

## Transfer of Commodity Prices to the IPCA and Commodities Index-Brazil

Knowledge of the dynamics of commodity prices in the international markets has gained importance in recent years, given its potential impact on the dynamics of consumer prices in Brazil and, consequently, its impact on future prospects. In this context, this box presents the Commodities Index-Brazil (IC-Br)<sup>1</sup>, which aims to identify the portion of commodity price variations in international markets that is relevant to the dynamics of domestic inflation. Furthermore, we present illustrations of how variations in the IC-Br are passed on to consumer prices.

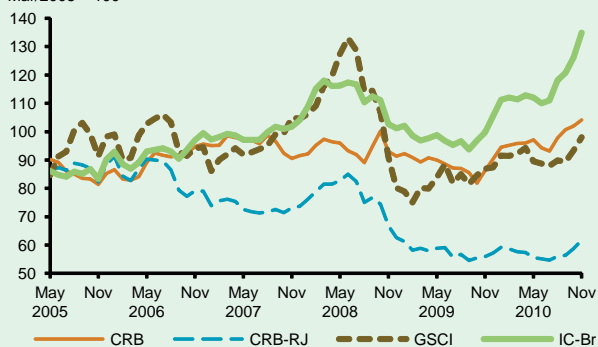
Figure 1 shows the development of the IC-Br, as well as other commodity indices that are often referenced in macroeconomic analysis.

In the basket that comprises the IC-Br, weightings were obtained from Autoregressive Vector models (VAR), constructed to estimate the transfer effect of each commodity price on inflation. Thus, it was possible to construct the IC-Br, and segment it into three sub-indices, IC-Br Agriculture, IC-Br Metal and IC-Br Energy, as seen in Figure 2.

To estimate the transfer effect of the IC-Br on the Extended National Consumer Price Index (IPCA), VAR methodology was again looked to. Monthly data from the last five years was used, including; average monthly commodity prices in reais; the IC-Br, as a measure of economic activity; the Special System of Clearance and Custody (Selic) rate, as a monetary policy measure; the average monthly exchange rate variation; and inflation as measured by the IPCA. As such, it seeks to identify not just the direct impacts of

**Figure 1 – IC-Br and other indices (R\$)**

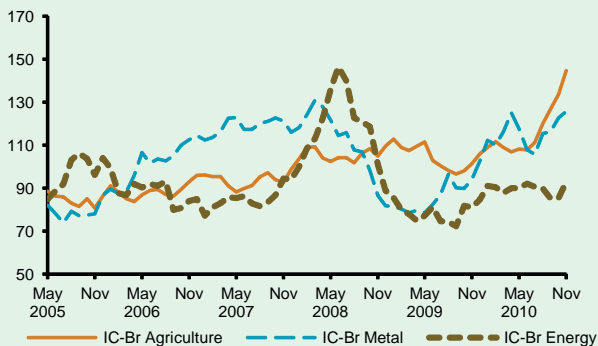
Mar/2005 = 100



Sources: Commodity Research Bureau, Thomson Reuters, S&P GSCI and BCB.

**Figure 2 – IC-Br segments (R\$)**

Mar/2005 = 100



Source: BCB

1/ The IC-Br aggregates the indicators regarding the segments of Crop and Livestock, Metal and Energy. The calculation of the Crop and Livestock index was based on the commodities beef, cotton, soybean oil, wheat, sugar, corn, coffee and pork. The Metal segment encompasses aluminum, iron ore, copper, tin, zinc, lead and nickel, whilst the Energy segment includes Brent oil, natural gas and coal.

**Table 1 – Commodity price indexes**

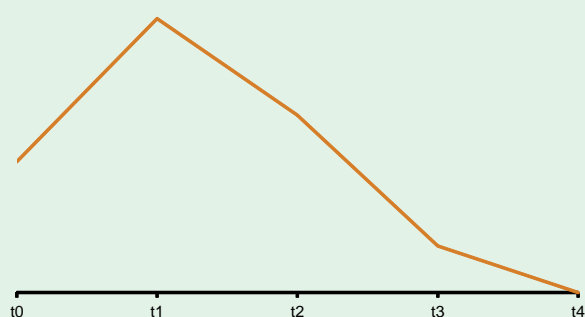
|                            | (changes % – measured in R\$) |       |       |       |                    |                            |                           |          |          |  |
|----------------------------|-------------------------------|-------|-------|-------|--------------------|----------------------------|---------------------------|----------|----------|--|
|                            | 2006                          | 2007  | 2008  | 2009  | 2010 <sup>1/</sup> | $\Delta$ 12m <sup>2/</sup> | $\Delta$ 3m <sup>2/</sup> | Oct/2010 | Nov/2010 |  |
| IC-Br                      | 6.2                           | 7.4   | -4.4  | 6.4   | 23.7               | 29.2                       | 14.7                      | 8.0      | 1.5      |  |
| IC-Br Agriculture          | 8.0                           | 3.7   | 10.5  | -3.5  | 31.3               | 35.7                       | 18.5                      | 11.1     | 0.4      |  |
| IC-Br Metal                | 28.0                          | 1.7   | -29.6 | 30.0  | 17.9               | 25.8                       | 8.8                       | 4.5      | 0.8      |  |
| IC-Br Energy               | -23.5                         | 21.9  | -11.9 | 2.3   | 8.1                | 12.7                       | 11.3                      | 3.9      | 5.2      |  |
| S&P GSCI Composite         | -8.1                          | 17.2  | -25.6 | 13.3  | 7.9                | 9.7                        | 12.6                      | 4.0      | 3.0      |  |
| S&P GSCI Agriculture       | 18.6                          | 17.6  | 4.5   | -13.5 | 22.4               | 22.1                       | 16.1                      | 15.1     | -3.2     |  |
| S&P GSCI Industrial Metals | 38.6                          | -25.6 | -33.0 | 44.1  | 4.8                | 12.2                       | 8.1                       | 2.7      | -0.6     |  |
| S&P GSCI Energy            | -16.5                         | 26.9  | -34.3 | 22.4  | 3.6                | 5.8                        | 13.1                      | 2.0      | 4.5      |  |
| CRB                        | 9.4                           | -4.9  | -0.9  | 0.7   | 12.9               | 14.0                       | 3.8                       | 1.3      | -0.4     |  |
| CRB – Reuters Jefferies    | -15.3                         | -2.7  | -16.8 | -6.9  | 4.5                | 6.1                        | 11.4                      | 5.5      | 1.1      |  |

Sources: Commodity Research Bureau, Thomson Reuters, S&P GSCI and BCB

1/ November/2010 compared to Dezember/2009.

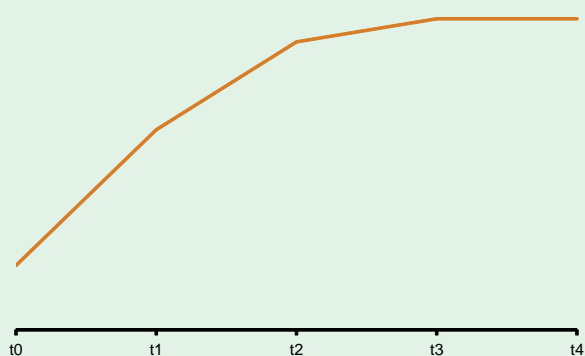
2/ Until November/2010.

**Figure 3 – Pass-through from IC-Br to IPCA**



Source: BCB

**Figure 4 – Pass-through from IC-Br to IPCA (accumulated)**



Source: BCB

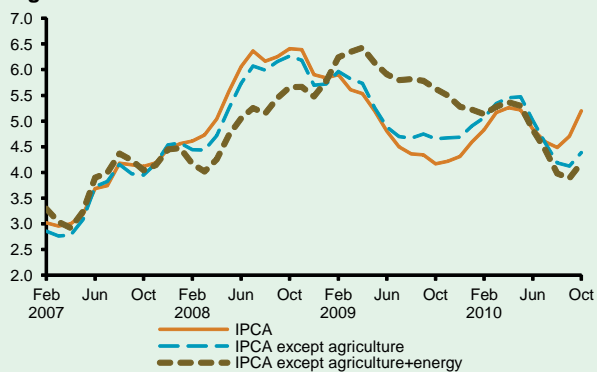
the increased production costs of finished goods, but also the secondary effects, namely the passing on of increased prices of some goods or services to others.

The estimated transfer effects of a price shock in the basket of commodities that makes up the IC-Br to the IPCA have been calculated based on responses to the impulse generated by the model. Figures 3 and 4 show the results obtained, considering the month-by-month development of the transfer effect of a price shock that occurred in  $t_0$  (Figure 3) and the accumulated transfer effect (Figure 4).

Data indicate that the transfer effect of a IC-Br shock to the IPCA starts right in the first month in which the average price of the basket rises, reaches a peak in the following month, and levels to almost zero after the fifth month. Based on the estimated transfer effect, it was also possible to calculate the IPCA variation, excluding total or partial effects of IC-Br variation. It should be noted that this exclusion tends to identify a significant proportion of the secondary effects of shocks in commodity prices and is not simply a case of removing the components as is typically done in the calculation of measures of core inflation.

Recent developments in headline inflation, as well as the IPCA variation excluding the estimated effects of variation in the IC-Br sub-index for Crop and Livestock and the addition of this to the IC-Br Energy, are shown in Figure 5. Note that, after registering variations similar to the IPCA during 2007, the measures of exclusion showed less variation in 2008, when there was high growth

**Figure 5 – IPCA ex-commodities**



Sources: IBGE and BCB

in commodity prices in international markets. The decline in these prices, which followed the worsening of the global crisis, is seen in the third period, ending mid-2010, when the variation of the measures of exclusion was higher than the IPCA. A fourth period, starting in the second half of 2010, sees the IPCA variation more pronounced than that of the exclusion measures, a trend consistent with the rise in the international market of the prices of major agricultural and metallic commodities.

In summary, this box shows the IC-Br, the most useful indicator of commodity prices to understand the process of transfer effects of these prices on Brazil's inflation. The recent trajectory of the indicator confirms the view that there was a significant impact, in recent months, on the acceleration of the IPCA from rising commodity prices. Data also suggests that the transfer effect is exhausted by around the fifth month.