

## Preemptive Action and Inflation Fighting

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There is consensus that the choice of timing for implementing monetary policy actions is a crucial step in the monetary policy framework. One reason that makes this choice hard is the existence of relevant lags in the monetary transmission mechanism. Evidence suggests that in mature economies a change in the monetary policy instrument may take up to two years to significantly affect the path of inflation and real output. The evidence for Brazil does not differ much from the international experience, though the lags are shorter. Another reason is that the monetary action directly depends on the nature of the shocks (demand versus supply shocks) and on their persistence (transitory or permanent). In this context, the measurement of lags and the precise identification of the shocks determine, to a large extent, the effectiveness and the cost of implementing monetary policy<sup>1</sup>. For example, inflationary pressures arising from excess demand tend to be more easily controlled at its early stages, before having long-lasting effects over agents' expectations and on wage and price decisions. In such circumstances, a preemptive monetary policy action is potentially more effective in terms of controlling inflation and less costly in terms of real output loss<sup>2</sup>.

Preemptive policy actions have been successful in both mature and emerging economies. The goal of this box is to identify stylized facts associated with the international experience. Therefore, we analyzed episodes of monetary policy tightening implemented by 26 central banks, since the adoption of their inflation targeting regimes – New Zealand (1990),

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1/ This is not a trivial task. "... economies rarely evolve as expected. Surprises are the norm, not the exception, and they would induce the central bank to alter its expected path in obvious ways." (Blinder, 1998, pp. 16-17).

2/ See Mishkin (1997) for a discussion about the advantages and disadvantages of preemptive monetary policy actions.

Chile (1990), Canada (1991), England (1992), Israel (1992), Sweden (1993), Australia (1993), Czech Republic (1998), South Korea (1998), Poland (1998), Euro Area (1999), Mexico (1999), Brazil (1999), Switzerland (2000), South Africa (2000), Thailand (2000), Iceland (2001), Norway (2001), Hungary (2001), Philippines (2002), Peru (2002), Slovakia (2005), Indonesia (2005), Romania (2005), Guatemala (2006) and Turkey (2006). The sample also includes data from the U.S. economy (which for some analysts has an implicit inflation target of 2%) since the beginning of the Greenspan era (1987).

The main goal of this analysis is to verify whether there exist significant differences between preemptive and reactive actions. To this goal, we first identified those tightening cycles related to inflationary pressures, therefore excluding episodes associated with financial crises or other shocks that did not significantly affect the path of inflation. Moreover, we also discarded very short cycles, under the assumption that only relatively long tightening cycles significantly affect the inflation dynamics. Therefore, the resulting sample includes only those tightening cycles that lasted at least eight months. Finally, we define preemptive actions as those implemented before the average inflation in the six months prior to its implementation exceeded the center of the target<sup>3</sup>. Altogether, we identified 50 tightening cycles, of which 22 we considered preemptive and 28 reactive<sup>4</sup>.

On Table 1,  $\Delta\pi_0$  denotes the mean deviation of inflation from the target in the six months before the start of monetary tightening cycle. Moreover, in order to compare preemptive and reactive policies, we selected the following four variables:

(1) Cycle duration – it measures both the duration of the tightening cycle (the period of increase in the policy interest rate) and the period required to bring inflation close to the target (for each country in the sample,  $T_r$  represents the time required to increase the policy interest rate, while  $T_\pi$  denotes the average time required to control inflation, both in months);

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3/ Alternatively, we could have used the target range instead of the target center. However, some central banks pursue inflation targets without fluctuation bands. For those countries whose targets are the ranges themselves we considered the midpoint of the range as the center of the implicit target.

4/ It is important to mention that a country may have implemented the two policies on different occasions.

(2) Mean deviation from the target of the 12-month inflation – for each country and episode, according to:

$$\Delta\pi = \frac{1}{T_\pi} \sum_{t=1}^{T_\pi} \left( \frac{\pi_t - \bar{\pi}_t}{\bar{\pi}_t} \right)$$

where,  $\Delta\pi$  represents the variation of the inflation rate and  $\bar{\pi}_t$  denotes the inflation target.

(3) Magnitude of the increase in the policy rate – for each country and episode, the magnitude of the tightening cycle was defined as the difference between the peak of the policy interest rate ( $r_{\max}$ ) and the rate prevailing in the month immediately preceding the beginning of the cycle (month 0), according to:

$$\Delta r = \frac{r_{\max} - r_0}{r_0}$$

where,  $r_0$  is the policy interest rate prevailing in month 0.

(4) Economic activity indicator – for each country and episode we measured the acceleration or deceleration of the average growth rate of industrial production during the period required to control the inflation, as below:

$$\Delta y = \frac{1}{T_\pi} \sum_{t=1}^{T_\pi} (y_t - \bar{y}_0)$$

where  $y_t$  denotes the 12-month growth rate of industrial production and  $\bar{y}_0$  denotes the average growth rate of industrial production in the semester immediately before the start of the monetary tightening.

The last variable is taken as an indicator of the cost of fighting inflationary pressures. We opted for the industrial production, rather than the unemployment rate or the growth rate of Gross Domestic Product (GDP), because the indicators of industrial production tend to be more homogeneous across countries, and are available on a monthly basis.

Table 1 shows the average (across countries) of the variables of interest for both preemptive and reactive cycles. The table highlights: (1) countries that have acted preemptively initiated the tightening cycle when the average level of inflation in the semester preceding the cycle was 26% *lower* than the target, while countries that have only reacted to

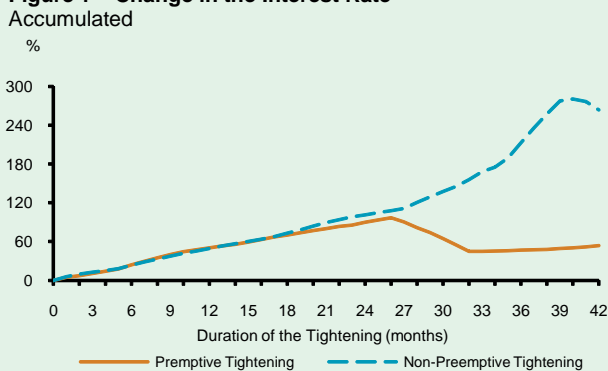
the surge in inflation began their tightening cycle when the average level of inflation in the semester proceeding the cycle was 36% *higher* than the target; (2) the average duration of preemptive cycles was approximately four months lower than that of reactive cycles and, in addition, the time required to control inflation was much smaller in the first case; (3) the average increase in the policy interest rate required to control inflation was substantially smaller in the countries that acted preemptively; (4) despite implementing a tighter monetary policy, for having acted with delay, the reactive countries experienced larger deviations of inflation from the target during the tightening cycle; and (5) real output reduced only in the reactive cycles.

**Table 1 – Preemptive and Non-Preemptive Interest Rate Cycles (mean values)**

Features	Symbol	Preemptive Tightening	Non-Preemptive Tightening
Number of episodes		22.0	28.0
Deviation of inflation from target prior to the tightening	$\Delta\pi_0$	-26.5%	36.3%
Duration of the tightening (in months)	$T_r$	17.3	21.5
Time required for inflation to converge to target (in months)	$T_\pi$	20.4	26.4
Accumulated change in the interest rate over the tightening	$\Delta r$	68.6%	91.8%
Deviation of inflation from target after the tightening	$\Delta\pi$	24.6%	52.3%
Dynamics of industrial production	$\Delta y$	0.79%	-0.12%

Banco Central do Brasil. Original sources: central banks, *Global Financial Data* and IMF.

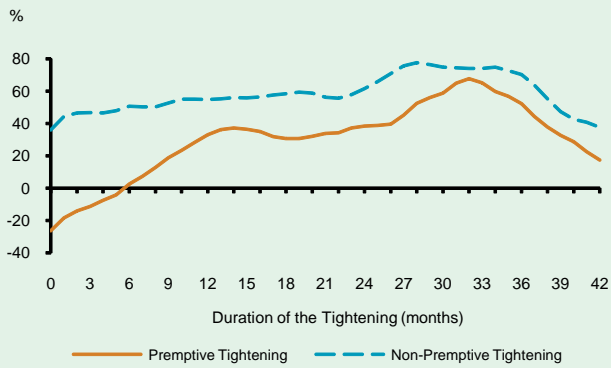
**Figure 1 – Change in the Interest Rate**



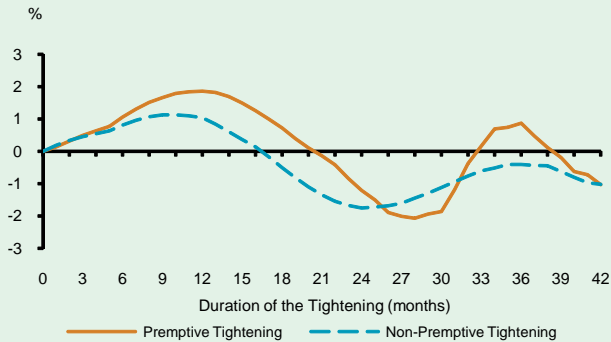
Complementing Table 1, Figures 1, 2 and 3 show, respectively, the paths of the average values of the cumulated interest rate increase ( $\Delta r$ ), inflation deviation from the target ( $\Delta\pi$ ) and the variation in industrial output ( $\Delta y$ ), in the three cases, considering six-month moving averages. Figure 1 indicates that despite the average increase in the interest rate being identical in the first half of the cycle for both preemptive and reactive countries, monetary policy started to ease first in the preemptive ones. In turn, Figure 2 shows that the inflation deviations from the target were systematically higher in the reactive cycles. Finally, Figure 3 suggests that the cost of fighting inflation was higher in the reactive cycles.

The above analysis does not identify the nature of the inflationary pressures, that is, whether they were caused by demand or supply shocks. Despite this caveat, overall, this box presents

**Figure 2 – Deviation of Inflation from Target**



**Figure 3 - Change in the Growth Rate of Industrial Production**



evidence that preemptive monetary actions are shorter, milder, more effective and less costly than the reactive ones. Therefore, in line with the theory, the international experience suggests that, in inflation-targeting economies, preemptive policies seem to be more effective in terms of controlling inflation and imply fewer costs in terms of output. These considerations reflect the available empirical evidence, but do not represent, nor should they be interpreted as forecasts by the Monetary Policy Committee about the ongoing monetary adjustment.

### References

- BLINDER, Alan S. (1998). *Central Banking in Theory and Practice*. The MIT Press.
- MISHKIN, Frederic S. (1997). "Strategies for Controlling Inflation". *NBER Working Paper Series*, No. 6122.