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Has the exchange rate pass-through in Brazil changed?

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We found no evidence of a significant change in the pass-through coefficient in the last year. According to our estimations, it remains between 3% and 5%. This means that recent inflationary surprises are related to other factors.

While, on the one hand, inflation has been surprising to the upside in Brazil in recent months, on the other the exchange rate has been depreciating significantly lately. The simultaneity of these two phenomena raises the question whether they are related or not. In particular, it could be the case that upside surprises in inflation are, to some extent, due to a higher exchange rate pass-through into prices[2]. In order to analyse the contribution of exchange rate variations to the recent inflation surprises in Brazil and contrast empirically whether there has been a recent increase in the rate of pass-through, we conducted two empirical exercises: the first was an estimation of a Phillips curve using the two steps least squares method (2SLS) and the second was a VAR with time varying coefficients (TVC-VAR).

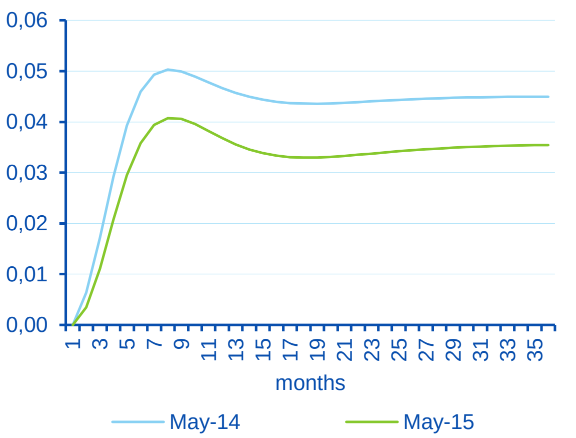
In the first case[3], market inflation (which excludes from the general CPI those products and services whose prices are regulated by the government) is assumed to be determined by past market inflation, inflation expectations, the output gap, commodity prices, variables to control for supply shocks and exchange rate (USD/BRL). Using quarterly data from 1Q99 to 2Q15, we found virtually identical results in the response of inflation to exchange rate moves to that found in the estimates with data up to 1Q14, suggesting that there has been no change in the coefficient of pass-through in the last year and, therefore, it continues to be no higher than 5%.

In the second model, we used monthly data from Jan-00. Estimates using data up to May 2015 were compared against those obtained with data up to May 2014[4]. We included the following variables as endogenous: an index of economic activity (the BCB's IBC-Br), the Selic rate, the exchange rate against the dollar and the price index (general or market prices). As exogenous variables we included US industrial production, the Fed funds rate, the index of US consumer prices and an index of commodity prices. The results indicate that the response of annual depreciation on market-price inflation has remained virtually unchanged over the last year (Figure 1), and is between 3% and 5% (the May-15 impact is within May-14 confidence range as exhibited in Figure 2). When using the general index (including government-administered goods), rather than market inflation, the pass-through decline slightly, from 5% to 2% over the last year (Figure 2). Anyway, we attach less importance to this latter finding, as we interpret this decline as a consequence of the increasing pressure from administered prices over inflation in the last months[5] (i.e. the pass-through has a lower explanatory power because administered prices have a more important role explaining general inflation movements).

1: With the colaboration of Rodrigo Falbo.
2: Simultaneous upward inflationary surprises and exchange rate depreciations have also been observed in other Latin American countries, which has deserved an analysis in the Box 2 of our 3Q15 Latin America Economic Outlook.
3: In this case we follow the model introduced by the BCB in its 2Q15 Inflation Report.
4: The reason for making the estimation by a TVC-VAR is that with this method we obtain the estimation at each point in time rather than sample average as in a traditional VAR. The TVC-VAR allows the estimated coefficients to change over time; to take account of the changes affecting the relationship between the variables. The effect of the exchange rate pass-through is calculated as the cumulative response over the first year of inflation to a 1% variation of the exchange rate.
5: See our 3Q15 Brazil Economic Outlook for more details.

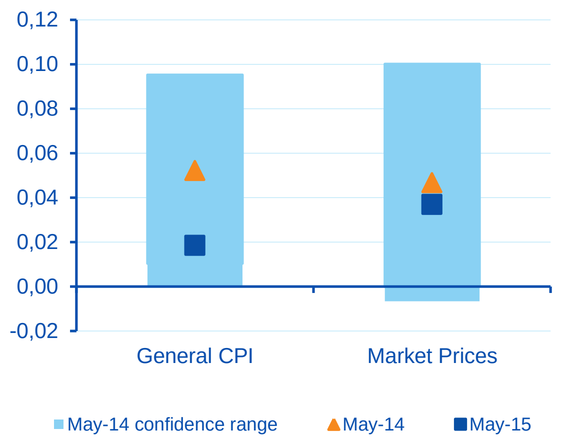
Interestingly, we found no evidence of asymmetric response in the exchange rate pass-through: the response appears to be no greater in moments of depreciation than in moments of appreciation.

Figure 1
Accumulated impulse response from exchange rate to market prices



Source: BBVA Research

Figure 2
Accumulated exchange rate pass-through in one year: sample until May-14 vs. sample until May-15



Source: BBVA Research

Conclusions

In line with our two empirical exercises, we conclude that the pass-through of exchange rates to domestic prices in Brazil is between 3% and 5%. Moreover, we found almost no evidence of a significant change in the pass-through coefficient in the last year, meaning that recent inflationary surprises are probably related to other factors (such as larger-than-expected administered-price inflation).

While there are some factors that may lately be driving the pass-through coefficient downwards (in its Inflation Report 1Q15, and the Brazilian central bank quoted some of them: economic activity weakness, the restrictive stance of monetary policy and a lower depreciation of the effective – multilateral - exchange rate compared to the bilateral exchange rate USD/BRL), the relative stability of the pass-through coefficient found in our models implies that there are other factors working in the opposite direction (such as the magnitude of the ongoing exchange rate depreciation and the perception that the depreciation is a permanent rather than a temporary phenomenon).

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