

Observed Inflation and Inflation Target: international experience and Brazil

This box follows the same line of the text published in the *Inflation Report* of December 2006 and, based on an updated information set, it analyses the evolution of observed inflation in relation to established targets, taking into account the respective tolerance intervals, to a sample of countries which adopted the inflation targeting regime. For each country, the analyzed period goes from the quarter in which the targeting regime was adopted up to the third quarter of 2008. It compares four-quarter accumulated inflation with established values, also for the four-quarter cumulative, of the targets and tolerance intervals, making interpolations when necessary.

Table 1 shows, country by country, the frequencies associated to different observed inflation situations in relation to the established target. The sample was divided between emerging economies – historically more sensitive to external shocks – and industrialized economies. The analyses carried out appearing on Table 1, infers that, for both groups, the frequency with which the observed inflation remained out of the tolerance interval was high: 40% in the industrialized economies and 49% in emerging economies. In the periods in which inflation was out of the tolerance interval in emerging economies, there was, approximately, equilibrium between the frequency in which remained below or above the inferior and superior limits; and, in the case of emerging economies, the frequency in which inflation was above the tolerance interval was quite higher.

Table 1 – Inflation target quarterly fulfillment in selected countries

Country	Adoption year of Inflation Targeting	$\pi <$ lower bound of the target	lower bound of the target $< \pi <$ central value of the target	central value $< \pi <$ upper bound of the target	upper bound of the target $< \pi$	$\pi <$ central value	$\pi >$ central value	$\pi =$ central value
Emerging		(A)	(B)	(C)	(D)	(A + B)	(C + D)	
South Africa	2000	0%	30%	26%	44%	30%	70%	0%
Chile	1991	14%	31%	37%	15%	45%	52%	3%
Hungary	2001	3%	26%	16%	52%	29%	68%	3%
Mexico	2001	0%	19%	32%	45%	19%	77%	4%
Peru	1994	37%	27%	12%	19%	64%	31%	5%
Poland	1999	46%	13%	5%	33%	59%	38%	3%
Weighted mean		19%	25%	22%	30%	45%	52%	3%
Developed								
Australia	1993	32%	13%	17%	32%	44%	49%	7%
Canada	1991	24%	25%	34%	14%	49%	48%	3%
England	1992	3%	34%	51%	7%	37%	58%	5%
Norway	2001	39%	32%	16%	13%	71%	29%	0%
New Zealand	1990	4%	24%	39%	32%	28%	71%	1%
Sweden	1995	38%	35%	20%	7%	73%	27%	0%
Weighted mean		21%	27%	31%	19%	47%	50%	3%
Brazil	1999	0%	24%	43%	27%	24%	70%	6%

* π denotes four-quarter accumulated inflation.

In only 3% of the considered quarters, both to emerging and industrialized economies, on average, inflation matched with the central value. The data show also that, for the sample of industrialized economies, inflation was lower than the target center in 48% of the time (44% in the case of the emerging ones). In the industrialized economies, in 27% of the quarters inflation was positioned between the inferior limit of the tolerance interval and the target center (25% in the emerging ones); and in 31%, between the inferior limit of the tolerance interval and the target center (22% in the emerging ones). In the industrialized economies, in 19% of the occasions the interval superior limit was surpassed (30% in the emerging ones). That is, in the considered period, to remain above the central value was, in the industrialized economies group, more associated to remain within the tolerance interval, and, in the emerging group, to stay above the superior limit of the tolerance interval.

As in other economies, also in Brazil, the central value of the tolerance interval was rarely reached.

Table 2 – Inflation deviations from the upper bound of the target

Country	2008				2009		
	I	II	III	IV	I	II	III
Emerging							
South Africa	-0.5	0.4	0.7	2.6	4.1	5.6	7.0
Chile	-1.4	-0.8	1.8	3.8	4.5	5.5	5.2
Hungary	4.6	4.3	2.3	3.4	2.7	2.7	1.7
Mexico	0.2	0.0	-0.2	-0.2	0.3	1.3	1.5
Peru	-2.7	-1.4	-0.2	0.9	2.6	2.7	3.2
Poland	-1.0	-0.9	-1.2	0.5	0.6	1.1	1.0
Mean	-0.1	0.3	0.5	1.8	2.5	3.2	3.3
Developed							
Australia	-0.6	-0.9	-1.1	0.0	1.2	1.5	2.0
Canada	-0.7	-0.8	-0.5	-0.6	-1.6	0.1	0.4
England	0.1	-0.6	-1.2	-0.9	-0.5	0.8	2.2
Norway	-2.4	-3.1	-3.8	-0.7	-0.3	-0.1	1.8
New Zealand	-0.5	-1.0	-1.2	0.2	0.4	1.0	2.1
Sweden	-1.1	-1.1	-0.8	0.5	0.4	1.2	1.4
Mean	-0.9	-1.3	-1.4	-0.3	-0.1	0.8	1.7
Brazil	-3.5	-2.8	-2.4	-2.0	-1.8	-0.4	-0.2

*Refers to four-quarter accumulated inflation.

In only 6% of the cases – which corresponds to two observations, last quarter of 2000 and last quarter of 2007 – the observed inflation coincided with the target central value. The total frequency in which inflation remained out of the tolerance interval (27%) was lower than the one observed, on average, both in the emerging (49%) and industrialized (40%) groups. However, unlike the occurred in most of the other economies, in Brazil the observed inflation never remained lower than the inflation interval inferior limit. In this sense, as verified in Mexico and South Africa, inflation out of the tolerance interval corresponded, always, to inflation above this interval superior limit.

In relation to the inflation distribution in the tolerance interval, the Brazilian experience diverges from the pattern observed in the sample average. In Brazil, when the inflation remained in the tolerance interval, the frequency in which it was positioned above the central value surpassed with extensive margin the frequency in which remained below, a distribution which gets distant from the other economies average, emerging or industrialized. One should also note that, differently from what was observed in most of the countries, it was verified in Brazil a low frequency of cases in which the inflation was lower than the target central value, only 24%, against 44% in the emerging group and 48% in the industrialized one.

When the recent behaviour is analyzed, Brazilian inflation remained lower than the target central value from the second quarter of 2006 to the last of 2007 and higher since the first quarter of 2008. The inflation rate growth in 2008 was not restricted to the Brazilian economy. Table 2 shows, country by country, the difference between the realized inflation and the target ceiling, for 2007 and for the first three quarters of 2008. While only two emerging countries (Hungary and Mexico) and one industrialized (England) showed inflation above the target ceiling in the first quarter of 2007, all the sampled countries – industrialized and emerging (Brazil is the only exception) – showed inflation higher than the target ceiling in the third quarter of 2008.

In summary, the evidence presented in this box, based on data of various countries which use the

inflation targeting as a framework for the monetary policy conduction, shows that it cannot be expected that inflation gets systematically observed below or above the central value of the tolerance interval. It is natural, and consistent with the international experience, that effectively observed inflation rate fluctuates around the central value of the tolerance interval, rarely reaching this central point. It is also not uncommon, according to the pattern identified in other economies that, observed inflation, when fluctuating around the central value of the target, breaks through the superior or inferior limit of the tolerance interval.