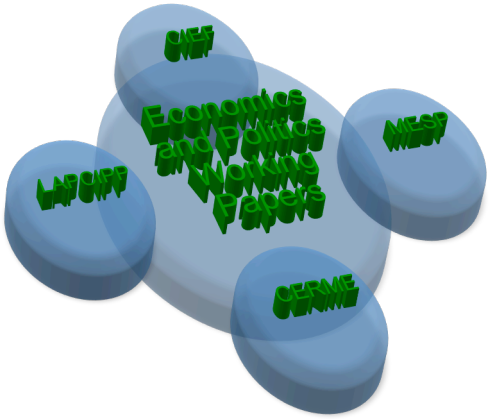

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A Brief Analysis of Aggregate Measures as an Alternative to the Median at Central Bank of Brazil's Survey of Professional[*] Forecasts

Fabia A. de Carvalho[**]

Abstract

This paper presents a brief analysis of representative measures of inflation expectations from Central Bank of Brazil's Survey of Professional Forecasts that are alternative to the median response. We build time series with the mode and core measures of inflation expectations from the panel of professional forecasts surveyed from January 2002 to September 2012. We compare them to the median response with respect to their predictive power in a 12-month-ahead horizon. We also compare the predictive power of the alternative measures with the realized core of consumer price inflation.

Key-words: inflation expectations, market forecasts, median, core inflation, trimmed core inflation, Brazil

JEL: E37; E58

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1. Introduction

Market forecasts surveyed by the Central Bank of Brazil since 1999 are reported daily at the institution's website and published weekly at the "Focus" reports. They have become an important reference to the discussion of macroeconomic prospects in Brazil, especially with respect to inflation. The univariate measures that are usually chosen to represent the panel of forecasts both at the "Focus" reports and at the Inflation Report (Chapter 6) are the median forecasts and their standard deviations[1]. Throughout the rest of the world, the use of the panel median or mean is also widely disseminated[2].

Carvalho e Minella (2012) present a detailed study of the predictive power of the median forecasts surveyed by the Central Bank of Brazil for a 12-month-ahead horizon. They show that in the analyzed period, the median response does not present systematic bias, which implies a reasonable predictive power, in spite of their failure in efficiency tests. Other studies have investigated the predictive power of the median response of Central Bank of Brazil's survey for varied forecast horizons[3].

This paper assesses the predictive power of other measures representative of the panel of inflation forecasts surveyed by the Central Bank of Brazil. In particular, we build series of modes and core measures of inflation forecasts for a 12-month-ahead horizon.

Except for the symmetric trimmed mean core and for one of the asymmetric core measures, all measures that we investigate are statistically different from the median response. In terms of predictive power, all measures present systematic bias in the complete sample. The evidence of bias is slightly smaller for the median. However, this conclusion does not hold for shorter sub-samples. Furthermore, for the complete sample, the investigated measures are more appropriate proxies of the smoothed trimmed core inflation index than of the actual headline consumer price inflation. Except for the mode, the investigated measures do not present systematic bias when compared to the core inflation. Notwithstanding, for subsamples beginning in January 2003 or January 2004, which are less contaminated by the

[1] More recently, in the Inflation Report of March 2011, the Central Bank of Brazil started to publish the median of segments of suvey participants.
[2] For instance, the Inflation Perspectives chapter of Bank of England's Inflation Report reports the mean expectations of a group of surveyed professionals. The mean is also the representative measure chosen to report the Macro Markets Home Price Expectations Survey, as well as Consensus Economics forecasts, which, in turn, also reports the individual forecasts. US Michigan Survey of Expectations reports the median response as its representative measure.
[3] Kohlscheen (2010) and Carvalho and Bugarin (2006), for instance.

confidence crisis that had hit the economy in previous years, all measures present systematic bias when compared to the inflation core.

2. Building Measures that are Representative of the Panel of Inflation Forecasts

Aggregate measures such as the mean, median and standard deviation of the expectations panel surveyed by the Central Bank of Brazil, and others derived from these three, are reported daily at the central bank's website (https://www3.bcb.gov.br/expectativas/publico/en/serieestatisticas). The survey currently encompasses over 100 registered participants[4].

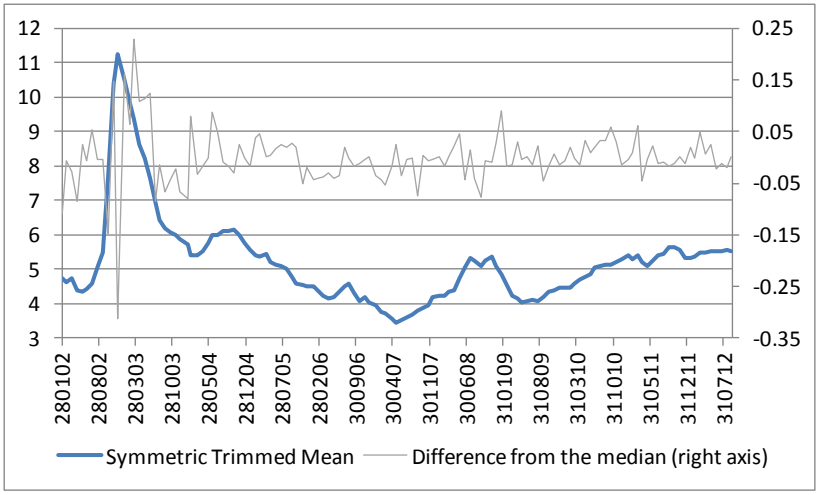
We used the complete data base of the survey, from January 2002 to September 2012, to build five core inflation expectations series in addition to a series of modes. The methodology is detailed in what follows. For all series, the data refer to forecasts surveyed at each day of the month corresponding to the day previous to that used to produce the Top-5 rank published by the Investor's Relations Office of the Central Bank of Brazil. The forecast horizon considered was 12-months, accumulated from the month following the survey date onwards.

The first core measure built for this study was the symmetric trimmed mean (Figure 1 and Appendix). Its computation involved ordering all projections according to their magnitude at each sampling day, and excluding those placed in the outer 10% ranges. The remaining 80% of the individual forecasts were used to calculate the mean.

[4] For a complete description of the survey's data base, please refer to Marques, Fachada e Cavalcanti (2003).

Figure 1

Symmetric Trimmed Mean Core of 12-Month-Ahead Inflation Expectations



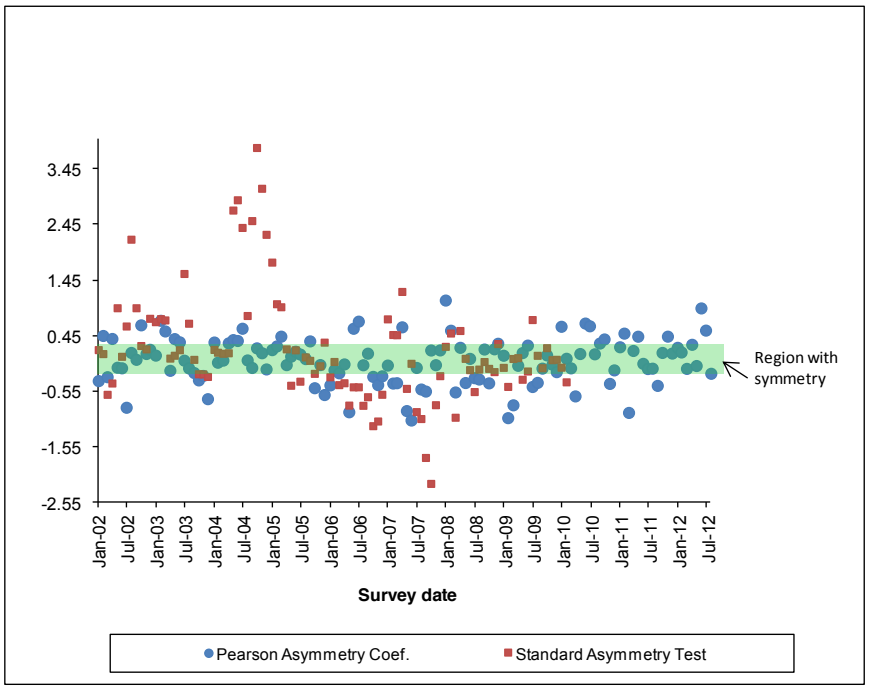
Second, we built an asymmetric median and mean core of inflation expectations. To this end, we carried out two asymmetry tests at each surveyed date: one based on Pearson's asymmetry coefficient[5] and another based on the third moment of the sampling distribution[6]. In both tests, distributions are classified as asymmetric when the absolute value of the resulting asymmetry coefficient is larger than 0.3. The results of this initial identification test of asymmetry in the expectations series are reported in Figure 2. The direction of the asymmetry does not always coincide in both tests. In fact, there was contradiction in 40% of the sample.

[5] Pearson's Asymmetry coefficient = ((Mode - Mean)/(Standard Deviation)). The mode was computed according to the methodology described in this paper.

6 $\text{Asymmetry}\,(x) = \frac{E(x-Mean(x))^3}{(Std(x))^3}$

Figure 2

Asymmetry Tests of the 12-Month-Ahead Inflation Expectations Distributions



After determining whether the distribution of expectations at each survey date is symmetric or not according to each type of asymmetry test, we removed the outliers as follows:

- If the distribution was found to be asymmetric, we removed the 2.5% smallest and the 2.5% highest values of the sample at each survey date;
- If the distribution was asymmetric to the left (i.e., mode < mean), we removed the 5% highest values of the sample at each survey date;
- If the distribution was asymmetric to the right (i.e., mode > mean), we removed the 5% lowest values of the sample at each survey date.

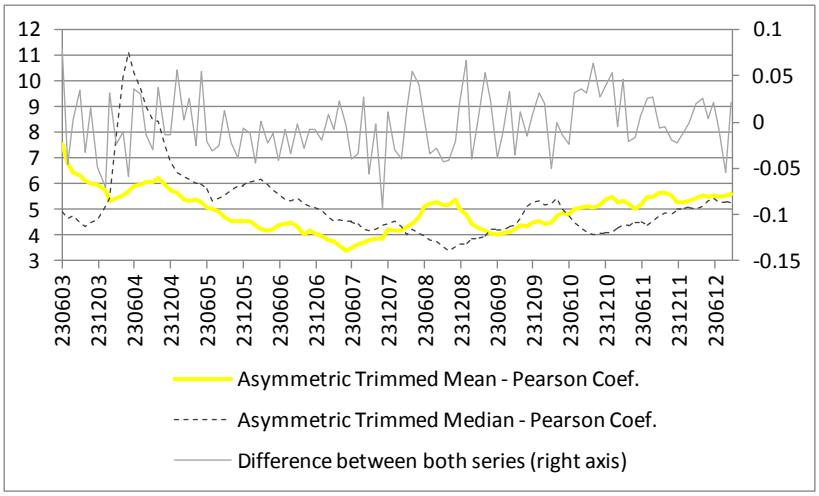
This asymmetric trimming methodology is used by the Central Bank of Brazil to calculate the daily average base rate (Selic), aiming at eliminating observations that are less representative of the aggregate forecast and which might bias the sample mean.

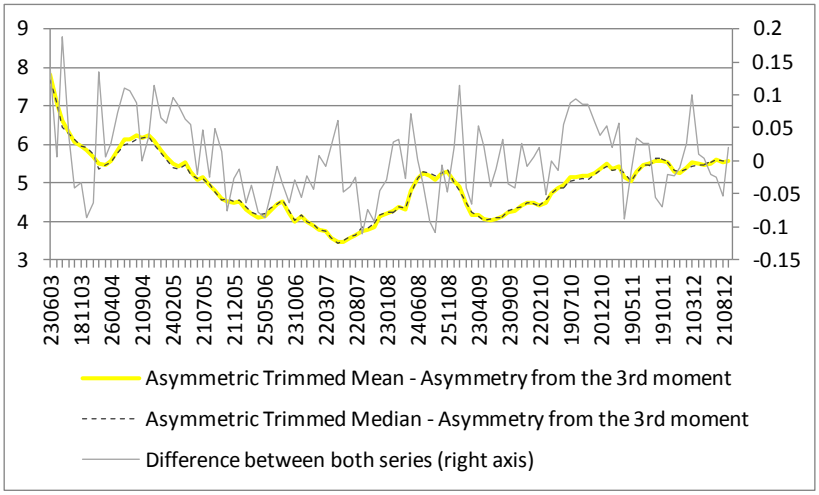
There is an important degree of arbitrariness in the construction of asymmetric core measures. First, the size of the trim (5%) in the distribution tails, regardless of the degree of asymmetry found, does not necessarily imply that the remaining distribution will be void of asymmetry. Second, the methodology requires computation of the sample mode, which also

bears an important degree of arbitrariness. The resulting asymmetric core series are presented in Figure 3 and in the appendix.

Figure 3

Asymmetric Core Measures of 12-Month-Ahead Inflation Expectations



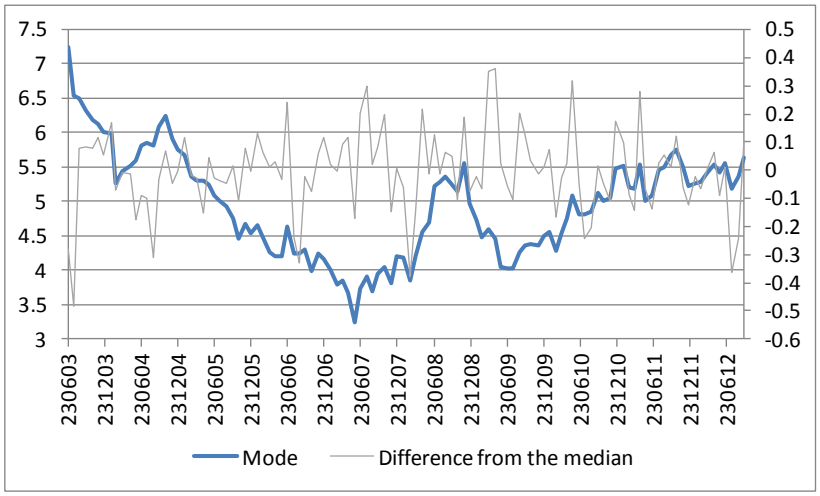


Finally, we build a series of modes at each survey date (Figure 4 and appendix). The mode is more representative of a "consensus" measure than the median. However, its computation is not straightforward. To compute the mode, we first built distribution histograms of the forecasts at each survey date. Following, we identified the mean point of the interval with the highest concentration of forecasts. This calculation, however, is sensitive to

the size of the bin chosen to slice the sample. The choice of the size of the bin for each survey date was arbitrary, and had the purpose of obtaining only one modal bin.

Figure 4

Mode of 12-Month-Ahead Inflation Expectations



3. Comparing the Alternative Measures to the Median and Testing its Predictive Power

We carried out statistical tests to investigate whether the alternative measures representative of inflation forecasts were statistically different from the median. These tests are inspired in the unbiasedness tests traditionally used in the literature (e.g., Marimon and Sunder (1993), Zarnowitz (1985), and Keane and Runkle (1990)). The tests consist of assessing the joint null H0: c(1)=0 and c(2)=1 in the equation:

$$\text{Alternative Measure} = c(1) + c(2) * \text{Median} + \text{White noise} \qquad (1)$$

Rejecting H0 implies that the alternative measure under evaluation is statistically different from the median. The results are reported in Tables A1 and A3 in the appendix.

The series of symmetric trimmed means is statistically indistinguishable from the series of medians. With respect to the asymmetric trimmed mean and median cores, the statistical tests point to important differences between the core series and the median. The only exception is one of the core series obtained from the Pearson coefficient.

With respect to the mode, when we built the histograms, we noticed that the shape of the forecast distribution is highly variable over the sampled period, presenting great asymmetry at certain moments. The tests indicate a significant difference between the mode and the median.

Comparing the alternative measures with the realized value of consumer inflation (IPCA), we tested the null H0: c(1)=0 at the equation

$$\text{Forecast bias of the alternative measure} = c(1) + \text{noise (MA(12))} \qquad (2)$$

where the bias present in the alternative measure corresponds to the difference between the headline consumer inflation and the considered alternative measure of inflation forecasts. Rejecting H0 implies that there is evidence of bias in the forecasts. In addition, we used a Newey-West covariance matrix with MA(12)[7] errors, as suggested by Keane e Runkle (1990), since the forecast errors for a 12-month-ahead horizon accumulate along these months in face of unexpected shocks.

The predictive power of inflation expectations can be measured by the p-value obtained in the unbiasedness tests. The lower the p-value, the stronger the evidence of systematic forecast bias. Table 1 presents the p-values of the unbiasedness tests for 12-month-ahead inflation forecasts compared with the realized headline consumer inflation. The tests use data up to December 2011 since market expectations surveyed at that date refer to realized inflation 12 months ahead, i.e., accumulated until December 2012, which corresponds to the last date for which actual inflation data was available when this paper was prepared.

[7] For further details on the reasons for using the correction in the covariance matrix for these tests, please refer to Carvalho and Minella (2012).

Table 1
P-value of the Unbiasedness Tests for 12-Month-Ahead Inflation Expectations

		2002:1 to 2011:12	2004:1 to 2011:12	2003:1 to 2011:12
Complete Panel	Median	0.015	0.016	0.120
	Mean	0.008	0.018	0.167
	Mode	0.012	0.014	0.081
Symmetric core (trimming 10% of each tail)	Trimmed Mean	0.008	0.016	0.143
Asymmetric core				
Pearson Coef.	Trimmed Mean	0.009	0.017	0.138
	Trimmed Median	0.017	0.017	0.115
3rd moment criterium	Trimmed Mean	0.008	0.023	0.197
	Trimmed Median	0.012	0.019	0.138

The results of the unbiasedness tests show that, for the complete sample, all statistics present systematic bias. When we select sub-samples that exclude one or another crisis period, the results change. In Carvalho and Minella (2012), a chosen sub-sample started in January 2004, which excludes the effects of a crisis of confidence in the future conduct of monetary policy after a leftist presidential candidate was elected back in 2002. Since the data sample used in that work went until 2007, the authors could not find any indication of bias in the median inflation expectation for that subperiod. However, in 2007 and 2010, there were important forecast errors, and the tests considered in this paper still point to a systematic bias in all investigated statistics, even if we exclude the confidence crisis. If we restrict the sample to begin in January 2003, when the forecast errors were strongly negative, in average these errors cancel out with the positive errors of the following year, and the tests reject the null of a systematic bias.

4. Are Inflation Expectations Better Indicators of the Headline Consumer Inflation or of the Core Inflation?

Ranchhod (2003) carries out exercises to verify the predictive power of inflation expectations surveyed in New Zealand. One of the results obtained is that, even when survey participants forecast headline inflation, their forecasts are a more adequate representation of smoothed measures of inflation, such as exclusion core indices. The reason seems to be that inflation of more volatile items in the consumer price index is more difficult to be anticipated.

Inspired by that work, we compared inflation expectations for the headline inflation in Brazil with actual values of the smoothed and trimmed mean core index for consumer price inflation. The results are presented at Table A4 in the appendix.

In the complete sample,[8] the unbiasedness tests do not indicate systematic bias in forecasts when compared with the core inflation. The only exception to that was the mode. However, this result is strongly affected by counterbalance of the sizable positive forecast errors at the beginning of the series with the sizable negative forecast errors observed in 2006 and 2008. If we begin the tests in January 2004, all investigated statistics show an important forecast bias.

5. Concluding Remarks

This brief paper shows that the mode of inflation expectations for a 12-month-ahead horizon and a great number of asymmetric core measures present important differences with respect to the median inflation expectation.

In the complete sample, which includes years in which the crisis of confidence in the future conduct of economic policy in Brazil affected most noticeably the predictive power of inflation expectations from professional forecasters, all analyzed measures (median, symmetric trimmed cored, asymmetric core and mode) present systematic forecast bias for the headline consumer inflation. However, in the sub-sample that begins in January 2003, the analyzed inflation forecasts cease to present bias, likely due not to an improvement in predictive capacity, but to statiscal cancelling out of positive through negative errors. In fact, the choice of subsample influences the result.

Inspired in Ranchhod (2003), we carry out tests to check whether the forecasts made for the headline inflation are more appropriate representations of a less volatile measure of inflation, such as the smoothed trimmed core consumer inflation. Contrary to the unbiasedness tests for the headline inflation, there is no indication of systematic bias in the analyzed measures (with the exception of the mode using a 95% confidence interval) when we compare the inflation expectations with the core inflation. However, for subsamples beginning in January 2003 or January 2004, the tests indicate forecast bias.

[8] We did not carry out tests for the trimmed median or mean core.

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Appendix

Table A1

Test of Statistical Difference Between the Symmetric Trimmed Mean and the Median 12-Month-ahead Inflation Expectations

Dependent Variable (Y): Symmetric Trimmed Mean Core of Inflation Expectations
Sample: Jan 2002 to Sep 2012
Number of Observations: 129
Equation: Y = c(1) + c(2)*Median of Infl. Expectations

	Coefficient	Std	t-ratio	P-value
C(1)	-0.037	0.020	-1.840	0.068
C(2)	1.007	0.004	273.266	0.000

R2	0.998302	Mean dependent var	5.216861
adjusted R2	0.998289	SD dependent var	1.357727
Regression Std	0.056165	Akaike	-2.90568
SSR	0.400616	Schwarz	-2.861342
Log likelihood	189.4163	Hannan-Quinn	-2.887664
F-Statistics	74674.53	Durbin-Watson	2.187917
Prob(F-Statistics)	0		

Wald Test: c(1)=0, c(2)=1

Test Statistic	Value	dF	Probability
F-Statistics	1.727744	(2, 127)	0.1818
Chi-square	3.455488	2	0.1777

Table A2
Tests of Statistical Difference Between the Asymmetric Trimmed Mean and Median Core and the Median Inflation Expectations

Dependent variable (Y): Asymmetric Trimmed Mean Core of Inflation Expectations (Pearson Coeff.)

Sample: Jan 2002 to Sep 2012
Number of obs: 129
Equation: Y = c(1) +c(2)*Median Expectations

	Coefficient	Std	t-ratio	P-value
C(1)	0.000	0.022	-0.002	0.999
C(2)	1.000	0.004	245.890	0.000

R2	0.997904	Mean dependent var	5.216725
adjusted R2	0.997887	SD dependent var	1.348531
Regression Std	0.061982	Akaike	-2.708548
SSR	0.487912	Schwarz	-2.66421
Log likelihood	176.7013	Hannan-Quinn	-2.690532
F-Statistics	60462.02	Durbin-Watson	1.80517
Prob(F-Statistics)	0		

Wald Test: c(1)=0, c(2)=1

Test Statistic	Value	dF	Probability
F-statistic	0.022819	(2, 127)	0.9774
Chi-square	0.045638	2	0.9774

Dependent variable (Y): Asymmetric Trimmed Median Core of Inflation Expectations (Pearson Coeff.)

Sample: Jan 2002 to Sep 2012
Number of obs: 129
Equation: Y = c(1) +c(2)*Median Expectations

	Coefficient	Std	t-ratio	P-value
C(1)	0.041	0.010	3.952	0.000
C(2)	0.992	0.002	517.150	0.000

R2	0.999525	Mean dependent var	5.215422
adjusted R2	0.999522	SD dependent var	1.336546
Regression Std	0.029233	Akaike	-4.211672
SSR	0.108528	Schwarz	-4.167334
Log likelihood	273.6529	Hannan-Quinn	-4.193657
F-Statistics	267443.7	Durbin-Watson	1.867673
Prob(F-Statistics)	0		

Wald Test: c(1)=0, c(2)=1

Test Statistic	Value	dF	Probability
F-statistic	9.79399	(2, 127)	0.0001
Chi-square	19.58798	2	0.0001

Dependent variable (Y): Asymmetric Trimmed Mean Core of Inflation Expectations (Asymmetry measured by the 3rd moment)

Sample: Jan 2002 to Sep 2012
Number of obs: 108
Equation: Y = c(1) +c(2)*Median Expectations

	Coefficient	Std	t-ratio	P-value
C(1)	-0.189	0.036	-5.234	0.000
C(2)	1.041	0.007	155.116	0.000

R2	0.994749	Mean dependent var	5.242026
adjusted R2	0.994708	SD dependent var	1.406198
Regression Std	0.102294	Akaike	-1.706541
SSR	1.328946	Schwarz	-1.662203
Log likelihood	112.0719	Hannan-Quinn	-1.688526
F-Statistics	24060.97	Durbin-Watson	1.654712
Prob(F-Statistics)	0		

Wald Test: c(1)=0, c(2)=1

Test Statistic	Value	dF	Probability
F-statistic	22.17044	(2, 127)	0
Chi-square	44.34087	2	0

Dependent variable (Y): Asymmetric Trimmed Median Core of Inflation Expectations (Asymmetry from the 3rd moment)

Sample: Jan 2002 to Sep 2012
Number of obs: 129
Equation: Y = c(1) +c(2)*Median Expectations

	Coefficient	Std	t-ratio	P-value
C(1)	-0.036	0.010	-3.603	0.000
C(2)	1.008	0.002	541.864	0.000

R2	0.999568	Mean dependent var	5.22563
adjusted R2	0.999564	SD dependent var	1.35903
Regression Std	0.028369	Akaike	-4.271629
SSR	0.102212	Schwarz	-4.227291
Log likelihood	277.5201	Hannan-Quinn	-4.253614
F-Statistics	293616.4	Durbin-Watson	1.593859
Prob(F-Statistics)	0		

Wald Test: c(1)=0, c(2)=1

Test Statistic	Value	dF	Probability
F-statistic	15.06299	(2, 127)	0
Chi-square	30.12599	2	0

Table A3

Test of Statistical Difference Between the Mode and the Median Inflation Expectations

Dependent variable (Y): Mode of Inflation Expectations
Sample: Jan 2002 to Sep 2012
Number of obs: 129
Equation: Y = c(1) +c(2)*Median Expectations

	Coefficient	Std	t-ratio	P-value
C(1)	0.367	0.069	5.346	0.000
C(2)	0.925	0.013	72.629	0.000

R2	0.97649	Mean dependent var	5.195851
adjusted R2	0.976305	SD dependent var	1.261863
Regression Std	0.194242	Akaike	-0.424042
SSR	4.791699	Schwarz	-0.379704
Log likelihood	29.35074	Hannan-Quinn	-0.406027
F-Statistics	5274.929	Durbin-Watson	1.99016
Prob(F-Statistics)	0		

Wald Test: c(1)=0, c(2)=1

Test Statistic	Value	dF	Probability
F-statistic	17.94627	(2, 127)	0
Chi-square	35.89254	2	0

Table A4

P-value of the Unbiasedness Tests of Aggregate Measures of Inflation Expectations as Predictions for the Symmetric Trimmed Mean Core of Realized Consumer Inflation (IPCA)[9]

	Jan 2002 to Sep 2012	Jan 2004 to Sep 2012
Median	0.2184	0.0001
Mean	0.0975	0.0000
Mode	0.0433	0.0002
Symmetric Core of Expectations	0.1138	0.0000

[9] Test equation: Forecast error of the measure representative of expectations = c(1) + noise (MA(12)). The p-values shown refer to the test with H0: c(1) = 0

Table A5
Series of Measures Representative of Inflation Expectations for the 12-Month-Ahead Consumer Inflation (IPCA)

	Mode of 12-month-ahead Inflation Expectations		
Jan-01	5.0	Jun-06	3.7
Feb-01	4.8	Jul-06	3.9
Mar-01	4.6	Aug-06	3.7
Apr-01	4.5	Sep-06	4.0
May-01	4.1	Oct-06	4.1
Jun-01	4.6	Nov-06	3.8
Jul-01	4.6	Dec-06	4.2
Aug-01	5.7	Jan-07	4.2
Sep-01	5.5	Feb-07	3.9
Oct-01	8.0	Mar-07	4.2
Nov-01	8.8	Apr-07	4.6
Dec-01	11.0	May-07	4.7
Jan-02	10.3	Jun-07	5.2
Feb-02	9.8	Jul-07	5.3
Mar-02	8.4	Aug-07	5.4
Apr-02	8.1	Sep-07	5.2
May-02	8.4	Oct-07	5.1
Jun-02	7.3	Nov-07	5.6
Jul-02	6.5	Dec-07	5.0
Aug-02	6.5	Jan-08	4.7
Sep-02	6.3	Feb-08	4.5
Oct-02	6.2	Mar-08	4.6
Nov-02	6.1	Apr-08	4.5
Dec-02	6.0	May-08	4.0
Jan-03	6.0	Jun-08	4.0
Feb-03	5.3	Jul-08	4.0
Mar-03	5.4	Aug-08	4.3
Apr-03	5.5	Sep-08	4.4
May-03	5.6	Oct-08	4.4
Jun-03	5.8	Nov-08	4.4
Jul-03	5.9	Dec-08	4.5
Aug-03	5.8	Jan-09	4.6
Sep-03	6.1	Feb-09	4.3
Oct-03	6.2	Mar-09	4.5
Nov-03	5.9	Apr-09	4.6
Dec-03	5.8	May-09	5.1
Jan-04	5.7	Jun-09	4.8
Feb-04	5.4	Jul-09	4.8
Mar-04	5.3	Aug-09	4.9
Apr-04	5.3	Sep-09	5.1
May-04	5.2	Oct-09	5.0
Jun-04	5.1	Nov-09	5.0
Jul-04	5.0	Dec-09	5.5
Aug-04	4.9	Jan-10	5.5
Sep-04	4.7	Feb-10	5.2
Oct-04	4.5	Mar-10	5.2
Nov-04	4.7	Apr-10	5.5
Dec-04	4.5	May-10	5.0
Jan-05	4.7	Jun-10	5.1
Feb-05	4.5	Jul-10	5.5
Mar-05	4.3	Aug-10	5.5
Apr-05	4.2	Sep-10	5.7
May-05	4.2	Oct-10	5.8
Jun-05	4.6	Nov-10	5.5
Jul-05	4.2	Dec-10	5.2
Aug-05	4.2	Jan-11	5.3
Sep-05	4.3	Feb-11	5.3
Oct-05	4.0	Mar-11	5.4
Nov-05	4.2	Apr-11	5.5
Dec-05	4.2	May-11	5.4

	Asymmetric Trimmed Median Core of Inflation Expectations (Asymmetry from the 3rd moment)		
Jan-01	4.9	Jun-06	3.5
Feb-01	4.6	Jul-06	3.6
Mar-01	4.8	Aug-06	3.7
Apr-01	4.4	Sep-06	3.8
May-01	4.3	Oct-06	3.8
Jun-01	4.5	Nov-06	3.9
Jul-01	4.5	Dec-06	4.2
Aug-01	5.1	Jan-07	4.2
Sep-01	5.5	Feb-07	4.2
Oct-01	7.9	Mar-07	4.4
Nov-01	10.2	Apr-07	4.3
Dec-01	11.6	May-07	4.7
Jan-02	10.4	Jun-07	5.1
Feb-02	9.8	Jul-07	5.3
Mar-02	9.3	Aug-07	5.3
Apr-02	8.6	Sep-07	5.2
May-02	8.1	Oct-07	5.3
Jun-02	7.5	Nov-07	5.4
Jul-02	7.0	Dec-07	5.1
Aug-02	6.4	Jan-08	4.8
Sep-02	6.3	Feb-08	4.5
Oct-02	6.1	Mar-08	4.2
Nov-02	6.0	Apr-08	4.1
Dec-02	6.0	May-08	4.0
Jan-03	5.8	Jun-08	4.1
Feb-03	5.3	Jul-08	4.1
Mar-03	5.4	Aug-08	4.1
Apr-03	5.5	Sep-08	4.2
May-03	5.8	Oct-08	4.3
Jun-03	6.0	Nov-08	4.4
Jul-03	6.0	Dec-08	4.5
Aug-03	6.1	Jan-09	4.5
Sep-03	6.2	Feb-09	4.4
Oct-03	6.2	Mar-09	4.6
Nov-03	6.0	Apr-09	4.7
Dec-03	5.8	May-09	4.9
Jan-04	5.6	Jun-09	4.9
Feb-04	5.4	Jul-09	5.1
Mar-04	5.4	Aug-09	5.1
Apr-04	5.5	Sep-09	5.1
May-04	5.2	Oct-09	5.1
Jun-04	5.1	Nov-09	5.2
Jul-04	5.1	Dec-09	5.3
Aug-04	5.0	Jan-10	5.4
Sep-04	4.7	Feb-10	5.3
Oct-04	4.6	Mar-10	5.4
Nov-04	4.6	Apr-10	5.2
Dec-04	4.5	May-10	5.0
Jan-05	4.5	Jun-10	5.3
Feb-05	4.4	Jul-10	5.4
Mar-05	4.3	Aug-10	5.5
Apr-05	4.2	Sep-10	5.6
May-05	4.2	Oct-10	5.6
Jun-05	4.3	Nov-10	5.5
Jul-05	4.5	Dec-10	5.3
Aug-05	4.5	Jan-11	5.3
Sep-05	4.3	Feb-11	5.4
Oct-05	4.0	Mar-11	5.4
Nov-05	4.2	Apr-11	5.5
Dec-05	4.0	May-11	5.5

Asymmetric Trimmed Median Core of Inflation
Expectations (Pearson's Coef.)

Jan-01	4.9	Jun-06	3.6
Feb-01	4.6	Jul-06	3.7
Mar-01	4.7	Aug-06	3.7
Apr-01	4.5	Sep-06	3.9
May-01	4.3	Oct-06	3.9
Jun-01	4.4	Nov-06	4.0
Jul-01	4.5	Dec-06	4.2
Aug-01	5.1	Jan-07	4.2
Sep-01	5.5	Feb-07	4.2
Oct-01	7.9	Mar-07	4.3
Nov-01	10.1	Apr-07	4.4
Dec-01	11.6	May-07	4.7
Jan-02	10.3	Jun-07	5.1
Feb-02	9.8	Jul-07	5.3
Mar-02	9.0	Aug-07	5.3
Apr-02	8.5	Sep-07	5.2
May-02	8.1	Oct-07	5.3
Jun-02	7.5	Nov-07	5.4
Jul-02	6.8	Dec-07	5.1
Aug-02	6.4	Jan-08	4.7
Sep-02	6.2	Feb-08	4.5
Oct-02	6.1	Mar-08	4.3
Nov-02	6.0	Apr-08	4.1
Dec-02	6.0	May-08	4.0
Jan-03	5.8	Jun-08	4.1
Feb-03	5.3	Jul-08	4.1
Mar-03	5.4	Aug-08	4.1
Apr-03	5.5	Sep-08	4.3
May-03	5.7	Oct-08	4.3
Jun-03	5.9	Nov-08	4.4
Jul-03	5.9	Dec-08	4.5
Aug-03	6.1	Jan-09	4.5
Sep-03	6.1	Feb-09	4.4
Oct-03	6.2	Mar-09	4.6
Nov-03	6.0	Apr-09	4.7
Dec-03	5.8	May-09	4.9
Jan-04	5.6	Jun-09	4.9
Feb-04	5.4	Jul-09	5.0
Mar-04	5.3	Aug-09	5.0
Apr-04	5.4	Sep-09	5.1
May-04	5.2	Oct-09	5.1
Jun-04	5.1	Nov-09	5.1
Jul-04	5.1	Dec-09	5.3
Aug-04	5.0	Jan-10	5.4
Sep-04	4.7	Feb-10	5.3
Oct-04	4.6	Mar-10	5.3
Nov-04	4.6	Apr-10	5.3
Dec-04	4.5	May-10	5.0
Jan-05	4.5	Jun-10	5.2
Feb-05	4.4	Jul-10	5.4
Mar-05	4.3	Aug-10	5.5
Apr-05	4.2	Sep-10	5.7
May-05	4.2	Oct-10	5.7
Jun-05	4.4	Nov-10	5.5
Jul-05	4.5	Dec-10	5.3
Aug-05	4.5	Jan-11	5.3
Sep-05	4.3	Feb-11	5.3
Oct-05	4.1	Mar-11	5.4
Nov-05	4.2	Apr-11	5.5
Dec-05	4.1	May-11	5.5

Symmetric Core of Inflation Expectations

Jan-01	4.8	Jun-06	3.5
Feb-01	4.6	Jul-06	3.6
Mar-01	4.7	Aug-06	3.7
Apr-01	4.4	Sep-06	3.8
May-01	4.4	Oct-06	3.9
Jun-01	4.4	Nov-06	4.0
Jul-01	4.6	Dec-06	4.2
Aug-01	5.1	Jan-07	4.2
Sep-01	5.5	Feb-07	4.2
Oct-01	7.7	Mar-07	4.4
Nov-01	10.4	Apr-07	4.4
Dec-01	11.3	May-07	4.7
Jan-02	10.5	Jun-07	5.0
Feb-02	9.9	Jul-07	5.3
Mar-02	9.4	Aug-07	5.3
Apr-02	8.6	Sep-07	5.1
May-02	8.2	Oct-07	5.2
Jun-02	7.7	Nov-07	5.4
Jul-02	6.9	Dec-07	5.1
Aug-02	6.4	Jan-08	4.8
Sep-02	6.2	Feb-08	4.5
Oct-02	6.1	Mar-08	4.2
Nov-02	6.0	Apr-08	4.1
Dec-02	5.9	May-08	4.0
Jan-03	5.7	Jun-08	4.1
Feb-03	5.4	Jul-08	4.1
Mar-03	5.4	Aug-08	4.1
Apr-03	5.5	Sep-08	4.2
May-03	5.8	Oct-08	4.3
Jun-03	6.0	Nov-08	4.4
Jul-03	6.0	Dec-08	4.5
Aug-03	6.1	Jan-09	4.5
Sep-03	6.1	Feb-09	4.5
Oct-03	6.1	Mar-09	4.6
Nov-03	6.0	Apr-09	4.7
Dec-03	5.8	May-09	4.8
Jan-04	5.5	Jun-09	4.9
Feb-04	5.4	Jul-09	5.1
Mar-04	5.4	Aug-09	5.1
Apr-04	5.5	Sep-09	5.1
May-04	5.2	Oct-09	5.1
Jun-04	5.1	Nov-09	5.2
Jul-04	5.1	Dec-09	5.3
Aug-04	5.0	Jan-10	5.4
Sep-04	4.8	Feb-10	5.3
Oct-04	4.6	Mar-10	5.4
Nov-04	4.5	Apr-10	5.2
Dec-04	4.5	May-10	5.1
Jan-05	4.5	Jun-10	5.2
Feb-05	4.4	Jul-10	5.4
Mar-05	4.2	Aug-10	5.4
Apr-05	4.1	Sep-10	5.6
May-05	4.2	Oct-10	5.6
Jun-05	4.4	Nov-10	5.6
Jul-05	4.5	Dec-10	5.3
Aug-05	4.6	Jan-11	5.3
Sep-05	4.3	Feb-11	5.4
Oct-05	4.1	Mar-11	5.5
Nov-05	4.2	Apr-11	5.5
Dec-05	4.0	May-11	5.5

Asymmetric Trimmed Mean Core of Inflation Expectations (Asymmetry from the 3rd moment)

Jan-01	4.9	Jun-06	3.5
Feb-01	4.6	Jul-06	3.6
Mar-01	4.7	Aug-06	3.6
Apr-01	4.3	Sep-06	3.7
May-01	4.3	Oct-06	3.8
Jun-01	4.6	Nov-06	3.9
Jul-01	4.6	Dec-06	4.1
Aug-01	5.2	Jan-07	4.3
Sep-01	5.8	Feb-07	4.2
Oct-01	8.2	Mar-07	4.4
Nov-01	10.4	Apr-07	4.3
Dec-01	11.2	May-07	4.8
Jan-02	10.8	Jun-07	5.1
Feb-02	10.1	Jul-07	5.3
Mar-02	9.6	Aug-07	5.2
Apr-02	8.9	Sep-07	5.1
May-02	8.2	Oct-07	5.2
Jun-02	7.7	Nov-07	5.4
Jul-02	6.9	Dec-07	5.1
Aug-02	6.6	Jan-08	4.9
Sep-02	6.3	Feb-08	4.5
Oct-02	6.1	Mar-08	4.2
Nov-02	6.0	Apr-08	4.1
Dec-02	5.9	May-08	4.0
Jan-03	5.7	Jun-08	4.0
Feb-03	5.4	Jul-08	4.1
Mar-03	5.4	Aug-08	4.1
Apr-03	5.5	Sep-08	4.2
May-03	5.8	Oct-08	4.3
Jun-03	6.1	Nov-08	4.4
Jul-03	6.1	Dec-08	4.5
Aug-03	6.2	Jan-09	4.5
Sep-03	6.2	Feb-09	4.5
Oct-03	6.2	Mar-09	4.5
Nov-03	6.1	Apr-09	4.7
Dec-03	5.9	May-09	4.9
Jan-04	5.7	Jun-09	4.9
Feb-04	5.5	Jul-09	5.1
Mar-04	5.4	Aug-09	5.2
Apr-04	5.5	Sep-09	5.2
May-04	5.2	Oct-09	5.2
Jun-04	5.1	Nov-09	5.3
Jul-04	5.1	Dec-09	5.4
Aug-04	4.9	Jan-10	5.5
Sep-04	4.8	Feb-10	5.4
Oct-04	4.6	Mar-10	5.4
Nov-04	4.5	Apr-10	5.2
Dec-04	4.5	May-10	5.0
Jan-05	4.5	Jun-10	5.3
Feb-05	4.4	Jul-10	5.5
Mar-05	4.2	Aug-10	5.5
Apr-05	4.1	Sep-10	5.6
May-05	4.1	Oct-10	5.6
Jun-05	4.3	Nov-10	5.5
Jul-05	4.5	Dec-10	5.3
Aug-05	4.5	Jan-11	5.3
Sep-05	4.2	Feb-11	5.4
Oct-05	4.0	Mar-11	5.5
Nov-05	4.1	Apr-11	5.5
Dec-05	4.0	May-11	5.5

Asymmetric Trimmed Mean Core of Inflation
Expectations (Pearson Coef.)

Jan-01	4.9	Jun-06	3.5
Feb-01	4.7	Jul-06	3.6
Mar-01	4.7	Aug-06	3.7
Apr-01	4.4	Sep-06	3.8
May-01	4.3	Oct-06	3.9
Jun-01	4.5	Nov-06	3.9
Jul-01	4.6	Dec-06	4.2
Aug-01	5.2	Jan-07	4.3
Sep-01	5.6	Feb-07	4.2
Oct-01	7.9	Mar-07	4.3
Nov-01	10.1	Apr-07	4.4
Dec-01	11.2	May-07	4.8
Jan-02	10.6	Jun-07	5.1
Feb-02	9.9	Jul-07	5.3
Mar-02	9.3	Aug-07	5.3
Apr-02	8.5	Sep-07	5.2
May-02	8.2	Oct-07	5.2
Jun-02	7.5	Nov-07	5.4
Jul-02	6.8	Dec-07	5.1
Aug-02	6.4	Jan-08	4.8
Sep-02	6.2	Feb-08	4.5
Oct-02	6.1	Mar-08	4.3
Nov-02	6.0	Apr-08	4.2
Dec-02	5.9	May-08	4.0
Jan-03	5.8	Jun-08	4.1
Feb-03	5.4	Jul-08	4.1
Mar-03	5.4	Aug-08	4.1
Apr-03	5.5	Sep-08	4.2
May-03	5.7	Oct-08	4.3
Jun-03	5.9	Nov-08	4.4
Jul-03	6.0	Dec-08	4.5
Aug-03	6.1	Jan-09	4.5
Sep-03	6.1	Feb-09	4.4
Oct-03	6.1	Mar-09	4.6
Nov-03	6.0	Apr-09	4.7
Dec-03	5.8	May-09	4.9
Jan-04	5.6	Jun-09	4.9
Feb-04	5.4	Jul-09	5.0
Mar-04	5.4	Aug-09	5.1
Apr-04	5.4	Sep-09	5.2
May-04	5.2	Oct-09	5.1
Jun-04	5.1	Nov-09	5.2
Jul-04	5.1	Dec-09	5.4
Aug-04	5.0	Jan-10	5.5
Sep-04	4.8	Feb-10	5.3
Oct-04	4.5	Mar-10	5.3
Nov-04	4.6	Apr-10	5.3
Dec-04	4.5	May-10	5.0
Jan-05	4.5	Jun-10	5.2
Feb-05	4.4	Jul-10	5.5
Mar-05	4.2	Aug-10	5.5
Apr-05	4.1	Sep-10	5.7
May-05	4.2	Oct-10	5.7
Jun-05	4.4	Nov-10	5.5
Jul-05	4.5	Dec-10	5.3
Aug-05	4.5	Jan-11	5.3
Sep-05	4.3	Feb-11	5.3
Oct-05	4.0	Mar-11	5.4
Nov-05	4.2	Apr-11	5.5
Dec-05	4.1	May-11	5.5