has been seen in the prices of tradables and other sub-baskets, which would have helped to quickly reduce inflation in 2009 and keep it close to 2% at the beginning of 2010 (Graphs 77 and 78).

  Given the foregoing, the new forecasts suggest that, in the remainder of 2010, a transfer of the cumulative appreciation to tradable prices, faster than predicted in the previous report, will continue to be seen as encouraged, in part, by a relatively weak demand. The larger downward flexibility exhibited in this CPI segment will make it possible for the annual variations of these prices to be established at even negative values for several months, something never seen before and unpredictable three months ago. Towards 2011, and to the extent that no pressures are expected upon the exchange rate neither on international prices, the tradable CPI will show high stability and low – though positive – adjustments.
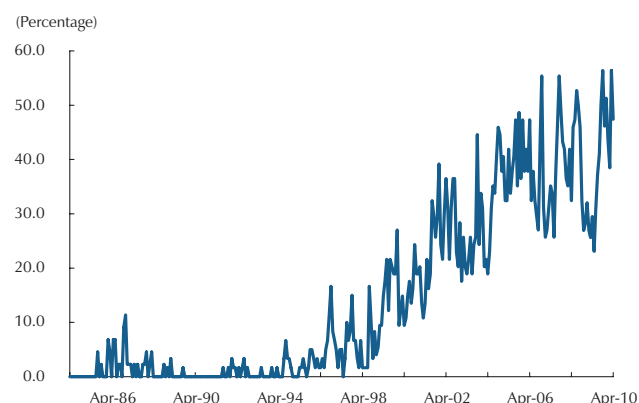
(Percentage)



Source: DANE, calculations by Banco de la República.

(Percentage)
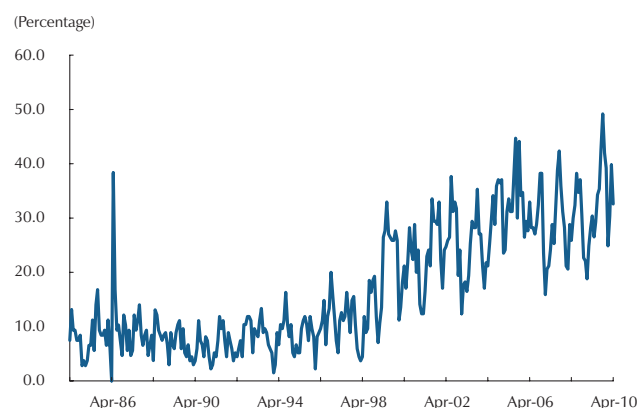


Source: DANE, calculations by Banco de la República.

- *The economy will continue to show excess productive capacity through the rest of 2010 and a good part of 2011*

As pointed out in the preceding sections, sounder than expected signs of economic recovery continued to be seen in the first months of the year. These and other reasons already explained have increased the likelihood of growth being established around the midpoint of the forecast interval between 2% and 4%, and not at the lower half as previously thought. Despite the bias movement of the projection, the estimation of output gap did not change in a substantial manner and, currently, it is deemed to remain in negative terrain, very close to the levels observed in 2009. The estimation of an ample excess productive capacity is justified by the high idle capacity still observed in industry and other sectors, because the unemployment rate is set at high levels and should not go through substantial changes in the rest of the year.

Consequently, for the remainder of the year, demand-pull inflationary pressures will continue to be reduced, this contributing to curb or moderate rises in non-tradable and tradable prices, including foods. Up until now, the non-tradable without foods and the non-regulated prices have behaved according to the expectations, with significant reductions in the annual variation of the index. In the rest of the year, this trend will be maintained, though less pronounced.

Towards 2011, it is possible to expect higher GDP growth than that predicted for 2010, if external conditions continue to improve. This would lead the output gap to be gradually filled. Nevertheless, preliminary estimations suggest that during a good part of this year, the gap would remain in negative terrain. Because of the foregoing, the demand-pull inflationary pressures will be kept under control in 2011. It is worth pointing out that as long as excess productive capacity and a negative gap exist, inflation tends to decline.

- *Inflation expectations behave more favorably than expected, this contributing to reduce forecasts.*

In the previous report, the increase of inflation expectations was established as one of the most possible effects of El Niño event. Notwithstanding, this risk was not materialized in the course of this part of the year and, contrary to what was anticipated, such expectations declined. Besides, to the extent that the expected El Niño effects are decreasing and consumer inflation has remained close to the target range floor, the likelihood of a strong rebound in this variable for the remainder of the year is now lower than three months ago.

Expectations play an important role in the inflation prediction models of the Central Bank and, therefore, their decline translated in some minor price adjustments for the rest of the year and 2011 face to those provided in the previous *Inflation Report*.

- *The high persistence of inflation in Colombia helps it to be maintained at low levels*

A number of studies carried out in Colombia in the past two decades show that inflation has been extremely persistent. This means that inflation in a given month or quarter tends to remain set at the values observed in the immediately previous months or quarters. Therefore, if inflation increases, observing its reduction is less likely and, if this occurs, that reduction takes place in a gradual manner. Nonetheless, this argument works conversely: if inflation drops and remains low for several months, the likelihood of a significant and fast inflation increase is small and, in that case, it would occur at a slow pace.

In practice, the mechanisms through which this persistence becomes apparent are varied and, among others, they belong in indexation practices imposed by governments (like in the case of education, rentals, some regulated items) or through clauses in private contracts and salary packages.

Decline in inflation in the previous year and its stability at very low levels in the first months of the current year have highlighted the importance of persistence as seen in the inflation forecasts for 2010 and forward. An example of this situation is the not anticipated fall in the annual variation of tradables (without foods and regulated prices) during the first quarter, which shifted downwards the projections for the following quarters, partly because of the high persistence of the series. Another illustrative example what happened with both the minimum wage and the market salary, for which adjustments have decreased very fast face to the inflation drop seen in 2009. .

Taking the foregoing into consideration, the forecast submitted in this report continues to anticipate an increase in consumer inflation during the second and the third quarters of the year, mainly as a result of an increase in food

prices, partly due to the usual tardy effect of the El Niño event. Upward pressures, nevertheless, are lower than those envisaged in the previous report in recognition of the much milder impact that this event was exhibiting during the first quarter. The increase in the annual food variation will be temporary and destined to vanish gradually between the fourth quarter of 2010 and the first quarter of 2011.

For inflation without foods, predictions were reduced slightly by the exercise face to the previous quarterly report, and a path set at the lower half of the target range for 2010 was shown. This last outcome had already been obtained three months ago in the relevant report.

For 2011, inflation without foods and total inflation will continue to be determined by an output gap still in negative terrain reducing the rate at which prices are increased. Likewise, only a few pressures are anticipated on the exchange rate, as well as some expectations aligned with the long-term target.

The above coupled with high persistence, tend to keep inflation at low levels and prevent it from a fast return to the midpoint of the target range. The results imply a moderate recovery of the global economy in the current and the following years, and international prices for raw materials with little increases as opposed to the values observed as of March.

## 2.    Risk Balance

The risk balance for total consumer inflation and inflation without foods is presented in the *Fan charts* shown in Graphs 79 and 80. The broadness of the balance is still considerable, implying that uncertainty around the predictions is still high. Particularly, the estimation of El Niño effects continues to be difficult, since they have not been systematic over time and, usually, because they occur jointly with a broad number of phenomena. In the present conjuncture, for example, domestic demand weakness and the fall of sales to Venezuela seem to have cushioned their impact.

Consequently, the main upward risks on inflation in the remainder of 2010 and 2011 can be grouped as follows:

1.    *A more dynamic private consumption than that envisaged in the central path:* growth forecasts have been quite conservative, taking into account the good results of the consumer confidence surveys and the outcome of retail sales in the first few months. In addition, since real and nominal interest rates are low and credit availability is high, this may prompt a faster consumer response than expected.

2.    *Higher international prices for raw materials and oil*: the good economic performance of the emerging —and particularly Asian—

Graph 79
Total inflation fan chart ᵃ/
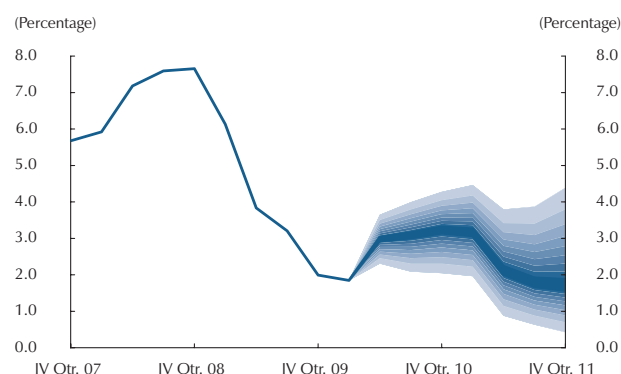
(Percentage)                                    (Percentage)

8.0                                                   8.0
7.0                                                   7.0
6.0                                                   6.0
5.0                                                   5.0
4.0                                                   4.0
3.0                                                   3.0
2.0                                                   2.0
1.0                                                   1.0
0.0                                                   0.0
      IV Qtr. 07   IV Qtr. 08   IV Qtr. 09   IV Qtr. 10   IV Qtr. 11

a/ Forecasts are constructed on the assumption of a monetary policy aimed at ensuring the
achievement of inflation targets in the long term.
Source: Banco de la República.

Graph 80
Inflation without food fan chart ᵃ/
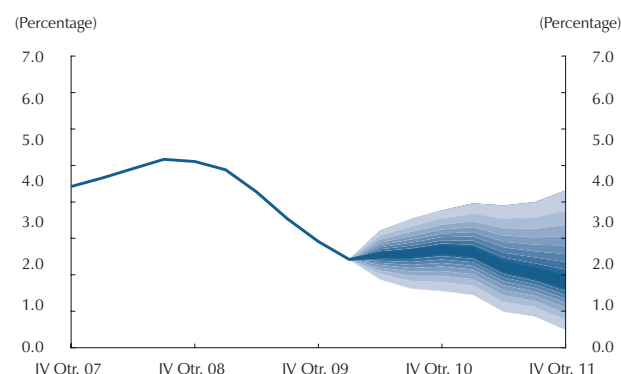
(Percentage)                                    (Percentage)

7.0                                                   7.0
6.0                                                   6.0
5.0                                                   5.0
4.0                                                   4.0
3.0                                                   3.0
2.0                                                   2.0
1.0                                                   1.0
0.0                                                   0.0
      IV Qtr. 07   IV Qtr. 08   IV Qtr. 09   IV Qtr. 10   IV Qtr. 11

a/ Forecasts are constructed on the assumption of a monetary policy aimed at ensuring the
achievement of inflation targets in the long term.
Source: DANE, calculations by Banco de la República.

countries may exert upward pressures on these prices above what has been envisaged on the central path of the forecast. In this case, further increases in consumer prices could be expected, especially with respect to foods, transport, and other regulated goods and services.

3.  *A strong depreciation of the peso*: as usual, its effects would be felt mainly on the prices of tradables and regulated items, and provided that the movements of the exchange rate are permanent and domestic demand does not weaken further.

On the other hand, major downward risks may be summarized as follows:

1.  *Less increases in food and regulated prices*: this may occur, either because El Niño event is finally having few direct consequences on inflation, or because it is offset by other persisting events such as domestic demand and export weaknesses.

2.  *Global economy deterioration owing to the sovereign debt in Europe*: a situation like this may lead to lower growth for both the world and some of our trade partners.

Given the above-mentioned risks and the low level of the forecast path, the fan charts exhibit an upward bias. Even so, the exercise shows strong likelihood for 2010 inflation to stand within the long-term target defined by the BDCB. For 2011, the probability of inflation being at said interval is high too.

Generally, a recovery of Colombian economy is deemed highly feasible without this involving the target of a low and stable inflation. As always, forecasts described envisage an active monetary policy.

Box 3
# THE IMPORTANCE OF NOMINAL AND REAL RIGIDITIES OF A GENERAL EQUILIBRIUM MODEL FOR COLOMBIA

Pietro Bonaldi[*]

At the Central Bank, series of recent researches are being developed with the aim to analyze price rigidities in the Colombian economy. In the Inflation Report of September 2009, Juan Carlos Parra stresses the results obtained it two of these works respectively prepared by Julio, Zarate and Hernandez (2009), and Misas, Lopez and Parra (2009). In the first report, a database employed in the construction of the CPI is used to measure the frequency and the magnitude of price changes at different aggregation levels. The second report summarizes the results of a survey applied to 747 Colombian enterprises in order to establish the fundamental determining factors in the decisions of firms when it comes to fix or adjust their prices. Pointing at the same direction but from a different methodological approach, in the document titled "*Importancia de las rigideces nominales y reales en Colombia: un enfoque de equilibrio general dinámico y estocástico*", Bonaldi, Gonzalez and Rodriguez (2010) attempt to determine in an empirical manner what nominal and real rigidities should be incorporated into a dynamic stochastic general equilibrium model (DSGE) as to replicate, to the highest adjustment degree, the short-term behavior of the Colombian economic variables; and, particularly, the way they respond face to macroeconomic shocks. A brief description of the methodology employed by Bonaldi *et al*. (2010), together with its main results, is included below.

## 1.     The Model Description

All of the models estimated are variations of a base model developed by Gonzalez, Mahadeva, Prada and Rodriguez (2010) for the Colombian economy. This is a neo-Keynesian DSGE incorporating a set of nominal and real rigidities, closely following other standard models that can be found in specialized literature.

Some of the rigidities included in the model appear in the household characterization. Specifically, the process

of capital accumulation shows investment adjustment costs, and the capital depreciation rate is endogenous and depends upon its utilization level. Besides, households behave as monopolists of their differentiated work variety, this implying that they have certain power in wage fixation, but they confront nominal rigidities as in Calvo (1983). Therefore, only a constant household fraction chooses their salary in an optimal manner in each period. The remaining fraction fixes the wages by following and indexation rule depending on the previous period's inflation.

The model also exhibits nominal rigidities in some productive sectors of the economy. The structure of these sectors is similar to the labor market's, since in all of them there is a set of firms in a situation of monopolistic competition fixing their prices and facing rigidities as in Calvo. Consequently, only a constant fraction of these firms determines the price in an optimal manner, and the rest indexes it to the previous period's inflation specific to the sector. This behavior is followed by the firms that prepare, distribute and commercialize national goods, and by the importers of goods and raw materials.

In addition, in the model proposed by Gonzalez *et al*. (2010), the monetary authority fixes the nominal interest rate according to a rule that includes a softening component, as well as the annual inflation deviations with respect to the target and the annual GDP respective to its long-term level. This policy rule is exposed to a shock following a normal distribution with mean equal to zero.

Overall, the model contains fifteen exogenous variables subject to random shocks explaining the economic cycle. All of these shocks, except for the politics shock, follow first order self-regressive processes. The relevant disruptions are supposed to be independent and identically distributed, with a mean of zero, and their variances are included in the set of parameters to be estimated

## 2.     Estimation

In order to estimate the above-described model, Bonaldi *et al*. (2010) use Bayesian techniques and include quarterly series of fourteen variables in Colombian economy between 1996:II and 2009:III. The estimation is carried out in two stages: At the first one, the parameters having a bearing in the long-term value (at the stationary state level) of the model variables are weighed up, following the method suggested by Bonaldi, Gonzalez, Prada, Rodriguez and Rojas (2009). The purpose of this

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weighing up is to capture 21 long-term ratios of the Colombian economy. In absolute value, the maximum percent deviation between the value of these rations in the Colombian economy and its counterpart in the model is 5.29%.

At the second stage of the estimation, the value of the weighed-up parameters is kept fixed, and the *posterior* distributions of 19 parameters in the model affecting only its short-term behavior are obtained. These parameters are divided, in turn, into two groups; one of them contains the variances of the fifteen shocks, and the other includes four parameters associated to the nominal and real rigidities, such as $\varepsilon^q$, $\varepsilon^m$, $\varepsilon^w$ y $\Psi^x$ and $\varepsilon^q$. The first one is the ratio of firms that do not adjust prices optimally in each one of the sectors responsible for the production of the national good, the domestic production of consumer and investment goods combined with distribution services and the production of these services. $\varepsilon^m$ it points to the corresponding proportion in the distribution of imported goods for consumption and investment, and of imported raw materials; $\varepsilon^w$ it represents the ratio of households indexing their wages to the previous period's inflation. Finally, $\Psi^x$ it is the parameter serving to determine the intensity of the investment adjustment costs.

The estimation of the parameters in the second group is made by using the Bayesian method, assuming uniform *prior* distributions for the parameters to be estimated. Results are summarized in Table B3.1 which shows the mean, the standard deviation, the fashion and the *highest posterior density* (HDP) regions at 90% of the posterior parameter distribution. To make the comparison easier, also the means and the standard deviations of *prior* distributions are included. The contraction of the standard deviation of the *posterior* distribution with respect to the *prior* distribution, for all the parameters estimated indicates that the sample used is informative.

## 3.    Results

To determine the importance of nominal and real rigidities, Bonaldi *et al*. (2010) compare the marginal densities and

the momentum-response functions of six models with the base model. Alternative models are identical to the base model, except for the changes described below. In the first one, national prices are flexible ($\varepsilon^q=0$); in the second, nominal salaries, ($\varepsilon^w=0$), and in the third, imported goods prices ($\varepsilon^m=0$). In the fourth model, the price and wage indexation rule depends on the inflation target and not on the previous period's inflation; the fifth model has no investment adjustment costs ($\Psi^x=0$), and the sixth one does not include variable capital utilization, which implies that the capital depreciation rate is constant.

Prior to presenting the estimation results, Bonaldi *et al*. (2010) explain that the parameters determining the nominal rigidities cannot be directly compared to the observed frequency of the change in prices calculated with the use of microdata, like in the works carried out by Julio and Zarate (2008), and Julio *et al*. (2009). Indeed, given the indexation rules that include the estimated models, in each period all the households and the firms in monopolistic competition do charge different wages and prices, respectively, although only a fraction does so in an optimal manner. Additionally, Bonaldi *et al*. (2010) sustain that the objective of the DSGE model consists of explaining how prices respond to macroeconomic shocks, but do not account for the price formation mechanisms at the micro level. In order to sustain their stance in this respect, they quote Mackowiak and Smets (2008), who affirm that no direct connection exists between the frequency of changes in prices and the response of prices and amounts face to macroeconomic shocks, and Fuhrer (2009), according to whom the response of inflation face to output movements depends as well upon real rigidities and not exclusively on that frequency..

Table B3.2 contains the means of the *posterior* distributions for the parameters estimated for the seven models, and the marginal density for each one of them. Bonaldi *et al*. (2010) compare the value of these densities in order to establish the effect on the model adjustment resulting from eliminating each one of the rigidities. According to this comparison, the most relevant rigidity is that of wages followed, in order of importance, by the rigidity of national prices and investment adjustment

Table B3.1
Posterior distribution of estimated parameters in base modes

| Parameters | Prior mean | Prior est. dev. | Posterior mode | Posterior mode | HPD  90% | Posterior est. dev. |
|---|---|---|---|---|---|---|
| $\varepsilon^q$ | 0.5000 | 0.2887 | 0.3636 | 0.3615 | 0.3208 – 0.4018 | 0.0182 |
| $\varepsilon^w$ | 0.5000 | 0.2887 | 0.4390 | 0.4547 | 0.3767 – 0.5333 | 0.0265 |
| $\varepsilon^m$ | 0.5000 | 0.2887 | 0.2987 | 0.3021 | 0.2554 – 0.3450 | 0.0172 |
| $\Psi^x$ | 0.2500 | 0.2887 | 0.3229 | 0.3326 | 0.2352 – 0.4304 | 0.0574 |

Source: Bonaldi et *al*. (2010). The original table also includes the results of the fifteen shocks variances estimation.

Table B3.2
Posterior distribution measures and marginal densities of the estimated models

| Parameters | Base model | $\varepsilon^q=0$ | $\varepsilon^w=0$ | $\varepsilon^m=0$ | $\Psi^x=0$ | Indexation to target | Exogenous depreciation |
|---|---|---|---|---|---|---|---|
| $\varepsilon^q$ | 0.3615 | - | 0.3770 | 0.3780 | 0.2947 | 0.5163 | 0.4126 |
| $\varepsilon^w$ | 0.4547 | 0.6188 | - | 0.4411 | 0.5862 | 0.5957 | 0.4903 |
| $\varepsilon^m$ | 0.3021 | 0.3435 | 0.2896 | - | 0.3173 | 0.4564 | 0.3086 |
| $\Psi^x$ | 0.3326 | 0.2558 | 0.4225 | 0.3104 | - | 0.3742 | 0.3734 |
| Marginal density [a] | 1.404.9 | 1.345.0 | 1.317.6 | 1.369.0 | 1.357.6 | 1.404.0 | 1400.7 |

a/ The marginal density of the model is proportional to the probability of the model having generated the data.
Source: Bonaldi et al. (2010). The original table contains as well the information relating to shock variances

costs. The absence of an endogenous depreciation, in contrast, does not seem to have a significant effect on the empiric adjustment of the model. Finally, the proposed comparison criterion is not conclusive with respect to the indexation rule.

In order to evaluate the effect of the rigidities on the short-term dynamics of the model variables, Bonaldi *et al*. (2010) compare the responses of the consumer final good inflation, the real GDP and the policy interest rate face to a monetary shock of a standard deviation, in the seven models, by means of a momentum-response analysis. The results of this exercise partially confirm the findings obtained from the calculation of marginal densities, except that the change in the indexation rule does indeed modify the model responses to the policy shock. Specifically, the sensibility face to this shock depends, mainly and in order of importance, on wage rigidities, type of price and salary indexation, and investment adjustment costs.

## 4. Conclusion

In brief, Bonaldi *et al*. (2010) use the empiric adjustment of a DSGE model and the short-term dynamics thereof to determine the importance of nominal and real rigidities in Colombia. For that purpose, they estimate in a Bayesian way the values of those parameters determining such rigidities, given the productive structure of the model. For technical details of this estimation and the complete analysis of results obtained, the interested reader is invited to consult the original document in the Borradores de Economía series published by Banco de la República, the Central Bank of Colombia.

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# Annex

## Macroeconomic Forecasts by Local and Foreign Analysts

This Annex contains a summary of the most recent forecasts by local and foreign analysts with respect to the main economic variables for 2010 y 2011. At the time of being consulted, they had information available as of the first week of May 2010.

### 1. Forecasts for 2010

On average, local analysts anticipate a 3.0% economic growth against 2.4% recorded in the previous *Inflation Report.* As for the foreign entities consulted, they expect an average GDP growth of 0.1%.

Table A1
Forecasts for 2010

| | Real GDP growth | CPI inflation | Nominal exchange rate end of 2010 | Nominal Fixed-term deposit – DTF (percentage) | Fiscal deficit (GDP percentage) | Unemployment rate in thirteen cities (percentage) |
| --- | --- | --- | --- | --- | --- | --- |
| | (Percentage) | | | | | |
| Local analysts | | | | | | |
| Alianza Valores | 3.8 | 3.6 | 1,920 | 4.5 | (4.1) | 12.5 |
| ANIF [a] | 2.5 | 3.5 | n.a. | 3.5 | (3.7) | 12.0 |
| Banco de Bogotá | 2.5 | 3.1 | 2,000 | 4.0 | (3.8) | 11.5 |
| Banco Santander | 2.9 | 3.4 | 2,050 | 4.3 | (3.5) | 12.4 |
| Bancolombia | 3.0 | 3.4 | 1,870 | 3.3 | (3.8) | 12.6 |
| BBVA Colombia [a] | 3.0 | 3.4 | 1,973 | 3.3 | (4.3) | 11.9 |
| Corficolombiana [a] | 2.6 | 3.2 | 1,950 | 4.0 | (4.1) | 11.9 |
| Corredores Asociados [a] | 3.5 | 3.1 | 2,050 | 3.5 | (3.9) | 12.0 |
| Correval | 3.3 | 3.4 | 1,910 | 3.3 | (4.5) | 12.7 |
| Fedesarrollo | 2.7 | 3.2 | 1,921 | n.a. | (3.7) | 12.4 |
| Average | 3.0 | 3.3 | 1,960 | 3.7 | (3.9) | 12.2 |
| Foreign analysts | | | | | | |
| Citibank [a] | 2.8 | 3.6 | 1,940 | 4.1 | (3.7) | 12.6 |
| Deutsche Bank | 2.4 | 3.5 | 2,100 | n.a. | n.a. | n.a. |
| Goldman Sachs | 3.2 | 3.7 | 2,050 | n.a. | (3.7) | n.a. |
| JP Morgan | 3.0 | 3.8 | 2,000 | n.a. | (3.7) | n.a. |
| Average | 2.9 | 3.7 | 2,023 | 4.1 | (3.7) | 12.6 |

n.a. Not available.
a/ The deficit projection corresponds to the GNC (the Central National Government).
Source: Banco de la República (electronic survey).

| | Real GDP growth | CPI inflation | Nominal exchange rate end of 2011 |
|---|---|---|---|
| | (Percentage) | | |
| **Local analysts** | | | |
| Alianza Valores | 4.7 | 2.9 | 1,750,0 |
| ANIF | 4.2 | 4.0 | n.a. |
| Banco de Bogotá | 3.5 | 4.0 | 2,100,0 |
| Banco Santander | 3.3 | 3.6 | 2,328,0 |
| Bancolombia | 3.5 | 3.8 | 1,985,0 |
| BBVA Colombia | 4.4 | 3.2 | 1,903,0 |
| Corficolombiana | 4.0 | 3.5 | 1,926,1 |
| Corredores Asociados | 4.5 | 4.3 | 2,150,0 |
| Correval | 4.5 | 3.7 | 1,980,0 |
| Fedesarrollo | 3.9 | 3.4 | 1,899,8 |
| Average | 4.0 | 3.6 | 2,002,4 |
| **Foreign analysts** | | | |
| Citibank | 4.3 | 3.5 | 2,000,0 |
| Deutsche Bank | 2.8 | 3.5 | 2,220,0 |
| Goldman Sachs | 4.0 | 3.5 | 2,011,0 |
| JP Morgan | 4.1 | 4.0 | 2,200,0 |
| Average | 3.8 | 3.6 | 2,107,8 |

n.a. No available.
Source: Banco de la República (electronic survey).

With regard to inflation forecasts, the local analysts anticipate a 3.3% increase in prices by the end of the year, while inflation expected by the foreign analysts is 5.1% on average. These figures are within the target range set by the BDCB gpt 2010 (between 2.0% and 4.0%), and have been showing a significant reduction in the course of the year.

As for the exchange rate, the national analysts expect the representative exchange market rate (TRM in Spanish) to average COP$1,960 by the end of the year as compared to the COP$1,980 estimated in the survey carried out in the previous report. The foreign analysts are forecasting a TRM nearing COP$2,023 for the end of the year.

With respect to the DTF (fixed term deposit) rate, the local analysts forecast 3.7%. In addition, they anticipate an unemployment rate at 12.2%.

## 2.    Forecasts for 2011

For next year, the national analysts foresee 4.0% growth, face to 3.8% estimated by the foreign analysts. With respect to inflation, both local and foreign analysts are forecasting 3.6% inflation. As for the exchange rate, the national and external entities expect, respectively, COP$2,002 and COP$2,108 on average.