

MACROECONOMIC EFFECTS OF CENTRAL BANK TRANSPARENCY: THE CASE OF BRAZIL

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Nowadays there is a tendency for central banks to increase transparency in the conduct of monetary policy. Central bank transparency could be defined as the existence of symmetric information between monetary policymakers and other economic agents. High degrees of transparency reduce uncertainty, improve the private-sector inference about central bank goals, and increase the effectiveness of monetary policy. There is now an increasing literature that measures the effects of transparency on average inflation, output volatility (Chortareas, Stasavage, and Sterne 2002), the efficiency of monetary policy (Cecchetti and Krause 2002), and the volatility of financial markets (Ehrmann and Fratzscher 2005).

Some empirical analysis highlights the advantages of transparency due to a fall in asymmetric information. Siklos (2000) analyzes the impact of Canadian central bank transparency on the uncertainty of financial economic agents through a change in kurtosis of some financial assets for different periods. The analysis of kurtosis is made around dates of changes in the basic interest rate and the publication of the bank's Inflation Report. Furthermore, Siklos subdivides the period under analysis taking into consideration the introduction of

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the inflation target and the bank's Inflation Report. His results indicate that, if there is clarity (central bank publishes quality information), an increase in central bank transparency reduces the uncertainty in the financial market.¹

Clare and Courtenay (2001) also studied the impact of central bank transparency on financial assets. They found that an increase in the Bank of England's transparency improved the efficiency of the financial market. There was an increase in the speed of reaction of financial assets to the bank's announcements of the basic interest rate.

Muller and Zelmer (1999) evaluate whether the price of financial assets anticipates changes in the basic interest rate in the Canadian economy. Their analysis reveals that there was an increase in the anticipation of monetary policy action by economic agents after the central bank independence (operational). In this period, the variations in the past spreads are more sensitive to the changes in the date of monetary policy committee meetings than in the periods where the central bank does not have operational independence.

The importance of central bank communication is highlighted by Bernanke (2004b) through a phrase published by the Federal Open Market Committee (FOMC): "In these circumstances, the Committee believes that policy accommodation can be maintained for a considerable period." According to Woodford (2005), that phrase was responsible for a substantial fall in the interest rate in the futures market. When the information "maintained for a considerable period" was eliminated by the FOMC from the minutes, the interest rate returned to the previous level. Bernanke (2004a) strengthens the argument that in the case where the public does not believe in the central bank's explanations and forecasts, economic transparency and transparency on monetary policy decisions will no longer function as guides for the public's expectations.

The main objective of this article is to analyze the impact of transparency at the Central Bank of Brazil (CBB) on macroeconomic variables. In particular, we consider the effect of the CBB's announcements and publications on several variables related to the inflation targeting system, including expectations.

¹An increase in kurtosis means an increase in the probability of the occurrence of extreme events.

CBB Transparency and Macroeconomic Performance

To evaluate the effect of CBB transparency on macroeconomic variables, we examine the behavior of the one-day interbank interest rate with payment in one month and three months (i.e., future contracts with interbank deposits). The data used in the analysis are from the Brazilian Mercantile and Futures Exchange for January 18, 2002, to March 13, 2006.² We consider expectations for the following variables: over-SELIC (basic interest rate) in the short and long run; inflation (measured by IPCA, the official price index);³ public debt/GDP ratio; and the exchange rate. All data are from the CBB's Focus survey. Furthermore, to determine the reaction of the stock market to the CBB's publications, we use the Bovespa index (Ibovespa). The justification for using these variables is that they are intrinsic to the CBB's inflation targeting, and the Monetary Policy Committee (COPOM) takes them into consideration when evaluating the economy's future and in making decisions about the SELIC target. The impact of the CBB's main publications—COPOM minutes and the Inflation Report—on macroeconomic variables will be of primary interest.

When the central bank has political transparency the advantages from economic transparency and from transparency on monetary policy decisions become more evident. Hence, a period of political opacity is understood as that where there is uncertainty concerning the future behavior of monetary policy. This vision is observed in the Brazilian case. The CBB states in the Inflation Report (December 2002 and March 2003) that one cause of deterioration of the inflation expectation was the public's uncertainty about the future of monetary policy.

In general, the uncertainty is a consequence of the tradition of the Latin American left and the history of monetary policy in Latin America. Thus, people expect that prior to elections the monetary authorities will take actions to stimulate short-run output and employment. The political business cycle in Brazil was evident during the elections of 1986, 1989, and 1998. Hence, in evaluating the CBB's transparency and its impact on macroeconomic variables, we need to distinguish between the periods with opacity and with political transparency.

²All data series in this article use daily figures.

³Inflation is measured by National Consumer Price Index (extended).

After the adoption of inflation targeting in June 1999, there was a period of opacity during the penultimate Brazilian presidential election. That opacity occurred because of the favoritism and the victory of Luís Inácio Lula da Silva, the candidate of the left party. The market was uncertain about his macroeconomic policies, given his trade union background and his softness on price stability. The reason for political opacity was the absence of legislation that would ensure the CBB's operational independence. In Brazil, there is only a tacit accord that gives operational independence for the CBB. In addition, the president of the republic appoints the members of the National Monetary Council, which sets the CBB's inflation target. Consequently, we shall label the period between May 31, 2002, and August 1, 2003, the period of political opacity (OP). In contrast, we shall label the period prior to May 31, 2002 (TRAN1: January 1, 2001, to May 31, 2002) and the period after August 1, 2003 (TRAN2: August 1, 2003, to March 13, 2006) as having political transparency.

Table 1 presents the kurtosis for our data series taking into consideration all days in the period. We see that the kurtosis is lower during the electoral period compared with the other periods. This electoral period is marked by political opacity, meaning an increase in uncertainty in the conduct of monetary policy. This effect is observed through a low kurtosis concerning inflation expectations and, thus, an increase in the tradeoff between inflation and unemployment. In this case, the explanations and actions of the CBB did not produce the desired effect and control over inflation expectations was damaged.

Two other periods are analyzed: five days before and after the COPOM minutes and five days before and after the publication of the CBB's Inflation Report. The comparison between the publication of COPOM minutes and the Inflation Report for the period TRAN2 denotes that the kurtosis is higher for the variables that compose the inflation targeting around the date of publication of the Inflation Report. Therefore, uncertainty about the exchange rate (nominal), inflation, and the basic interest rate (short-run and long-run SELIC) is lower in a monetary regime having an Inflation Report. In the period of political opacity, however, the kurtosis is higher around the date of publication of the COPOM minutes. This result denotes a change in the behavior of economic actors who demand information with more frequency.⁴

⁴The data are available from authors upon request.

TABLE 1
KURTOSIS IN SELECTED MACROECONOMIC VARIABLES

Period	Future Interest Rate (1 month)	Future Interest Rate (3 months)	Public Debt/GDP	Exchange Expectations	Inflation Expectations	IBOVESPA	SELIC Expectations (short run)	SELIC Expectations (long run)
TRAN1	4.442	2.540	1.647	—	1.986	3.1703	1.229	—
TRAN2	3.301	4.657	1.3021	1.940	2.756	3.301	3.204	2.565
OP	1.445	1.609	1.910	1.707	1.471	1.972	1.821	1.222
Total	4.354	2.773	2.520	2.661	3.037	2.698	1.982	1.876

Another way to analyze the effects of central bank transparency on macroeconomic variables is to apply the method used by Clare and Courtenay (2001). According to Clare and Courtenay (2001), the abnormal reaction is the difference between the excess of the variables in the period of political opacity (May 31, 2002 to January 6, 2003) with the period of political transparency (January 7, 2003 to March 13, 2006).⁵ In the Brazilian case, these excesses correspond to the difference between the average of the variable around the COPOM decision (interval of one day) and its average on the days without a decision. For instance, to calculate the abnormal reaction of inflation expectations, we subtract the excess of that variable for the OP period OP ($9.86 - 9.67 = 0.19$) by the excess in the TRAN2 period ($6.821 - 6.817 = 0.004$). Therefore, the abnormal reaction corresponds to 0.186 ($0.19 - 0.004$)—that is, in the period of political opacity the public's inflation expectations are stronger than in the period when the CBB's policy is more transparent. This procedure is also applied to the future interest rate (1 month and 3 months), and the results are presented in Table 2. The results indicate positive abnormal reactions, which indicate a low capacity of economic actors to anticipate the CBB's actions in a period of political crisis.

TABLE 2
ABNORMAL REACTION TO COPOM DECISION

Announcement	Future Interest Rate (1 month)	Future Interest Rate (3 months)	Inflation Expectations
SELIC target	0.37	0.41	0.19

Publication of the CBB's Inflation Report and Volatility of Macroeconomic Variables

Volatility is understood as the daily change in the value of the series. Furthermore, the option to study the change and not the level

⁵The period under analysis has been reduced with the intention of capturing the effects of high political crisis.

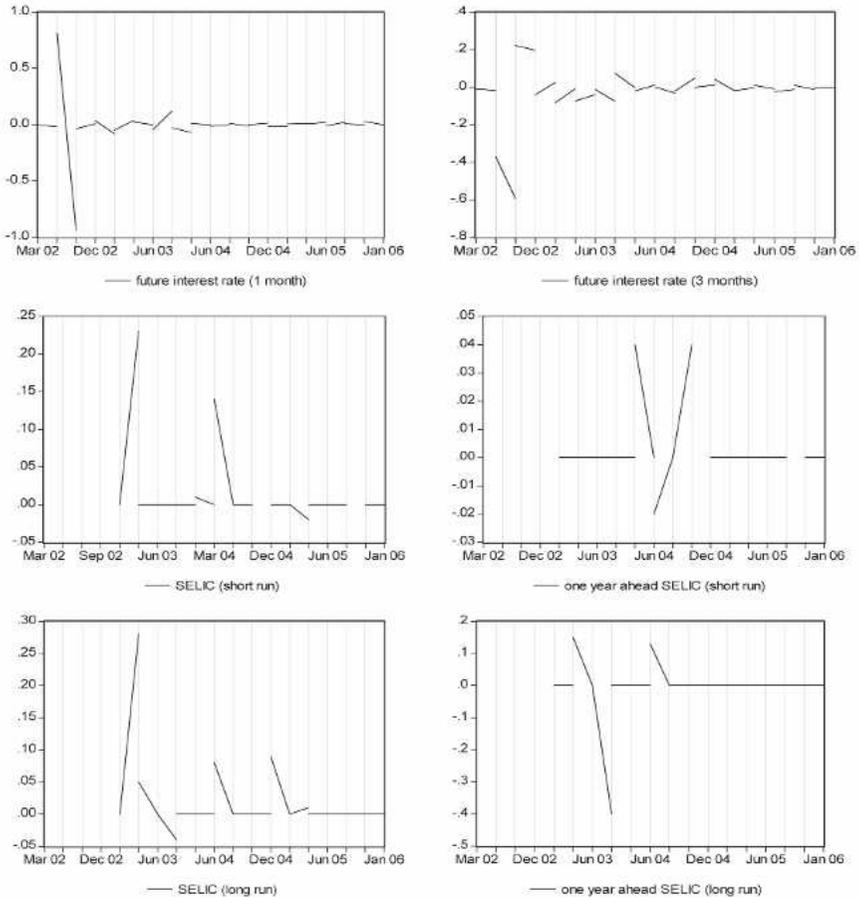
of the series has as its objective to analyze the possible change in the rate with which the public readjusts its expectations. If the volatility on the previous day of the publication of the CBB's Inflation Report is higher than on the day of publication, this behavior denotes that the market anticipated the information in the report. It is important to note that, if the level of the series is used in the analysis instead of volatility, there would be a bias in the results because a change in the level could not be related to the Inflation Report.

In Figure 1, the graph of the future interest rate (1 month) shows that the information in the Inflation Report of June 28, 2002, changed the public's expectations. The volatility went from almost 90 basis points before the publication of the Inflation Report to 100 basis points on the day of publication. Furthermore, the change from a high positive volatility to a high negative volatility denotes an inflection point in the perception of economic actors to the future decisions concerning monetary policy. Therefore, on the day before the publication of the Inflation Report (June), the market increased its expectations for the next COPOM meeting concerning the definition of the basic interest rate. However, on June 28, 2002, the public's expectations of an increase in the interest rate changed to expectations of a decrease in the interest rate. In this report, the CBB emphasizes a lower pressure on market prices due to an increase in the past interest rate.

In Figure 1, the graph related to the future interest rate (3 months) reveals an increase in the volatility of this variable in June 2002. The volatility before the Inflation Report was -40 basis points and on the day of publication the volatility was -60 basis points. Thus, a prospective analysis of the Brazilian economy in the Inflation Report increased the public's expectation that there would be a decline in the basic interest rate in the last quarter of 2002. Nevertheless, the 3-month future interest rate fell less than the 1-month rate. The possible justification is the Inflation Report's warning about the financial market in light of the uncertainty about monetary policy. According to the Inflation Report, this uncertainty is one of the main reasons for the deterioration of the public's inflation expectations in that period.

In Figure 1, the volatility of the SELIC expectations (short run) for the current year reveals an increase of almost 25 basis points on the day when the March 2003 Inflation Report was published. The perspective of a war in Iraq, the inertia caused by the high inflation

FIGURE 1
VOLATILITY AROUND INFLATION REPORTS



in the last quarter of 2002, and the fact that the inflation forecast was higher than the inflation target for 2003, produced an increase in the short-run SELIC expectations. However, in the June 2004 Inflation Report, the volatility in the SELIC expectations fell from 15 basis points on the day before the Inflation Report to zero on the day of its announcement. This behavior strengthens the argument that, in the periods with political opacity, the CBB's Inflation Report is not sufficient to stabilize the public's expectations. In spite of this, these peri-

ods are marked by volatility in expectations about the short-run SELIC in response to the announcement of the CBB's basic interest rate target.

Even though the volatility of the public's expectations about the short-run SELIC for the current year are influenced strongly by the CBB's Inflation Report, the volatility of this variable one year ahead is not very sensitive to the Inflation Report. The same does not apply to expectations about the long-run SELIC for the current year and one year ahead. Figure 1 shows that the behavior of the SELIC expectations (long run) for the current year increased more than 25 basis points after the publication of the Inflation Report (March 2003). In that report, the CBB highlighted the increase in inflation forecast for 2003 compared with the previous report.

In June 2004 and March 2005, there was a different movement compared with what occurred in March 2003. The market (readjusted upward in relation to the SELIC expectations (long run) for the current year. On the days when the Inflation Report was published, volatility fell from close to 10 basis points to zero. Thus, the market anticipated the CBB's opinions in the Inflation Report, which, in turn, became common knowledge. Hence, at the beginning of the new government, the CBB's president had the task of building a credible monetary policy. It is observed that the Inflation Report implied an increase in the rate of the readjustments of the SELIC expectations (long run) for the current year. However, when the CBB's credibility was consolidated, the volatility in the expectations converged to zero—on the day the Inflation Report was published.⁶

The volatility in the SELIC expectations (long run) for one year ahead was zero on the day before the September 2003 Inflation Report was published and -40 basis points after its publication. The CBB stated that the decrease in the inertial component of inflation and the increase in the importance of inflation expectations guided the market to a downward readjustment in SELIC expectations (long run) for the next year. Furthermore, the September 2003 Inflation Report indicated that the inflation forecast for 2004 was close to the inflation target.

The impact of the Inflation Report of June 2003 and June 2004 on SELIC expectations (long run) are different from those of the September 2003 report, because there was a convergence to zero in the volatility of this variable. In the June 2003 Inflation Report, the

CBB's forecast indicated that inflation peaked in the second half of 2003. This fact implied a change in the rate of readjustment of SELIC expectations (long run) for the current and one year ahead. In this case, the first difference of this variable, which was positive, became zero. This observation is also valid for the June 2004 Inflation Report, which published an inflation forecast (for 2004 and 2005) that was lower than expected by the market. As a consequence, the market stabilized the SELIC expectations (long run), as observed through a fall in volatility (convergence to zero).

Publication of the COPOM Minutes and Volatility of Macroeconomic Variables

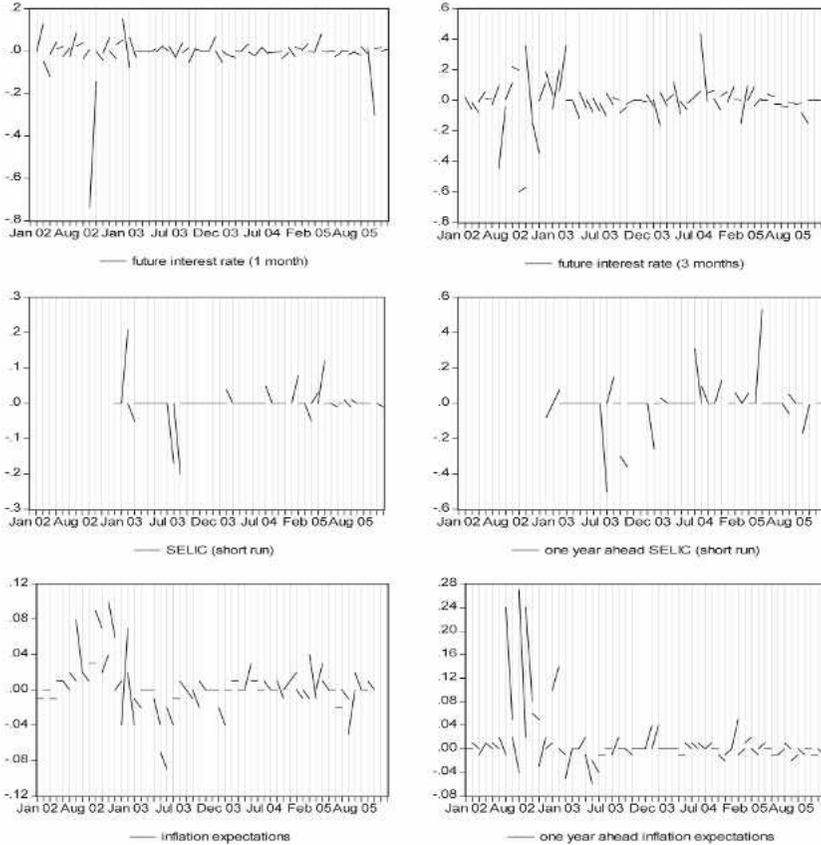
The graphs in Figure 2 compare the volatility of macroeconomic variables on the publication date of the COPOM minutes with volatility the previous day. The graph of the future interest rate (1 month) shows a fall in volatility (negative) on October 21, 2002, the day the minutes were published. The COPOM states that the objective of the CBB's monetary policy is to control inflation, not the exchange rate. Furthermore, the CBB justifies increasing the interest rate because of higher inflation expectations. As a consequence, expectations about the future interest rate (1 month) were readjusted upward (volatility changed from -80 basis points to -15 basis points on the day the minutes were published).

Another important effect of the COPOM minutes on expectations about the future interest rate (1 month) is seen from the minutes of December 1, 2005. On the day prior to publication, volatility was almost zero. However, upon publication of the minutes, volatility plunged to -30 basis points. The main reason for this movement was the CBB's policy decision to reduce the interest rate to achieve macroeconomic stability.

In Figure 2, the graph for the volatility of the future interest rate (3 months) reveals that the publication of the COPOM minutes on October 30, 2002, saw a significant fall in the volatility (40 to -10 basis points). The expectations of a decrease in the future interest rate were intensified in November. On November 20, 2002, the volatility was close to -30 basis points, which pointed to an increase in the volatility of the future interest rate (3 months). The change

⁶For an analysis concerning the CBB's credibility, see de Mendonça (2007).

FIGURE 2
VOLATILITY AROUND COPOM MINUTES



the public's perception of inflation was due to the statements of COPOM (after October 2002) that the Brazilian economy was improving. An example of this good environment was the increase in demand for Brazilian public debt and the fall in country risk.

The minutes of March 2003 and September 2004 highlight the change in the volatility of the future interest rate (3 months). Due to the minutes of March 2003, the volatility increased 30 basis points

while the minutes of September 2004 implied a fall of 43 basis points. In relation to the minutes of March 2003, the justification for this behavior was the risk in the control of inflation. The COPOM highlighted the uncertainties related to the fall of inflationary inertia and the war in Iraq. Besides this, the forecasted inflation for 2003 was higher than the adjusted inflation target (8.5 percent), and the readjustments of prices and wages could be based on accumulated inflation. In the minutes of September 2004, the COPOM called attention to the increase in economic activity, which justified an increase in the basic interest rate due to the risk of the departures from the inflation target (5.1 percent). An important point in these minutes was the revelation of the use of gradualism in the conduct of the monetary policy. The speed of the rate of adjustment of the market was quicker than proposed by the CBB, and the publication of the minutes contributed to the understanding by the market.

With regard to the behavior of volatility of the short-run basic interest rate (current year) expectations, the minutes published on February 20, 2003, August 28, 2003, September 24, 2003, and April 28, 2005, deserve attention. The volatility associated with the minutes of February 2003 increased almost 20 basis points because the CBB announced a tight monetary policy to constrain inflation. The indication of an additional effort to control inflation increased the SELIC short-run (current year) expectations on the day the minutes were published. With regard to the minutes of January 2005, one sees an increase in the volatility of the interest rate. A possible justification for this behavior is because the COPOM stated the necessity of increasing the basic interest rate, followed by a long period of stabilization. As a result, there was an upward readjustment of expectations about the short-run SELIC (current year) for 2005.

With regard to the analysis concerning the volatility of the SELIC short run (one year ahead), one should observe the COPOM minutes for August 28, 2003, January 16, 2004, and April 28, 2005. In the minutes of August 28, 2003, COPOM emphasizes the fall in industrial output and in the level of economic activity as responsible for a loosening of monetary policy. According to COPOM, the basic interest rate must be reduced, in a gradual way, until the real interest rate converges to that compatible with the accomplishment of the inflation target. The main reason for this possibility was due to the improvement in the fiscal picture (medium and long run). Hence, the volatility decreased by 40 basis points on the day of the

announcement, indicating the strong impact of CBB transparency on expectations about the future interest rate (short run).

In the minutes of January 16, 2004, the main point was COPOM's uncertainty about future inflation. As a consequence, the CBB decided to stop easing monetary policy. That decision led to a fall of 23 basis points in SELIC expectations for 2005. In the minutes of April 28, 2005, the justification for increasing the basic interest rate to 19.5 percent was due to rising inflation expectations, associated with an increase in administered prices, and due to the volatility in international capital markets. As a result, there was an upward readjustment in the public's expectations (volatility future interest rates readjusted upward by increased nearly 50 basis points).

The graph in Figure 2 denotes that the minutes that are relevant to the analysis of inflation expectations (current year) are those published on January 20, 2003. The volatility was almost 12 basis points. The economic agents who reduced their inflation expectations on January 19, 2003, changed their behavior on January 20, 2003, due to the information in the published minutes. The main motives for the departure of inflation from the target were the imminent war in Iraq and the CBB's inflation forecast being above the adjusted inflation target. Even so, except the second half of 2002 (a period of high opacity), the inflation expectations (current year and one year ahead) are only slightly sensitive to the publication of the COPOM minutes.

Volatility of Macroeconomic Variables around the Date of CBB Announcements and Publications

In this section, based on the methodology developed by Muller and Zelmer (1999), the reaction of the spread between the future interest rate (1 month) and SELIC on the days around the publication of the Inflation Report is analyzed. Table 3 presents the average volatility around the spread of the interest rate (2 days before and 2 days after publication of the Inflation Report) for each day of the interval and is related to the period between March 28, 2002, and January 25, 2006. The results reveal an average volatility around the day of the Inflation Report that corresponds to -0.106 , which is lower than the average volatility from the five-day interval (0.341).

The results in Table 3 indicate that, on average, the reaction of economic agents is no higher on the day the Inflation Report is published than on other days in the interval. Therefore, the public's expectations

TABLE 3
AVERAGE VOLATILITY OF THE INTEREST RATE SPREADS ON THE DAYS AROUND INFLATION REPORTS

Inflation Report	2 days before		Day previous		Day of		Day after		2 days after		Overall	
	Inflation Report	Average	Volatility									
March 28, 2002	0.875	0.267	0.053	0	0	VHR	-2	0	-2	0		
June 28, 2002	-0.370	6	-1	VHR	0	0	0.662	0	0.662	0		
September 30, 2002	-0.386	-0.21	0.062	6	6	6	-0.371	6	-0.371	6		
December 30, 2002	4	-1	VHR	0	0	0	0	0	0	0		
March 31, 2003	0.292	1	-0.551	-2	-2	-2	-0.111	-2	-0.111	-2		
June 30, 2003	0.051	-0.289	0	6	6	6	0.013	6	0.013	6		
September 30, 2003	-0.102	0.305	-0.712	7	7	7	0.136	7	0.136	7		
December 30, 2003	-0.693	0.871	1	0	0	0	0	0	0	0		
March 31, 2004	-0.032	-0.330	0.279	2	2	2	0.057	2	0.057	2		
June 30, 2004	0.092	0.126	0.028	-0.691	-0.691	-0.691	-0.029	-0.691	-0.029	-0.691		
September 30, 2004	-0.062	-0.132	0.139	-2	-2	-2	0.193	-2	0.193	-2		
December 27, 2004	3	0	-0.378	0.435	0.435	0.435	0	0.435	0	0.435		
January 24, 2005	-1	2	0.088	0.270	0.270	0.270	-0.638	0.270	-0.638	0.270		
March 29, 2005	0	0.071	-0.1667	0.24	0.24	0.24	-0.016	0.24	-0.016	0.24		
June 29, 2005	-0.515	-0.438	-2	-0.091	-0.091	-0.091	1	-0.091	1	1		
September 29, 2005	-0.043	0.152	-0.158	0.094	0.094	0.094	0	0.094	0	0		
December 28, 2005	0.035	-0.091	-0.013	0.468	0.468	0.468	0	0.468	0	0		
January 25, 2006	0.178	-0.755	2	-0.303	-0.303	-0.303	-0.739	-0.303	-0.739	-0.303		
Variation average %	0.250	0.476	-0.106	1.085	1.085	1.085	0.001	1.085	0.001	1.085	0.341	

NOTE: VHR is very high reaction. It represents a case where the reaction of the future interest rate is too high in relation to the other days in the interval.

are in accord with the CBB's forecasts on the future of monetary policy. This result is not valid for the December 2002 Inflation Report, when the reaction of the future interest rate was too high.

Muller and Zelmer (1999) affirm that the perception of an inflection point in the future strategy of monetary policy causes an intense reaction by the economic actors. Thus, high variations on the day the Inflation Report appears indicate that there is new information in the report. In the Brazilian case, a good example is CBB President Arminio Fraga's statement in the Inflation Report of December 30, 2002, which revealed the expectation that the next government would maintain low inflation. That information was new for the market and, as a consequence, justified the reaction of the spread.

The Influence of COPOM Minutes on the Brazilian Economy

The objective of this section is to analyze the relation between future interest rates with different maturities (1 month, 3 months, and 6 months) for the periods close to the publication of COPOM minutes. For our analysis, we select a period without crisis—namely, the period between January 15, 2004, and June 20, 2006. This period is divided into two intervals: January 15, 2004, to July 26, 2004, and July 27, 2004, to December 2, 2005. This division is necessary due to the change in the language used in the COPOM minutes. Beginning with the July 29, 2004, minutes, the CBB used the words “sufficiently long” to give an idea of the future direction of monetary policy.

Figure 3 shows the performance of the one-day future interbank interest rate (maturities 1 month, 3 months, and 6 months). It is observed that the interest rates with different maturities depart from each other after the announcement of maintenance of the basic interest rate for a sufficiently long period (July 2004).⁷ As time advances, the interest rates converge to the same value until the inflection point. After this, the tendency is for a departure among them with the future interest rate (6 months) being lower than the others.

⁷It is important to note that although the COPOM emphasized the necessity for maintaining the interest rate for an extended time, the intention to increase the interest rate, when expected inflation is above the inflation target, was revealed to the public. This information, presented in COPOM minutes, was responsible for the difference among interest rates of different maturities.

FIGURE 3
FUTURE INTEREST RATES

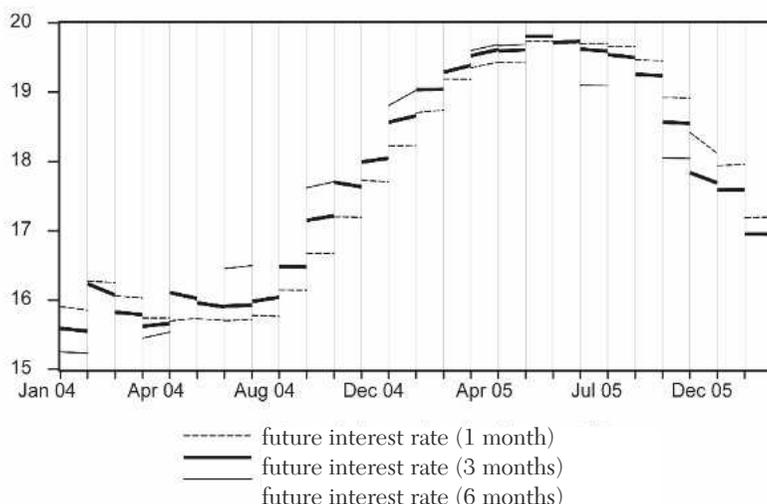


Table 4 shows the behavior of future interest rates (January 15, 2004, to October 27, 2005) and it is divided into two groups. The first treats the level of variables (columns 3-1 level and 6-1 level), while the second reveals the rate with the economic actors readjust their expectations concerning future interest rates (columns rate 1, rate 2, and rate 6). In the columns concerning the level of future interest rates, a positive sign (+) denotes an increase in the difference among the interest rates, while a negative sign (–) indicates a decrease. For instance, a positive sign in column “3-1 level” indicates that the difference between the future interest rates with maturities of 3 months and 1 month increased with the publication of the COPOM minutes. Furthermore, the labels “medium, high, and low” give the magnitude of the difference. In addition, the classification in bold (non-bold) denotes that the future interest rate with a higher (lower) maturity is less than that with a lower (higher) maturity.

The COPOM minutes of July 2004, stated that the CBB would increase the SELIC until the level where the basic interest rate would be maintained for a sufficiently long period. In this case, the

TABLE 4
BEHAVIOR OF FUTURE INTEREST RATES

COPOM Minutes	Decision	Rate 1	Rate 3	Rate 6	3-1 Anchor	Level	6-1 Level	Bias	Maintain Sufficiently	Wait for Unanimous	Explain Vote	Starts Adjust	Continue Adjust
Jan 16, 2004	maintain	0,-	+,-	+0	Yes	Medium	High	no	no	no	no	no	—
Feb 25, 2004	maintain	Cte	0,-		No	+Medium		no	no	yes	no	no	—
Mar 25, 2004	reduce	Cte	+0		Yes	Medium		—	no	no	yes	no	—
Apr 22, 2004	reduce	Cte	0,+	0,-	No	-Low	-Medium	no	no	no	yes	no	—
May 27, 2004	maintain	0,+	+,-		Contrary	-Medium		—	no	no	yes	no	—
Jun 24, 2004	maintain	Cte	0,-		No	Medium		no	no	no	yes	no	—
Jul 28, 2004	maintain	0,+	0,+	-,+	Yes	Medium	+High	no	yes	no	yes	no	—
Aug 26, 2004	maintain	0,-	0,+		Contrary	+Medium		no	no	no	yes	no	—
Sep 23, 2004	increase	Cte	+0		Yes	High		no	no	no	yes	yes	—
Oct 26, 2004	increase	Cte	+ , +	0,-	No	+High	+High	no	no	no	yes	no	yes
Nov 25, 2004	increase	-0	0,-		Contrary	-High		no	no	no	yes	no	yes
Dec 23, 2004	increase	0,-	0,+		Contrary	+High		no	yes	no	yes	no	yes
Jan 27, 2005	increase	Cte	0,+		No	+High	+Medium	no	yes	no	yes	no	yes
Feb 24, 2005	increase	0,+	Cte		No	-High	Medium	no	yes	no	yes	no	yes
Mar 24, 2005	increase	Cte	-,+		No	+Medium		no	no	yes	yes	no	yes
Apr 26, 2005	increase	0,+	0,+	0,-	Yes	Medium		no	no	yes	yes	no	—
May 27, 2005	increase	Cte	-0	-0	Yes	Medium	High	no	no	yes	yes	no	—
Jun 23, 2005	maintain	Cte	Cte		Yes	Null		no	yes	no	yes	no	—
Jul 28, 2005	maintain	-0	+0		Yes	Low	High	no	yes	no	yes	no	—
Aug 25, 2005	maintain	Cte	Cte	-0	Yes	+Low		no	yes	no	yes	no	—
Sep 22, 2005	reduce	0,+	0,-		No	+Low		no	no	yes	yes	no	—
Oct 27, 2005	reduce	Cte	Cte		Yes	Medium		no	no	yes	yes	no	yes

COPOM signaled to the market that the inertial inflation would be combated until it vanished. The indication that there would be a continued increase in the SELIC provoked a strong increase in the difference between the 6-month future interest rate and the 1-month rate (see Table 4, the line relative to the minutes of December 23, 2004, column “3-1 level”). This behavior is repeated in the subsequent minutes. However, in the minutes of February 24, 2005, the large difference between the 6-month and 1-month rates starts to fall (-high), and in the next COPOM minutes the difference changes to “medium.” In this sense, the interest rates with a higher maturity are less sensitive to the passage of time due to the fact that the economic actors anticipated the adjustments in SELIC.

The analysis concerning the volatilities of the series (in first difference) is presented in the columns Rate 1, Rate 3, and Rate 6 of Table 4). These columns permit the analysis of the anchor and the change in the behavior of the economic actors. The volatility is similar to that observed in the column relative to the level of spread between future interest rates. In periods when COPOM announces that it will increase the SELIC until it achieves a level that will be maintained “for a sufficiently long period,” the volatility in the minutes of December 23, 2004, and January 27, 2005, changes from 0 to +, and in the minutes of February 24, 2005, the volatility remains constant.⁸ This observation strengthens the results found in the analysis concerning the level of variables where the interest rates with a higher maturity depart from those with a lower maturity. Due to the indication by COPOM that the SELIC will be maintained for a sufficiently long period, the public bets on lower differences among the future interest rates. Another regularity, which is observed in Table 2, refers to the fact that when the expression “for a sufficiently long period” is published, the rate at which expectations readjust for different interest rates is similar.

The information in Table 4 permits the observation of a sudden movement in the volatility when the CBB adds some information to the minutes (or when it explains the unanimous voting, or when it uses the expression “wait for”). The minutes of February 25, 2004, May 27, 2004, September 23, 2004, and March 24, 2005, are those that cause the higher change in the behavior of volatility. The

⁸In this case, “zero” means that the volatility goes to zero (when zero is after the comma) or it starts from zero (when zero is before the comma).

minutes of June 23, 2005, and July 28, 2005, call our attention to the fact that COPOM announced that it would maintain a stable SELIC “for a sufficiently long period.” In this case, the introduction of the expression “for a sufficiently long period” implies a particular movement—the first differences of all future interest rates follow the same path. Following the minutes of September 22, 2005, these interest rates converged to a first difference close to zero. Although the fact that, in the minutes of June 23, 2005, the volatility did not change, the interest rates in the minutes of July 28, 2005 have a different readjustment rate and their volatilities tended to zero following COPOM publication.

Another way to analyze the change in the behavior of economic actors among different periods of opacity and transparency is through an analysis of descriptive statistics. Table 5 shows the kurtosis relative to the future interest rates for different maturities. The objective is to analyze the impact of the words used by COPOM on

TABLE 5
KURTOSIS IN THE PERIOD WITH
HIGHER CBB TRANSPARENCY

Kurtosis	Future Interest Rate (1 month)	Future Interest Rate (3 months)	Future Interest Rate (6 months)
July 27, 2004, to December 2, 2005	1.918	2.070	2.007
January 15, 2004, to July 26, 2004	2.201	1.742	1.361

market behavior. The kurtosis for the period with high CBB transparency (July 27, 2004, to December 2, 2005) is higher than the period between January 1, 2004, and July 26, 2004. This observation is valid for all series except for the future interest rate (1 month). If the asymmetry is compared the same conclusion from the kurtosis analysis is reached. In other words, in the periods of transparency, the relative prices took into consideration more information on the economic future than in the periods that the CBB only announces

the SELIC target without the intensity of adjustment over time.

Conclusion

The kurtosis analysis showed that the public's expectations are anchored to the CBB's Inflation Report. Furthermore, the low frequency of these publications together with the prospective analysis concerning future inflation (and its risks) affect, with more intensity, the variables related to inflation targeting. The uncertainty in relation to the behavior of President Lula in the first mandate reduced the capacity of the CBB to anchor long-run inflation expectations. Therefore, the political opacity neutralized the advantages due to the economic transparency, and the adoption of a forecast policy did not have the desired effect. Bernanke (2004b) calls the forecast policies "forecast rules," and he highlights the increase in the use of this strategy compared with "feedback rules" (e.g., the Taylor rule). In the period between the second half of 2002 and 2003, the advantages of the forecast rules were neutralized by opacity, which meant that the feedback rules became the instrument for guiding the public's expectations.

The presence of an abnormal reaction of macroeconomic variables denotes a lower capacity of economic actors to anticipate the CBB's behavior at the moment of political crisis. In this sense, political opacity negates the advantages of transparency in monetary policy decisions. Hence, damage may be caused by the implementation of an inefficient monetary policy. Our results for the Brazilian economy, therefore, are similar to those found by Clare and Courtenay (2001).

In short, it is observed that an increase in the CBB's transparency, together with an increase in the quality of information, implies a significant change in the rate of readjustment of market expectations. This observation strengthens Winkler's (2000) argument that central bank transparency is beneficial to the economy when there is political stability. Furthermore, central bank transparency helps anchor the public's inflation expectations and long-run interest rates.

References

- Bernanke, B. S. (2004a) "Central Bank Talk and Monetary Policy." Remarks at the Japan Society corporate luncheon, New York (7 October).

- _____ (2004b) “The Logic of Monetary Policy.” Remarks at the National Economists Club, Washington, D.C. (2 December).
- Cecchetti, S. G., and Krause, S. (2002) “Central Bank Structure, Policy Efficiency, and Macroeconomic Performance: Exploring Empirical Relationships.” *Federal Reserve Bank of St. Louis Review* 84 (4): 47–59.
- Chortareas, G.; Stavage, D.; and Sterne, G. (2002) “Does It Pay to Be Transparent? International Evidence from Central Bank Forecasts.” *Federal Reserve Bank of St. Louis Review* 84 (4): 99–118.
- Clare, A., and Courtenay, R. (2001) “What Can We Learn about Monetary Policy Transparency from Financial Market Data?” *Bundesbank Discussion Paper* 06/01.
- de Mendonça, H. F. (2007) “Towards Credibility from Inflation Targeting: The Brazilian Experience.” *Applied Economics* 39 (20): 2599–2615.
- Ehrmann, M., and Fratzscher, M. (2005) “The Timing of Central Bank Communication.” Working Paper Series 565. European Central Bank.
- Muller, P., and Zelmer, M. (1999) “Greater Transparency in Monetary Policy: Impact on Financial Markets.” Bank of Canada Technical Report 86.
- Siklos, P. L. (2000) “Monetary Policy Transparency, Public Commentary, and Market Perceptions about Monetary Policy in Canada.” Discussion Paper Series 1: Economic Studies 2000, 08. Deutsche Bundesbank, Research Centre.
- Winkler, B. (2000) “Which Kind of Transparency? On the Need for Clarity in Monetary Policy-Making.” ECB Working Paper No. 26. European Central Bank (August).
- Woodford, M. (2005) “Central Bank Communication and Policy Effectiveness.” NBER Working Paper No. 11898. Cambridge, Mass.: National Bureau of Economic Research.