Monetary Policy in Brazil

Before the nineties, monetary aggregates (M1, M2, or M3) were the preferred target for monetary policy among countries operating floating exchange rate regimes. Since then, an increasing number of central banks around the world have been shifting to the inflation targeting monetary policy regime. This was due to the breakdown of tight relations connecting monetary aggregates under the central bank control and its ultimate objective, which is inflation control. As one macroeconomist puts it: *The logic is simple: Inflation may not be under the control of the central bank, but at least it is what the central bank and the public ultimately care about.*[1]

Under the inflation targeting regime the central bank follows certain rules to set the interest rates, given the available data. These rules are known as central bank reaction functions. The most famous reaction function is the Taylor Rule,[2] proposed by John Taylor (professor of macroeconomics at Stanford University, now with the US Treasury). This rule tells the central bank to set the nominal interest rate so as to minimize the total variance of inflation and output. It has the following algebraic representation:

$$i_t = a + g\tilde{y}_t + h(\pi_t - \pi^*)$$

where it is the short-run nominal interest rate, π_t is the rate of expected inflation, π^* is the inflation target $\tilde{y}_t$ is the output gap and a, g e h are parameters.

Its logic is easy. If inflation is equal to the inflation target, and the output is at its potential (i.e., zero output gap), then the central bank should set the nominal interest rate i equal to its target value a. By doing this, the central bank will assure that the economy will stay on the same path, with inflation equal to the target, and actual output equal to potential output. If inflation exceeds its target, the central bank should increase the nominal interest rate above its target value a. The higher interest rate will increase unemployment, lower output, and decrease inflation.

Taylor showed two very important things. First, he showed that most monetary policy regimes in the US were very well described by the Taylor rule, notwithstanding the fact that the central bankers at the time did not know explicitly of that rule. Second, he showed that the parameter h should always be greater than one. The parameter h reflects how much the central bank cares about inflation vis-à-vis output (or unemployment). If it were lower than one, an aggregate demand positive shock that increased expected inflation, say, by 1% would raise the nominal interest rate by less than 1%. In other words, the ex ante real interest rate would fall when expected inflation rose. This would put inflation in an upward trend. All stable rules have this "leaning against the wind" characteristic: when expected inflation rises, so must the real interest rate.

Brazil has implemented the inflation targeting regime since the second quarter of 1999. Given the fear of very high inflation on the aftermath of the devaluation of January, 1999, the new regime was greeted with much enthusiasm for many quarters, until the upward trend of the exchange rate forced the central bank to reverse the downward trend of interest rates in March 2001. Since then, the central bank has raised the interest rate in all four meetings of the COPOM (the Brazilian equivalent of the FOMC). In the first three meetings, the nominal interest rate rose 0.5%. In the last meeting, on June 20, 2001, it rose 1.5%.

Despite the fact that the main determinant of the central bank's recent large increase in the interest rate was the continuous depreciation of the exchange rate, the depreciation should only matter in the inflation targeting framework as far as expected inflation is affected by it. To check whether or not that was the case, I resorted to the survey results of forecasts by financial and research institutions published weekly by the Brazilian central bank.[3]

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[1] Blanchard, Olivier, *Macroeconomics* (New Jersey: Prentice Hall, 2000, 2nd ed), 509.

[2] Taylor, John, "Discretion versus Policy Rules in Practice," in *Carnegie Rochester Conference Series on Public Policy* 39 (Amsterdam: North-Holland, 1993), 195-214.

[3] http://www.bcb.gov.br/mPag.asp?perfil=1&cod=498&codP=132

The Chart shows three lines. The line that starts at the bottom and climbs monotonically since 3/22/01 is the expected inflation for 2001. This is the median of the expected inflation reported by more than 70 institutions. Until March, median expected inflation was 4.2% (for an inflation target of 4%). Since then, it has been climbing to 5.6% (right-hand-side scale).

Expected Inflation and Ex Ante Real Interest Rate
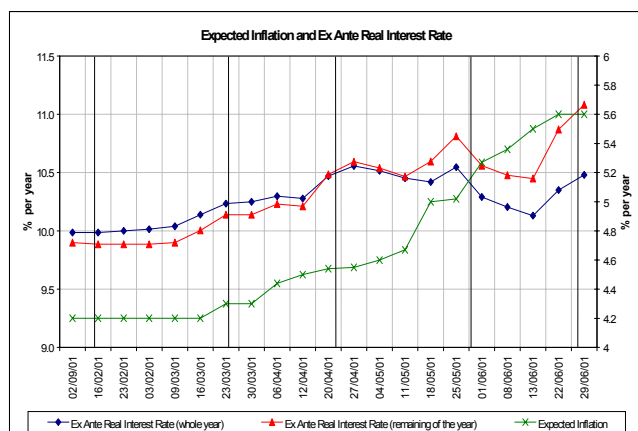
The other two lines are measures of the ex ante (expected) real interest rate (left-hand-side scale). One of them measures the combined observed real interest rate for the past months and the forecast for the future months; this is the Ex Ante Real Interest Rate (whole year). The other measures only the real rate that is expected to prevail in the future months (a forward rate); it is the Ex Ante Real Interest Rate (remaining of the year).

As mentioned before, the basic interest rate (the Selic rate) has been raised by the central bank in all four last COPOM meetings that are marked by vertical lines in the Chart. Since it started raising interest rates, the expected inflation was also moving up. Coherently with a stable Taylor rule, the expected real interest rate has also been climbing with expected inflation until the end of April.

Since May, however, the upward trend of the expected inflation has been accompanied by a downward trend of the real interest rate, signaling that economic agents were (implicitly) no longer thinking that the central bank was taking the appropriate measures to keep inflation at bay, despite the very high level of the real interest rate. The 0.5% interest rate

raise of May, 24 reversed the downward trend for a week, but immediately after, as it became clear that the depreciation trend continued, expected inflation resumed its upward trend and the real interest rate fell more quickly. It took the 1.5% hike to reverse this negative behavior. Therefore, market expectations of inflation and interest rates seem to corroborate the need for the large central bank action in the last COPOM meeting. We all only hope that this movement will prove to be a successful one.

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