

# **INFLATION TARGETING IN EMERGING COUNTRIES: THE CASE OF BRAZIL**

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# Main theoretical elements

- a) The price stability goal may be accompanied by output stabilization so long as price stability is not violated.
- b) Monetary policy is taken as the main instrument of macroeconomic policy; monetary policy is viewed as the most direct determinant of inflation, and cannot affect economic activity in the long run.
- c) Monetary policy should not be operated by politicians but by experts in the form of an 'independent' central bank.
- d) A mechanism for openness, transparency and accountability should be in place with respect to monetary policy formulation.

$$R_t = \alpha_1 p_{t-1} + (1-\alpha_1) [\alpha_0 + \alpha_2 (E_t P_{t+j} - P^*_{t+j})] + \alpha_3 Y^g_{t-1} + \alpha_4 \Delta e_{t-1},$$

- $R_t$  is the ‘Sistema Especial de Liquidação e Custodia’ (Selic), *i.e.* the rate of interest set by the COPOM
- $E_t P_{t+j}$  is inflation expectations and  $P^*_{t+j}$  is the inflation target, both referring to some period in the future
- $Y^g$  is the output gap (obtained by the difference between the actual and the HP-filtered series)
- $\Delta e_{t-1}$  is the nominal exchange rate variation.

**Table 2. Emerging IT countries**

Country	Before IT						After IT					
	Inflation			GDP			Inflation			GDP		
	Average	SD	CV	Average	SD	CV	Average	SD	CV	Average	SD	CV
Latin American countries												
Brazil	9.71	9.06	0.93	2.58	1.76	0.68	8.88	2.42	0.27	1.78	1.56	0.88
Chile	20.45	5.94	0.29	4.50	2.99	0.66	8.01	5.83	0.73	5.64	3.56	0.63
Colombia	23.71	4.26	0.18	3.62	1.64	0.45	6.80	2.21	0.32	1.86	1.76	0.95
Mexico	20.76	9.37	0.45	3.43	3.60	1.05	8.41	4.97	0.59	2.36	2.77	1.17
Other emerging countries												
Israel	23.43	12.18	0.52	4.43	12.18	0.52	7.07	4.43	0.63	3.86	2.99	0.77
Poland	29.74	11.16	0.38	5.23	1.74	0.33	6.21	4.39	0.71	5.18	5.41	1.04
Czech Republic	13.73	16.43	1.20	n.a.	n.a.	n.a.	3.88	3.69	0.95	1.80	1.72	0.95
Thailand	4.97	2.06	0.41	5.28	6.56	1.24	1.41	0.55	0.39	4.75	2.25	0.47
South Korea	6.18	1.71	0.28	7.46	1.98	0.27	3.49	2.28	0.65	4.17	5.98	1.44

SD = Standard deviation; CV = coefficient of variation (SD/average)

Source: IMF (2002, 2004) / IPEADATA for Brazil's inflation / Polish Market Review , August 2003.

Note: Before IT / After IT : Brazil: 1995-1998/1999-2003 ; Colombia; 1989-1998/1999-2003 ; Mexico;1989-1998/1999-2003;

Chile:1981-1990/1991-2003;Czech Republic:1988-1997/1998-2003 (until 1992, data from Czechoslovakia);

Israel: 1986-1991/1992-2003; Poland:1992-1997/1998-2003; Thailand:1990-1999/2000-2003; South Korea:1988-1997/1998-2003.

**Table 3. Emerging non-IT countries**

Country	1980-1991						1992-2003					
	Inflation			GDP			Inflation			GDP		
	Average	SD	CV	Average	SD	CV	Average	SD	CV	Average	SD	CV
Latin American countries												
Argentina	663.56	950.55	1.43	0.82	6.18	7.56	6.02	12.23	2.03	2.09	6.41	3.07
Uruguay	65.86	26.06	0.40	1.35	5.24	3.88	26.39	21.32	0.81	1.29	5.48	4.24
Venezuela	25.42	5.33	0.21	1.55	5.33	3.44	40.15	24.48	0.61	-0.18	5.15	-29.42
Other emerging countries												
China*	10.16	7.78	0.77	9.23	3.93	0.43	6.00	8.40	1.40	9.76	2.44	0.25
Egypt**	18.19	3.27	0.18	5.14	2.26	0.44	6.69	4.71	0.70	4.62	1.37	0.30
India	9.52	2.58	0.27	5.46	2.20	0.40	7.50	3.83	0.51	6.09	1.35	0.22
Malaysia	3.63	2.78	0.77	6.44	3.35	0.52	2.96	1.33	0.45	6.02	5.61	0.93
Turkey	53.23	23.15	0.43	4.26	3.61	0.85	68.81	22.02	0.32	3.52	5.81	1.65
Russia	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	147.94	258.80	1.75	0.04	7.33	201.68
South Africa***	14.64	1.96	0.13	1.92	3.03	1.58	7.94	2.47	0.31	2.23	1.70	0.76

SD = Standard deviation; CV = coefficient of variation (SD/Average)

Source: IMF (2002, 2004) / Deutsche Bank Research ([www.dbresearch.de](http://www.dbresearch.de)) for data on Russia.

Note: (\*) Data for inflation: 1987-1991 and 1992-2003; (\*\*) Data for inflation and GDP: 1983-1991 and 1992-2003;

(\*\*\*) Data for inflation and GDP: 1980-1991 and 1992-2001.

**Table 4. Emerging IT countries (full period)**

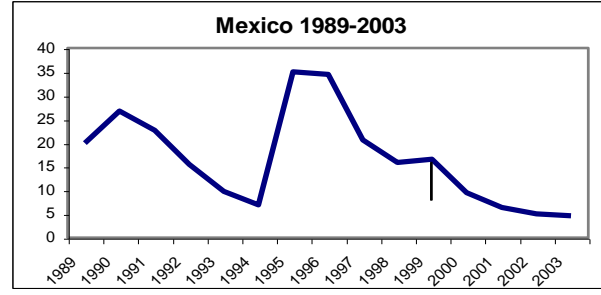
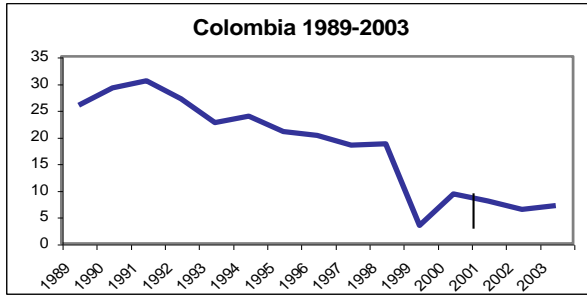
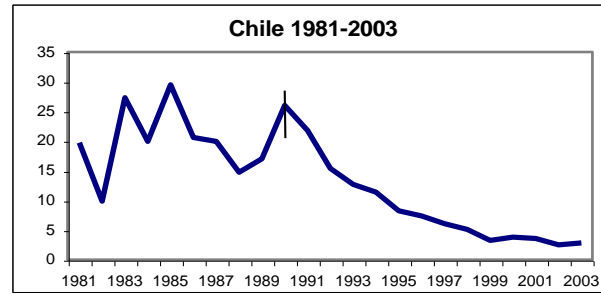
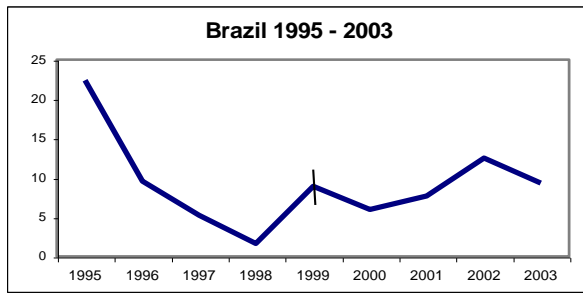
Country	1980-1991						1992-2003					
	Inflation			GDP			Inflation			GDP		
	Average	SD	CV	Average	SD	CV	Average	SD	CV	Average	SD	CV
Latin American countries												
Brazil	534.25	645.22	1.21	2.76	4.30	1.56	383.00	766.89	2.00	2.46	2.09	0.85
Chile	21.78	6.82	0.31	5.06	3.00	0.59	6.86	4.28	0.62	5.44	3.64	0.67
Colombia	25.33	6.17	0.24	3.37	1.49	0.44	15.49	8.10	0.52	2.98	2.00	0.67
Mexico	61.65	39.07	0.63	2.64	3.84	1.45	15.02	10.52	0.70	2.72	3.61	1.33
Other emerging countries												
Israel	111.07	118.71	1.07	3.68	1.74	0.47	7.07	4.43	0.63	3.86	2.99	0.77
Poland*	104.85	164.25	1.57	-0.56	6.53	11.59	17.98	14.71	0.82	5.21	3.83	0.74
Czech Republic**	6.89	16.25	2.36	n.a.	n.a.	n.a.	7.61	5.61	0.74	2.24	2.18	0.97
Thailand	5.82	5.33	0.92	7.70	3.12	0.41	3.65	2.47	0.68	4.33	5.61	1.30
South Korea	8.49	8.24	0.97	7.82	3.62	0.46	4.34	1.87	0.43	5.40	4.39	0.81

SD= Standard deviation; CV= coefficient of variation ( SD/average)

Source: IMF (2002, 2004) / IPEADATA for Brazil's inflation / Polish Market Review 08/2003.

Note: (\*) Data from 1981; (\*\*) Data from Czechoslovakia for 1980-1993.

**(a) Latin American IT countries**



**(b) Latin American non-IT countries**

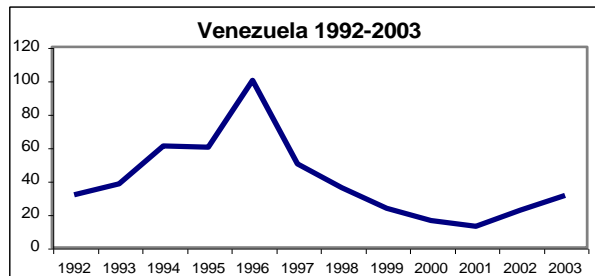
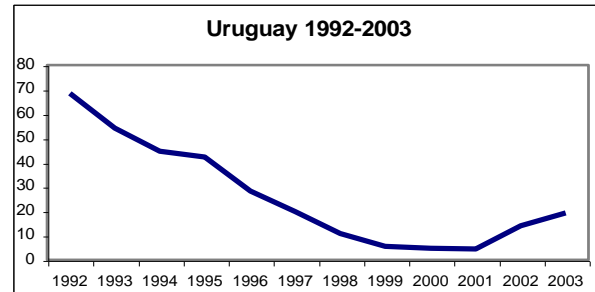
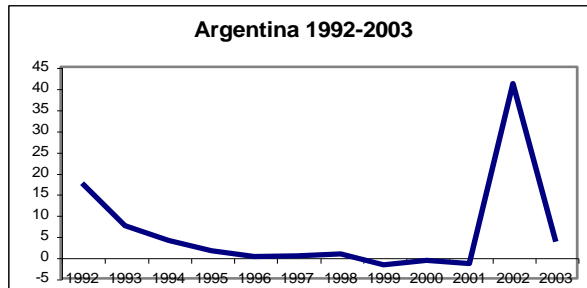
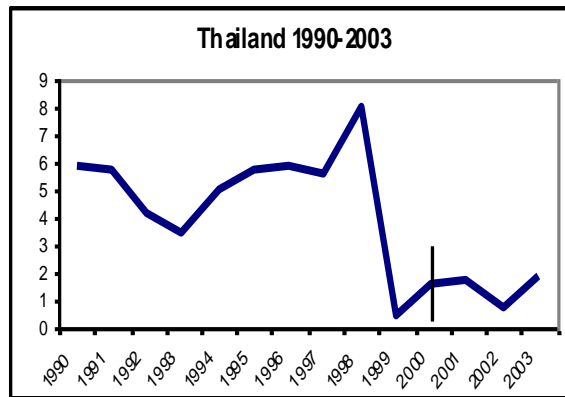
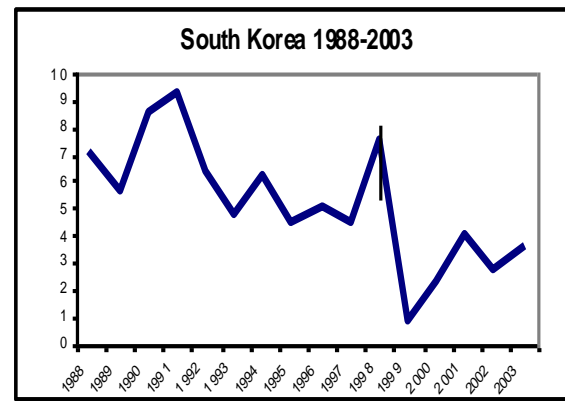
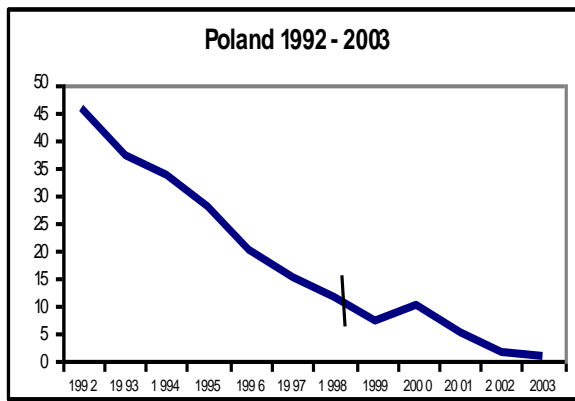
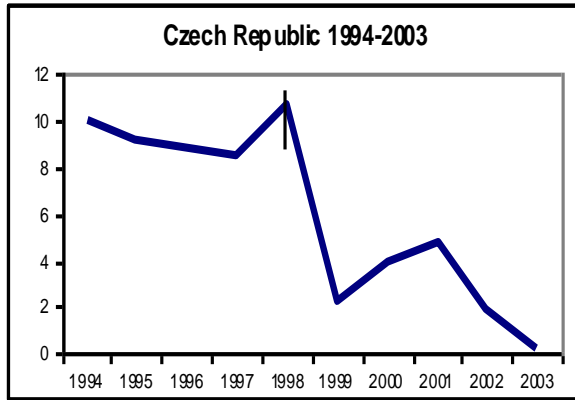
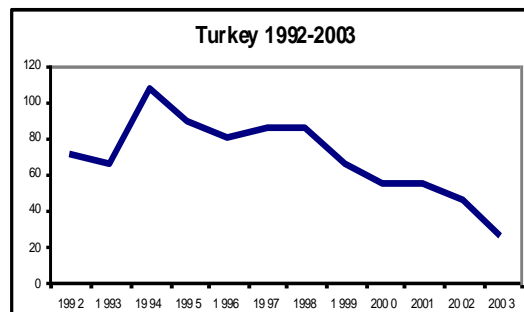
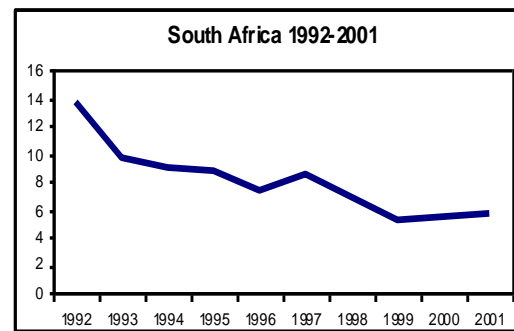
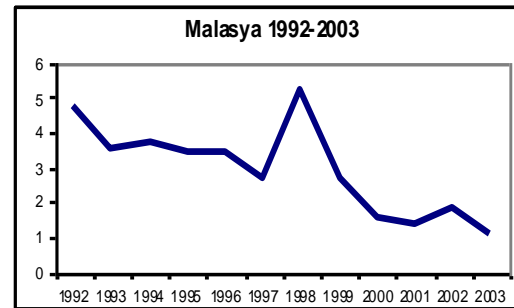
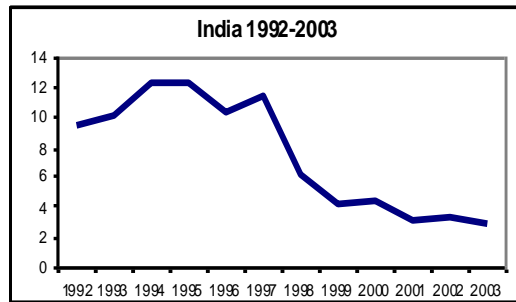
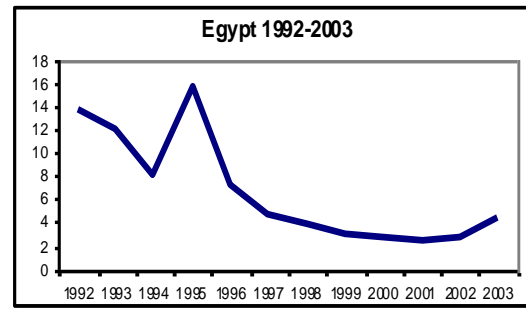
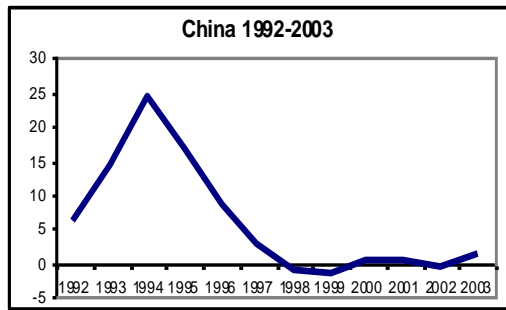


Figure 8 Other emerging non-Latin American IT countries





**Figure 9 Emerging non-IT countries**



**Table 1. Brazil - inflation targets and headline consumer price index (IPCA)**

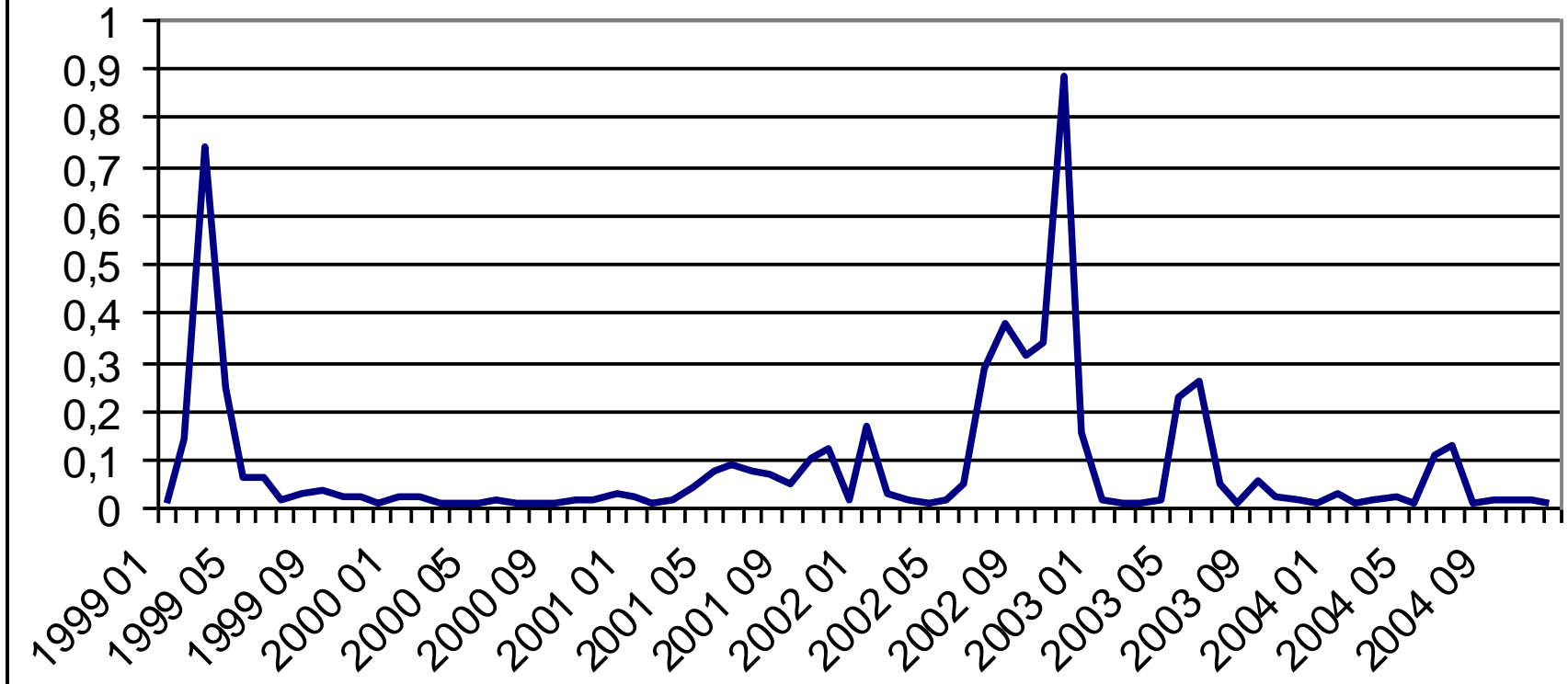
<b>Year</b>	<b>Inflation target</b>	<b>Tolerance intervals +/-</b>	<b>IPCA</b>
1999	8.0%	2.0%	8.94%
2000	6.0%	2.0%	5.97%
2001	4.0%	2.0%	7.67%
2002	3.5%	2.0%	12.53%
2003	4.0%*	2.5%	9.30%
2004	5.5%*	2.5%	7.60%
2005	4.5%	2.5%	5.69%

Source: Central Bank of Brazil (2006),

[www.bcb.gov.br](http://www.bcb.gov.br) (data obtained in May).

(\*)The original inflation target was 3.25% (tolerance interval of 2.0%) in 2003 and 3.75% (tolerance interval of 2.5%) in 2004 (see footnote 11 above).

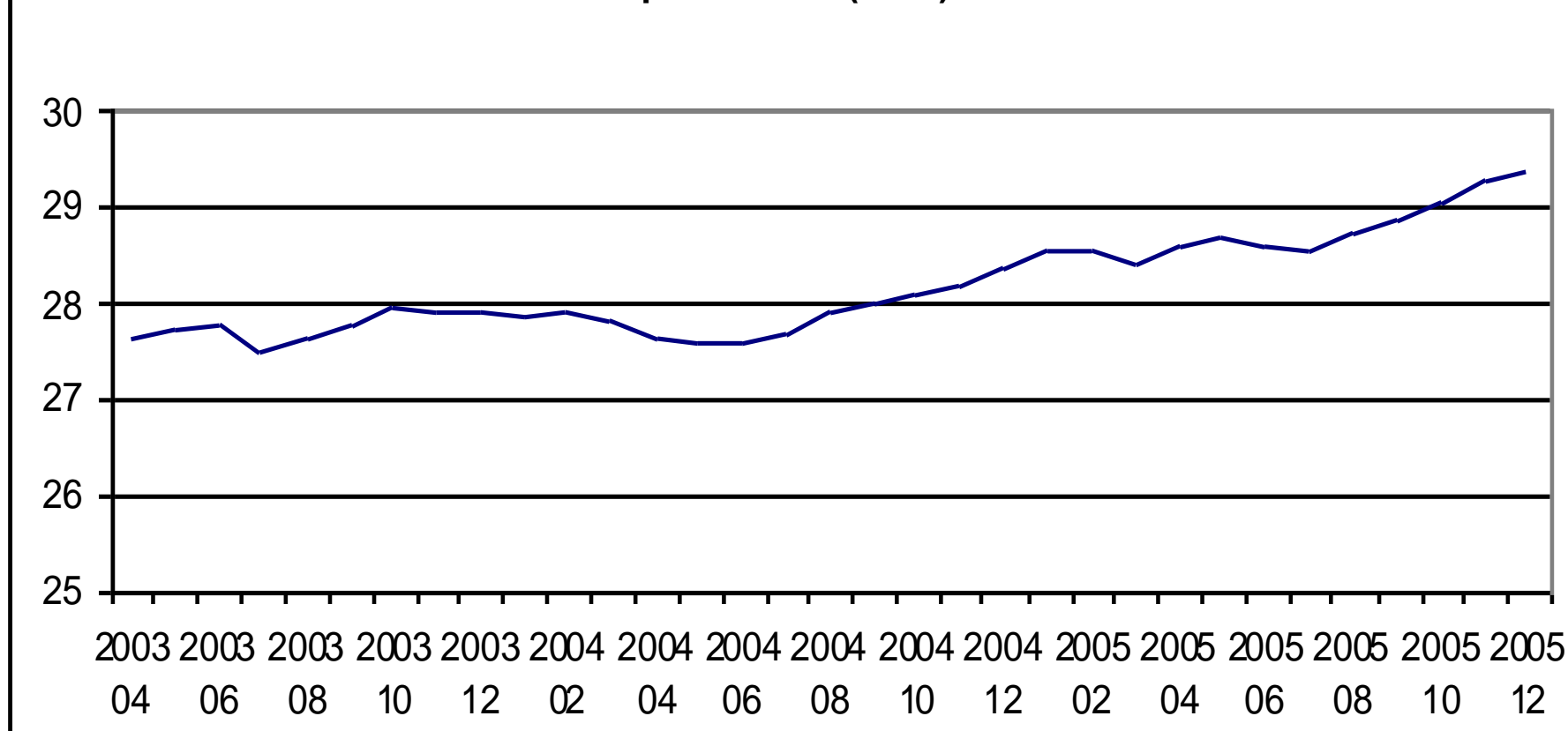
**Figure 2 Brazil: exchange rate volatility**



Source: Authors' calculations based on data from the Central Bank of Brazil (2006), [www.bcb.gov.br](http://www.bcb.gov.br) (data obtained in May).

Note: Exchange rate volatility is calculated using a GARCH (Generalised Autoregressive Conditional Heteroskedastic) model, a non-linear model that is used to calculate the volatility of time series.

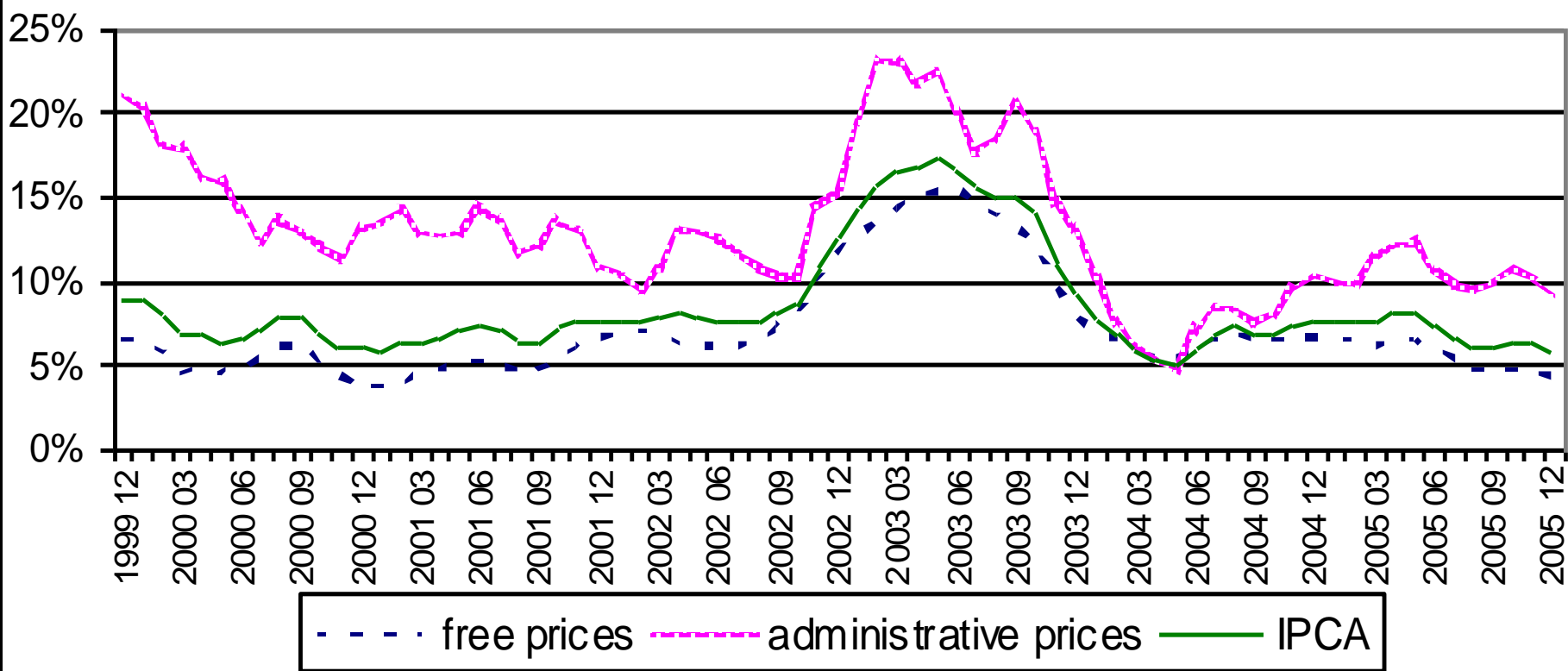
**Figure 3 Brazil: percentage of administrative prices over consumer price index (IPCA)**



Source: Authors' calculations based on data from IBGE ([www.ibge.gov.br](http://www.ibge.gov.br)).

Note: Administered prices include: utilities services (fixed telephone fees, residential electricity etc.), oil by-products, private health plans, that are, prices that are or determined (or authorized) directly by government (oil, private health plans) or are governmental permission that include some sort of price indexation. See footnote 7 for details on IPCA.

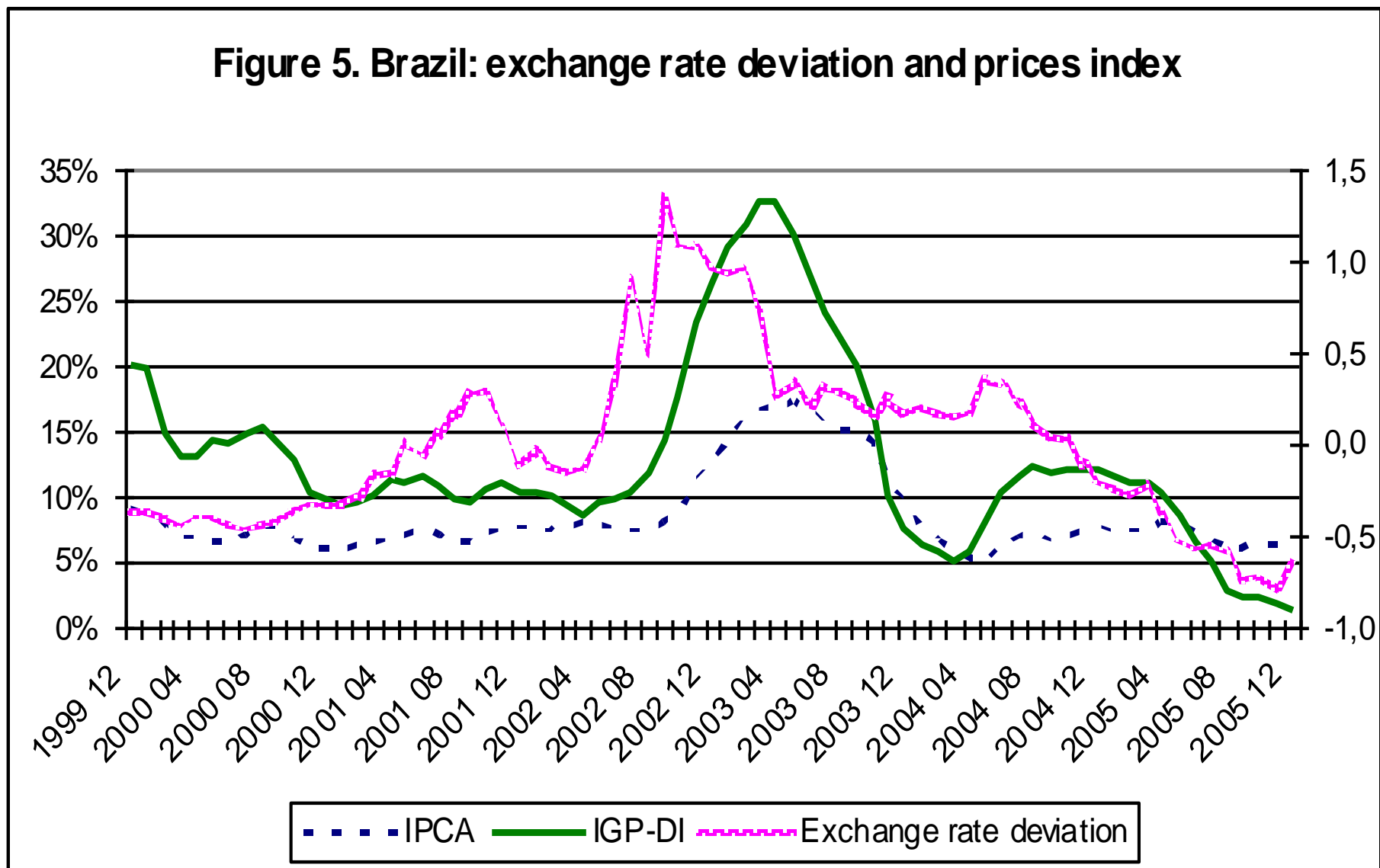
**Figure 4 Brazil: administrative and free prices in extensive consumer price index (IPCA)**



Source: IPEADATA ([www.ipeadata.gov.br](http://www.ipeadata.gov.br)).

Note: For the definition of administered prices see note in Figure 3.

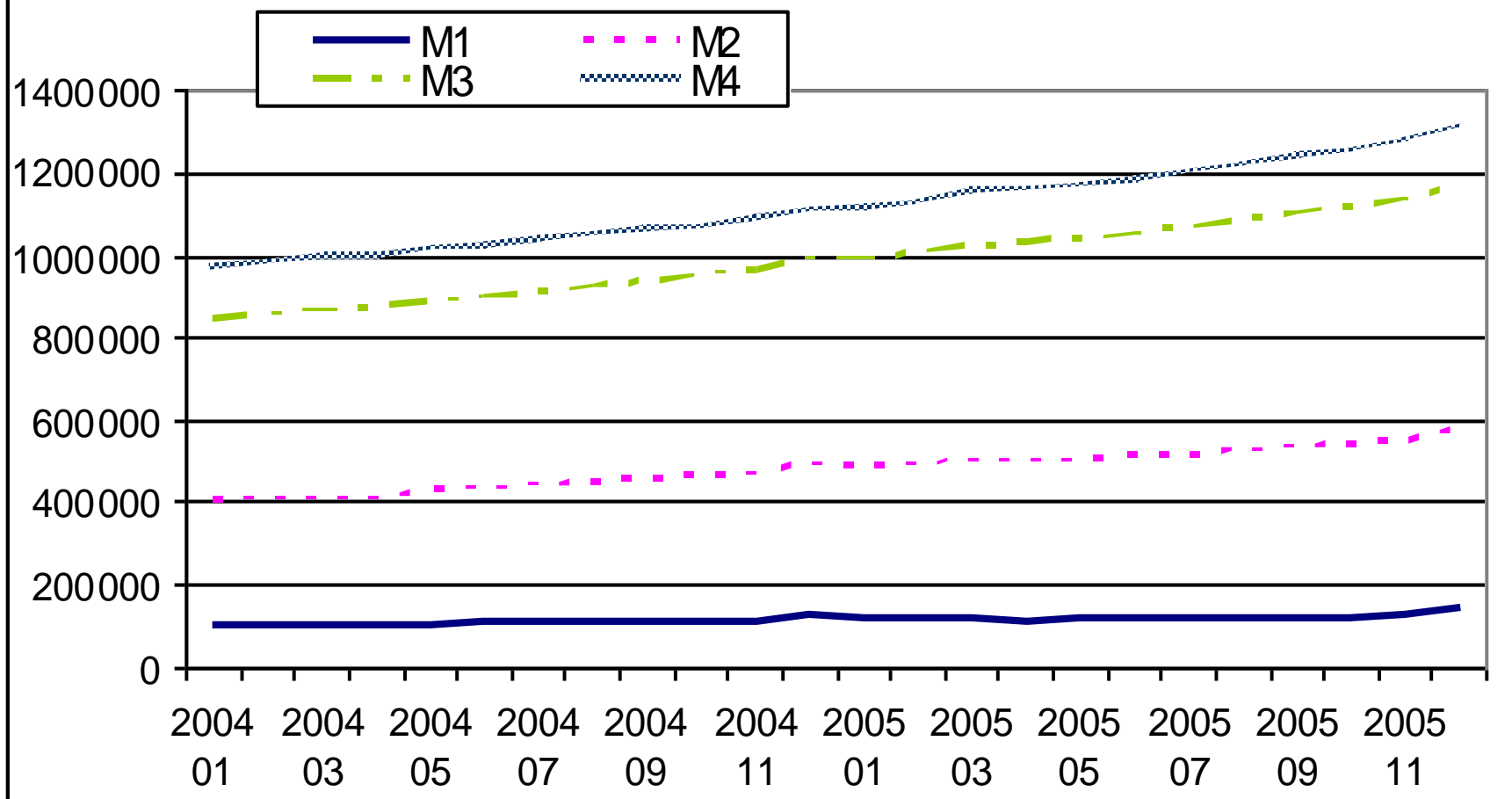
**Figure 5. Brazil: exchange rate deviation and prices index**



Source: IPEADATA ([www.ipeadata.gov.br](http://www.ipeadata.gov.br)).

Note: see footnote 7 for details on IPCA, and footnote 19 for relevant details on IGP. Exchange rate deviation was calculated as the difference between the nominal exchange rate and its linear trend.

### Figure 6 Brazil: monetary aggregates



Source: Central Bank of Brazil (2006), [www.bcb.gov.br](http://www.bcb.gov.br) (data obtained in May).

Note: (\*) M1= cash + demand deposits; M2 = M1 + saving deposits + securities issued by financial institutions; M3 = M2 + fixed income funds + operations committed with federal securities; M4 = M3 + federal bonds (Selic rate) + state and municipal securities