Box 2
WHY THE RISE IN FOOD PRICES AND WHERE ARE THEY HEADED?

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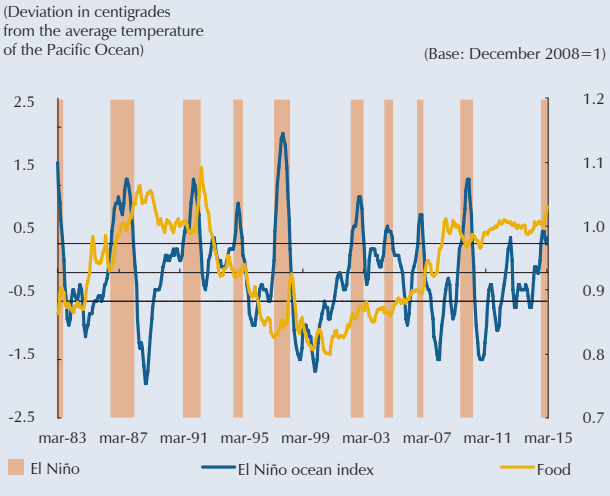
Since early last year relative food prices has shown an upward trend, which has not reverted yet (Graph B2.1). In annual terms, food inflation has risen almost steadily since December 2013, the month when it reached 0.9%, before jumping to 4.7% a year later and ending the first quarter of 2015 at 7.4% (see Graph 38 in Chapter III). Will food prices continue this upward drift or will they drop? Before answering this question, let us look at the causes behind this raise and then analyze how these prices might perform during the rest of the year.

Graph B2.1
El Niño Weather and Food Prices in Relation to the Non-food CPI



Sources: DANE; authors' calculations

What explains the surge in food prices?

There is a consensus among industry analysts that the increase in food prices stems largely from the indications that emerged during the second quarter of last year concerning the appearance of a new bout of *El Niño* weather, without knowing exactly when it would start date or how intense it would be. This early announcement put farmers on alert and, as a result, they would have modified their investment decisions, cutback on the amount of land planted with a wide variety of crops or delayed investing in land improvement, inputs, machinery and equipment, among other things.

Only in March of this year was the development of *El Niño* weather confirmed and consolidated. The forecasts, in principle, indicate it would last most likely until the end of summer in the northern hemisphere and its intensity would be weak.[1] However, in anticipation of this event, due to previous announcements, farmers already had taken steps that meant less supply and a subsequent rise in food prices.

As a reflection of this pessimism, agricultural GDP increased less in 2014 (2.3%) than in 2013 (6.7%). Likewise, farm production loans made with Finagro resources were down 17.5% in 2014 compared to 2013. In fact, even these loans continue to show no improvement, having declined during the first quarter of this year by more than 9.0%. However, it is important to note that total lending, which includes resources approved for investment, payment of existing liabilities and working capital (includes production lines), did increase by 17.6% between January and March.

Another factor that has pushed up food prices in recent quarters, although less significantly, is the depreciation of the peso against the dollar. The most recent ascending phase in the price of the dollar, which began in late July 2014, generated some upward pressure on certain imported foods, particularly cereals, oils-fats, and flour.

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1 See http://www.climate.gov/news-features/blogs/enso/march-2015-Enso-discussion-the-ni%C3%B1o-here. The presence of *El Niño* weather is confirmed only after five consecutive periods, in which each period is a moving average of three previous months, during which the temperature in zone 3-4 of the equatorial Pacific Ocean exceeds the historic average temperature of the last thirty years by 0.5 degrees centigrade. This trend was confirmed in March 2015, when the intensity of this climate episode still was regarded as weak.

Rice led the gains, with an annual hike of 36.6%, which explains 10.7% of total inflation accumulated in the last twelve months and 23.5% of food inflation. The increase in the price of rice was associated with the drop in production, the appraisal of inventories by some millers, and more costly imports to satisfy local demand, which became more expensive thanks to the appreciation of the dollar.

The crisis in the profitability of certain crops during the past year, together with the fears about the presence of *El Niño* weather, triggered a significant reduction in the amount of land planted in crops, especially perishables, bringing upward pressure to bear on this component of food CPI. Accordingly, the annual adjustment in this segment went from negative terrain in December 2013 (-0.2%) to positive terrain a year later (16.7%), ending the first quarter of 2015 at 21.6%. Within this group, potatoes have been hit the hardest by these factors, suffering price hikes that reached 71.8% in the last twelve months. These increases account for 8.0% of total inflation and approximately 16.0% of food inflation.

In addition, for much of last year, the upsurge in producer inflation would signal that farmers have faced higher production costs, because the cost of input, raw materials and agricultural machinery and equipment has become more expensive. This would have discouraged production. Finally, several protests by peasants and the strike by truckers, which caused temporary shortages in the country's wholesale food markets, boosted prices between February and March of this year.

Where are food prices headed?

To answer this question, several statistical exercises are outlined in this section to determine the path food prices might follow during the remainder of 2015. However, first, it is important to note the bout of *El Niño* weather and peso-dollar depreciation, which explain much of the rise in food prices, would decline or disappear between the second half of 2015 and early 2016, as the market expects. This would help to slow annual food price hikes. After peaking, a typical episode of *El Niño* weather it tends to disappear completely in the third quarter. This is precisely what meteorologists anticipate, considering the information at March. In other words, the weather would return to normal once summer ends in the northern hemisphere. Meanwhile, the dollar has slowed its upward trend since mid-March, which means increases in the food component of the tradable CPI should not extend beyond this year, considering it takes one or two quarters for changes in the exchange rate to affect consumer inflation.

A look of the typical behavior of the food CPI indicates one might expect prices to decline in the coming months. In this respect, we use the procedure outlined by Bry and Boschan (1971) to characterize the inflationary cycles of these food groups as of 2000. This methodology consists of an algorithm that removes outliers from the data series and then determines the breakpoints in the cycles of a time series. For this, local maximums and minimums are sought in a moving window all along the series, to which a set of constraints is applied. With these, the phases of the cycles (ascending and descending) are alternated, which makes it easier to determine the duration of each cycle and also gives every phase and cycle a minimum duration. Although that duration is selected by the researcher, this exercise follows Harding (2008), with the selected minimum length of each phase and cycle being five and nine months, respectively. Graph B2.2 shows the results and Table B2.2 presents the statistics describing the length of these cycles for the prices analyzed.

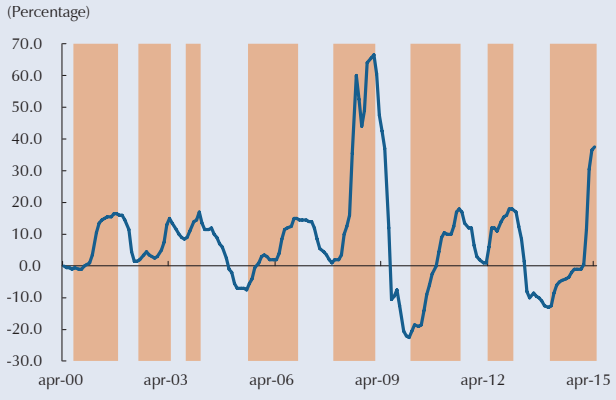
According to the results, the ascending portion of the annual cycle of changes in the CPI for rice is more prolonged than the descending phase; i.e., rice inflation increases over a longer period of time and then is followed, on average, by a rapid reversal in prices. On the other hand, if it is found that the magnitude of the change in this product and for potatoes is much higher than for other foods taken into consideration, a sharp slowdown in inflation for these products might be seen in the coming quarters.

The other foods exhibit longer inflationary cycles, but more symmetrical (Table R2.1); in other words, the duration of each phase is similar. For most, it is confirmed that prices are in an upward phase. However, by April 2015, several had already exceeded the average ascending duration of their cycles or would be close that point (Table B2.2), which means they could unwind towards the fourth quarter.

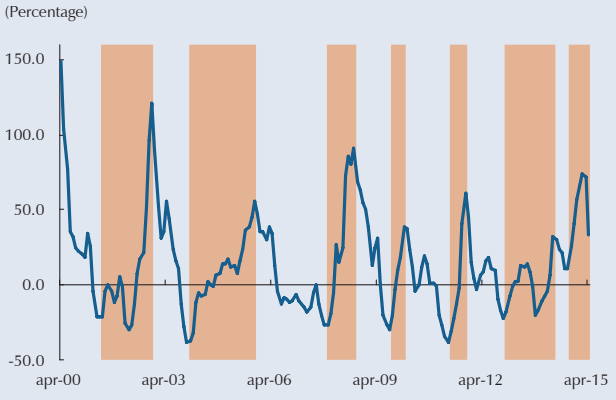
On the other hand, Table B2.3 illustrates how the importance of food to total inflation in the years with *El Niño* weather tends to fall off significantly in the second half, compared to the years with normal weather. While perishables account for 117% of inflation in the first half of the year, their contribution is negative (-17.0%) during the

Graph B2.2
Annual Price Cycles for Certain Foods

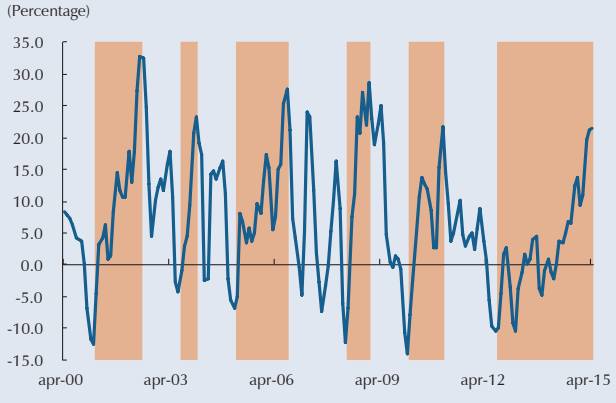
A. CPI for rice



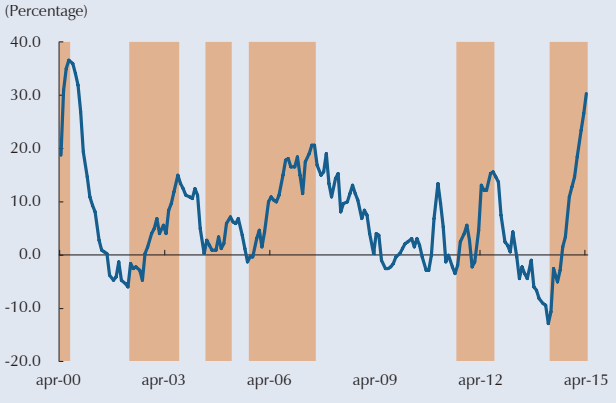
B. CPI for potatoes



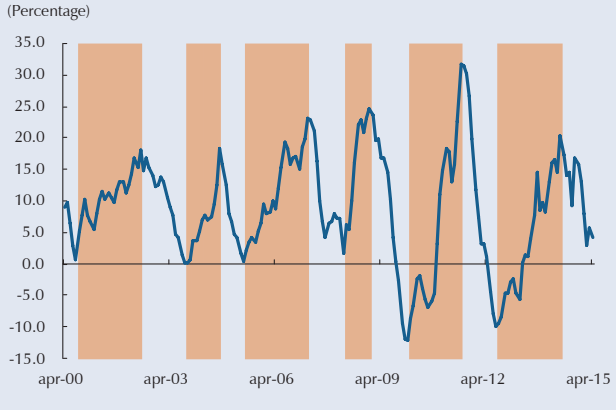
C. CPI for vegetables and Legumes



D. CPI for tubers excluding potatoes



E. CPI for fruits



Note: The shaded areas denote upward phases in the annual changes analyzed.
Sources: DANE; authors' calculations

second half. The same applies to the total food group; its share in the second half (5.0%) is much lower than in the first (95.0%). Moreover, given the important weight of food in the household basket (28.2%), this behavior is reflected in total inflation, although with less intensity.

In conclusion, given the data at March, meteorologists and exchange market analysts expect food prices to begin to ease up as of mid-2015. This is confirmed by the statistical exercises, which indicate a sharp drop in relative food prices during the same period. On the other hand, the technical staff at *Banco de la República* anticipates no intensification of *El Niño* weather and does not expect it to last longer than initially forecast. At the same time, the dollar is expected to be relatively stable. This would suggest the anticipated drop in food prices will be more than enough for annual consumer infla-

Table R2.1
Annual Food Price Cycles

Annual percentage change	Cycle (in months)				Descending phase				Fase descendente			
	Average duration	Deviation	Minimum	Maximum	Average duration	Deviation	Minimum	Maximum	Average duration	Deviation	Minimum	Maximum
Rice	23	4	16	29	13	4	5	17	10	4	5	16
Potatoes	27	11	19	47	13	7	5	23	14	6	5	24
Tubers	36	18	18	61	16	6	9	23	20	17	6	48
Vegetables	27	8	19	38	12	5	6	18	15	3	13	20
Fruits	29	7	20	37	18	6	9	22	12	3	8	15

Sources: DANE; authors' calculations

Table R2.2
Current Phase of Food Price Cycles

Annual percentage change	Current phase and duration	
Rice	Ascending	16
Potatoes	Ascending	7
Tubers	Ascending	13
Vegetables	Ascending	33
Fruits	Descending	11

Sources: DANE; authors' calculations

Table R2.3
Inflation Generation: 1950-2014

Description	Average semester share (percentage)	
Food inflation	**I**	**II**
Years with *El Niño* weather[a/]	95.0	5.0
Years without *El Niño* weather	56.0	44.0
Inflation in Perishables (excluding 2013)[b/]		
Years with *El Niño* weather[a/]	136.0	-36.0
Years without *El Niño* weather	101.0	
Total inflation		
Years with *El Niño* weather[a/]	76.0	24.0
Years without *El Niño* weather	66.0	34.0

a/ *El Niño* weather as of the second year
b/ Excluding data from 2013, which was an atypical period
Sources: DANE and National Oceanic and Atmospheric Bureau (NOAA); calculations by *Banco de la República*

tion to return to the target range by the end of 2015. If not, the possibility of inflation expectations breaking away from the target would increase, with high costs for the credibility of the inflation targeting regime and for the economy overall. *Banco de la República* has said it is vigilant and is taking an active position to ensure the inflation target is met.

References

Bry, G .; Boschan, C. (1971). *Cyclical Analysis of Time Series: Selected Procedures and Computer Programs*, NBER Books, National Bureau of Economic Research, Inc.

Harding, D. (2008). "Detecting and Forecasting Business Cycle Turning Points," MPRA Paper, No. 33583, University Library of Munich, Germany.