

Formation and Evolution of Inflation Expectations in Paraguay

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Abstract

The establishment of the inflation targeting regime in Paraguay is relatively recent, however, the results have been satisfactory. This is because based on the observed data, from the implementation of this framework, it has been possible not only to reduce inflation levels, but also align inflation expectations along the medium-term inflation target. This chapter seeks to identify the main determinants of the formation of inflation expectations in Paraguay since the adoption of the inflation targeting regime. This work bases the analysis on the results obtained from the expectations surveys conducted by the country's monetary authority. The evolution of inflation should be an important factor to consider. Moreover, for the correct functioning of the expectations channel, it is essential that the monetary authority has sufficient credibility. A credibility index has been constructed to capture the effect of the credibility that the Banco Central del Paraguay has acquired during the inflation targeting regime. To guarantee the robustness of our results, the model we use has been estimated by three econometric methods: ordinary least squares (OLS), fully modified OLS (FMOLS),

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and the generalized method of moments (GMM). According to the outcomes of all these methods, inflation expectation formation in Paraguay is determined mainly by the inflation expectation of the previous month. In addition, the annual inflation information of the previous month is significant at the time of forming expectations.

Furthermore, the credibility index presents an expected negative sign, as inflation expectations have effectively aligned around the medium-term inflation target since the implementation of the inflation targeting regime. The exchange rate was not significant in the regressions. This could partly be due to a relatively low pass-through of the exchange rate to total inflation, especially in the last few years.

Keywords: inflation targeting, inflation expectations, monetary policy.

JEL classification: E31, E52, E58.

1. INTRODUCTION

The Banco Central del Paraguay (central bank of Paraguay, BCP) officially adopted the inflation targeting regime to regulate its monetary policy in May 2011. Prior to this policy framework, Paraguay exhibited marked levels of volatility even though there were no historical records of high inflation periods. Under the inflation targeting regime, volatility and inflationary levels have been reduced. These inflationary levels fostered uncertainty in economic agents when forming their inflation expectations. All this was reflected in the fact that these expectations showed considerable variability, in accordance with the results obtained in the expectations surveys of economic variables carried out by the central bank on a monthly basis.

The main purpose of this chapter is to try to identify some of the determinants that Paraguay's economic agents consider when forming their inflationary expectations. In view of the results of the survey, a series of factors that may influence the expectations formation of those who answered the survey have been considered. To do this, simple econometric regressions are carried out, and the results of these can be considered a first attempt to find the determinants of inflation expectations in Paraguay. In addition, the regressions highlight the importance of the establishment of the inflation targeting framework, not only in reducing inflation levels and their volatility, but also lowering inflation expectations. Furthermore, it can

be affirmed that the BCP has managed to gain significant credibility with respect to the handling of the monetary policy in its attempt to maintain a low and stable inflation. This is reflected in the credibility index, which shows the alignment of expectations around the inflation target since the establishment of the inflation targeting regime.

Inflation expectations play a critical role in the process of price formation in the market. In addition, the decisions of households and firms depend heavily on the real return that could be expected on the savings and investments they make. Therefore, central banks closely monitor the development of inflation expectations in order to implement their monetary policy in a successful manner.

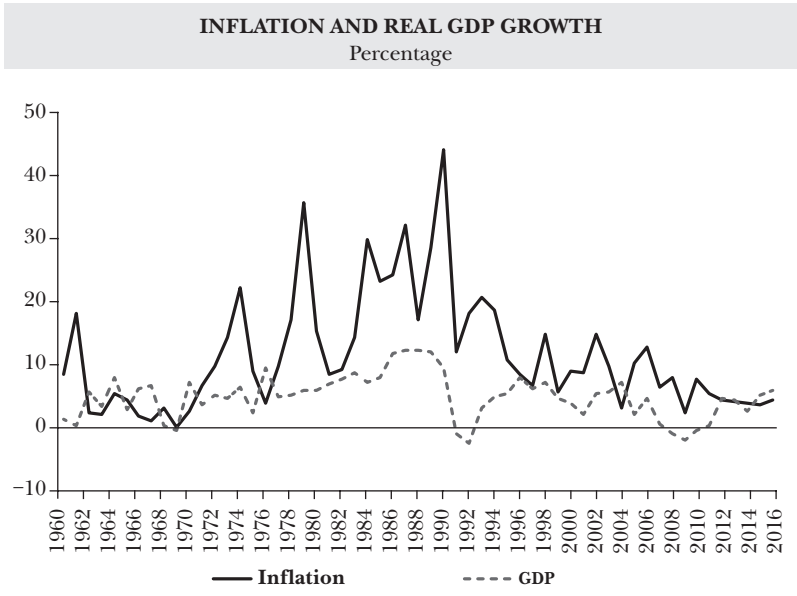
The results of the empirical model of this chapter show that the establishment of the inflation targeting scheme has helped to anchor expectations around the target, and that the dispersion of these expectations has been adjusted within the inflation range. Furthermore, this dispersion has been reduced with the decrease of the range during the consolidation process of the inflation targeting regime.

The first part of this chapter contains a brief narrative of monetary policy in Paraguay, highlighting their main characteristics, and delineates the most important results obtained from it, especially since the implementation of the inflation targeting framework. Next, the importance of inflation expectations in monetary policy, in general and specifically in Paraguay, is highlighted. Subsequently, after a description of the characteristics of the data according to the results of the economic variables survey, an estimation model of inflation expectations determinants in Paraguay is shown. The main outcomes of the model show the robustness of the results through different methodologies of estimating. Finally, in the last section some conclusions and final comments are presented.

2. MONETARY POLICY IN PARAGUAY

Throughout its history, the Paraguayan economy has not displayed significant macroeconomic imbalances, such as severe fiscal deficits or hyperinflationary episodes. The average growth of the gross domestic product (GDP) has been placed at relatively acceptable levels, although it has presented periods of high volatility. In regard to prices, inflation in Paraguay has been characterized by moderate levels,

Figure 1



Source: Banco Central del Paraguay

unlike most countries of the region (Figure 1). Likewise, the main problem regarding inflation has been its volatility. The macroeconomic performance of Paraguay can be attributed in part to the sound management of monetary policy. This is reflected partly in the fact that the *guarani*, the local currency of Paraguay, has not been modified since its inception, thus making it one of the oldest currencies in the region. The relatively prudent management of fiscal policy has contributed, to certain extent, to keeping inflation at a low level.

As pointed out in the document *Política monetaria en Paraguay: Metas de inflación, un nuevo esquema* (BCP, 2013), the design of monetary policy in Paraguay has considered the existence of a relation between the growth of money supply and inflation. Historically, this design has adopted a monetary policy scheme of intermediate objectives, in this case, setting targets for the growth of a specific monetary aggregate. Thus, the Central Bank used its instruments to control the money supply's growth to a level compatible with the inflation objective, which was based on the achievement of *low*

inflation, using the quantitative theory of money as a conceptual framework reference.

Regarding economic activity, in general, the average growth of the Paraguayan economy has been acceptable, even though it has been characterized by its volatility. While the expansion of the economy was quite significant in the 1970s, mainly due to the construction of the Itaipu hydroelectric dam, there was a period of slowdown in the 1980s and 1990s. In this weakened situation and as a consequence of a weak financial system, and the fragility of the regulatory and supervisory frameworks, between 1995 and 1998, there were episodes of large financial crises. In this period, economic authorities needed a comprehensive reorganization of monetary and financial policy, which was attained through the enactment of important laws that allowed a much more stringent regulatory framework for financial institutions.¹

In 2002, the Argentine economy fell into a deep crisis, causing the abandonment of the convertibility regime to which that country's exchange rate policy was subordinated. This episode also affected the Paraguayan economy. Despite the BCP's effort to curb capital outflows and exchange rate depreciation through sharp increases in the interest rates of monetary regulation instruments, the second financial crisis occurred towards the end of 2002, although of smaller magnitude than the first one.

Despite these episodes of crisis, the enactment of the aforementioned regulatory laws for the financial system allowed the BCP to focus more on the achievement and maintenance of low and stable inflation, driving its monetary policy of intermediate objectives, under a monetary aggregates framework.

As of 2004, the BCP began to lay the foundations for the establishment of an inflation targeting framework, albeit in an *experimental* way. Thus, the central bank modernized its monetary policy operational instruments with the establishment of a medium-term inflation target with a tolerance range. Under this scheme, it was possible to reduce the average inflation rate in the period from 2000 to 2010 to a single digit level.²

¹ The Law No. 489 of the BCP and the Law No. 861 "General of Banks, Finance, and other Credit Institutions."

² In that period average inflation was 8.1%, while in the 1990-2000 period it was 15.1 percent.

With a more consolidated and orderly monetary policy framework, the BCP formally adopted the inflation targeting regime in May 2011, establishing a target of five percent annually with a tolerance range of ± 2.5 percentage points (pp). After the establishment of the inflation targeting regime, lower levels of inflation and volatility were recorded. For this reason, monetary authorities decided to reduce the tolerance range to ± 2 pp at the beginning of 2014, and at the end of that year, they also announced the reduction of the inflation target to 4.5% annually, which would apply in 2015 and 2016. In order to achieve its objective of maintaining low and stable inflation, at the beginning of 2017, the Central Bank announced a new reduction of the medium-term target to a rate of four percent annually, maintaining the tolerance range of ± 2 pp.

From the establishment of the inflation targeting regime, in the 2011-2016 period, average inflation was recorded at 3.9%. With these results and with the efforts of the monetary authorities to not only maintain low levels of inflation, but also reach a significant degree of credibility, inflationary expectations were aligned to values around the inflation target with less variability over the years.

3. INFLUENCE OF EXPECTATIONS ON INFLATION

Economics is a social science that somehow attempts to explain human behavior, so the perceptions of economic agents on the future evolution of a wide range of economic indicators are important. Therefore, an interesting challenge for monetary authorities is to try to interpret these perceptions in order to implement coherent policies that help guide them towards clear and precise objectives. Thus, it is in the macroeconomic field and particularly the theory of monetary policy, where expectations have become a powerful analytical tool.

Under the inflation targeting framework, the transmission mechanism of inflationary expectations is crucial for the achievement of a medium-term inflation target. The effectiveness of the expectations channel depends on the credibility of the central bank. Therefore, establishing a systematic and transparent decision-making process in monetary policy is key in facilitating the process of price formation and private expectations.

The achievement of the objectives proposed by the central bank, its transparency and communication increase its credibility, which contributes to that the expectations remain anchored to the target in the policy horizon. When a central bank has built a credible and transparent reputation, a monetary policy decision aimed at controlling inflation keeps inflation expectations anchored to the target. Therefore, in the face of an expectation of controlled inflation, decisions to adjust prices and wages will be made in line with the inflation target announced by the central bank.

Taking into account that the objective of clear and transparent communication is to give signals about the implications of monetary policy decisions, in general terms, the expectations channel may have a more rapid impact on the achievement of the inflation target compared to others transmission mechanisms that act with a greater lag. This makes the expectations channel an important and timely channel for the effectiveness of monetary policy.

Since the implementation of the inflation targeting regime, the Banco Central del Paraguay has made a great effort to improve its credibility. As mentioned above, Paraguay's main problem has not been high levels of inflation, but rather high volatility. Since the formal establishment of the inflation targeting scheme by the BCP, not only have inflation levels been reduced, but, above all, their volatility has been reduced (Figure 2). Likewise, it has been verified in the expectations data that there has been a decrease both in their levels and their volatility given the decrease in observed inflation rates. This suggests that the BCP has managed to increase its credibility in recent years.

As mentioned above, an interesting fact that has been observed with the implementation of the inflation targeting regime is the reduction of inflation expectations (average or median) to levels closer to the target (Figure 3 and 4). Additionally, the dispersion has been reduced, mainly because of the reduction of the tolerance range in 2014.

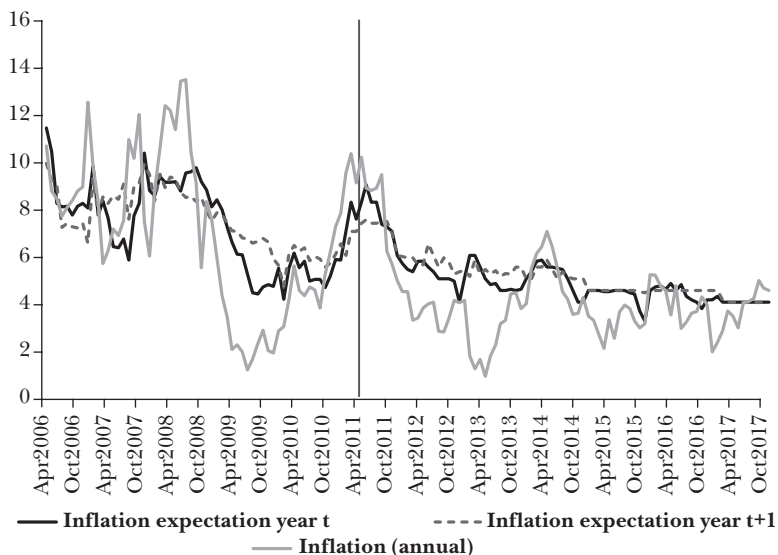
The reduction of the tolerance range can be proven through traditional statistics of variability, such as the standard deviation and the coefficient of variation (Figure 5), which effectively show a reduction (on average) in recent years, coinciding with the reduction of tolerance bands.

Finally, it was run, as an additional test, a simple model of the volatility statistics with respect to a dummy variable that takes the value of 1 if there is a reduction in the band. The variable is significant with an expected negative sign. In summation, these results suggest that

Figure 2

ANNUAL INFLATION AND INFLATION EXPECTATIONS
FOR YEAR T AND T+1

Percentage

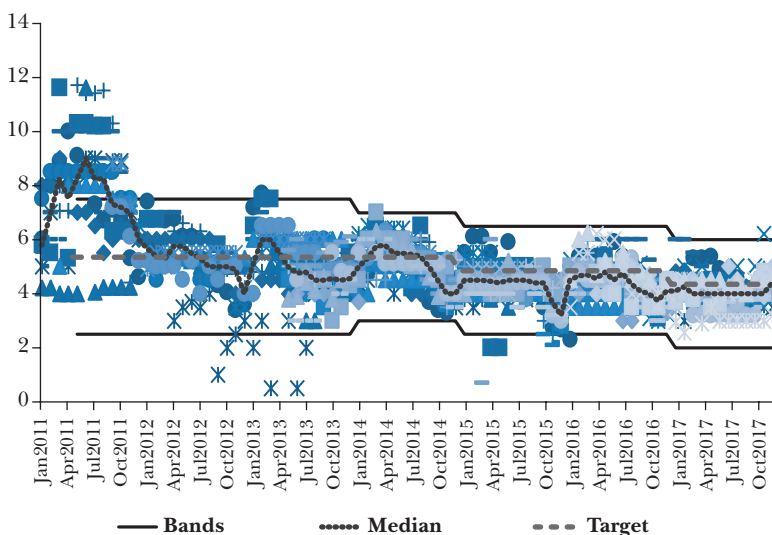


Source: Banco Central del Paraguay

Figure 3

DISPERSION OF INFLATION EXPECTATIONS FOR YEAR T¹

Percentage



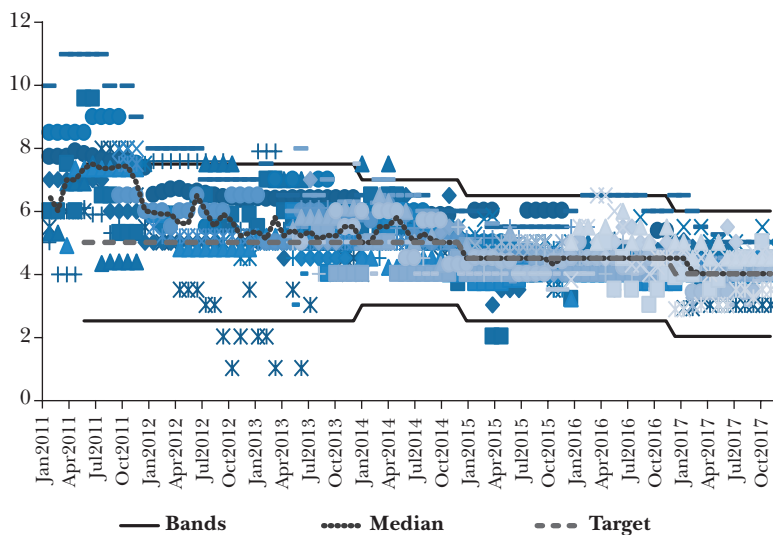
¹ The different dots correspond to the respondents in each period, which for ethical reasons cannot be identified individually.

Source: Banco Central del Paraguay

Figure 4

DISPERSION OF INFLATION EXPECTATIONS FOR YEAR T+1

Percentage

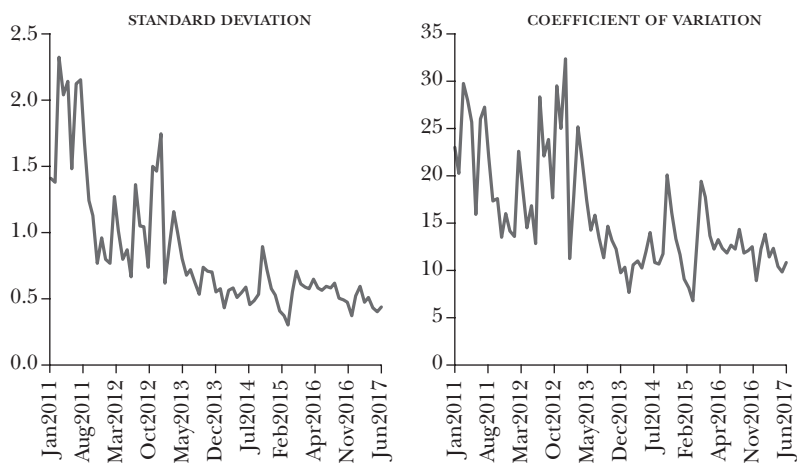


Source: Banco Central del Paraguay

Figure 5

STANDARD DEVIATION AND COEFFICIENT OF VARIATION

Percentage



Source: author's calculations.

the reduction of the band contributed to decreasing the dispersion of the expectations of the economic agents.

4. EMPIRICAL MODEL FOR PARAGUAY

In the BCP, the expectations of the main macroeconomic variables are obtained with monthly frequency—as of April 2006, from the Economic Variables Survey (EVE). In its beginning, the EVE was mainly focused on representatives of some of the country's banks. Currently, this survey is aimed at agents representing different economic sectors that include banks and financial companies, risk rating agencies, brokerage firms, consulting firms, independent analysts, economic organizations, and universities. The number of respondents amounts to 34, of which, taking into account banks and financial companies, they comprise 22 representatives of financial institutions.

The EVE is divided into four blocks that include questions related to the expectations of economic agents with respect to total inflation, measured by the variation of the consumer price index, the evolution of the nominal exchange rate (guarani versus the United States dollar), GDP growth, and the trajectory of the monetary policy rate.

The set of questions corresponds to the expectations of the variables mentioned at different periods: for the end of the current month and the following, the current year, the next 12 months, the following year, and for the monetary policy horizon (which comprises between 18 and 24 months).

Considering that inflation expectations constitute an important tool for the BCP in the management of monetary policy under the inflation targeting scheme, this chapter aims to identify the main variables that affect the formation of inflation expectations.

4.1 Data Features

Taking into account the structure of the EVE surveys in relation to the expectations of the economic variables studied, the survey is designed to obtain information on the perspectives of the economic agents for the current year and for the following year. Thus, the survey data provide information for *fixed event forecasts*, which, to a certain extent, are limitations when estimating an econometric model.

In order to identify the main determinants of the process of forming expectations, it is necessary to have a series of *fixed horizon* inflation expectations. To carry out an approximation of fixed horizon forecasts from the fixed event forecasts of the EVE, we follow the work of Dovern et al. (2012), in which this approximation is made as a weighted average of *fixed-event forecasts* as follows:

$$1 \quad F_{y_0,m,12}^{fh}(x) = \frac{12-(m-1)}{12} F_{y_0,m,y_0}^{fe}(x) + \frac{m-1}{12} F_{y_0,m,y_0+1}^{fe}(x)$$

where $F_{y_0,m,y_0}^{fe}(x)$ is the fixed-event forecast of the variable x for the current year (y_0) made in the month m of the year y_0 ; $F_{y_0,m,y_0+1}^{fe}(x)$ is the fixed-event forecast of the variable x for the following year ($y_0 + 1$) made in the month m of the year y_0 ; and $F_{y_0,m,12}^{fh}(x)$ is the fixed horizon twelve-month-ahead forecast made in the month m of the year y_0 .³

For example, the inflation expectation made in October 2014 for the time period between October 2014 and October 2015 is approximated by the sum of $F_{2014,10,2014}^{fe}(\pi)$ and $F_{2014,10,2015}^{fe}(\pi)$, and weighted by 3/12 and 9/12, respectively.

In this section, we identify some variables that determine inflation expectations in Paraguay, according to empirical literature related to the subject, and as consider some characteristics of the Paraguayan economy.

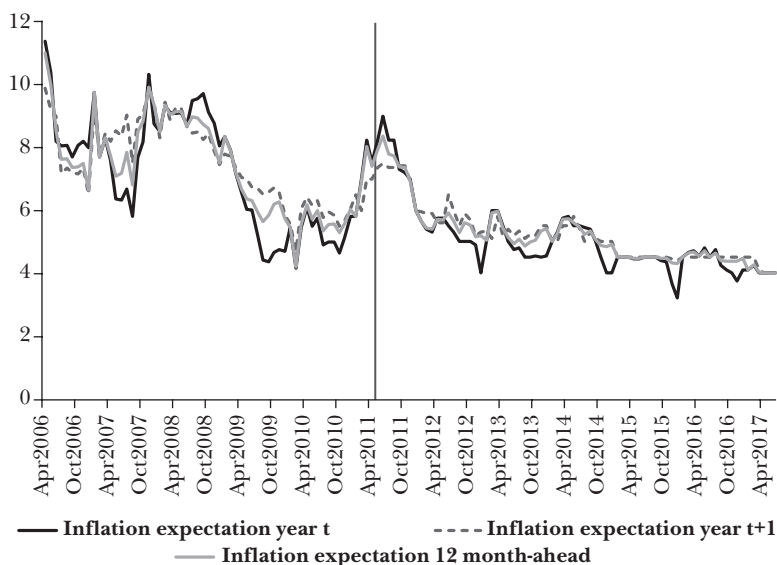
Taking into account that price formation has certain persistence in its adjustment process, for a certain period, the expectations of the recent past period should also be considered, since, in these expectations, agents are acquiring more information about events that may affect those expectations. In addition, the evolution of inflation should be an important factor to consider, since this evolution provides significant information when determining the future evolution of prices.

On the other hand, the establishment of the inflation targeting regime in Paraguay has been an important factor in the formation of inflation expectations, since it has led to a significant structural change in Paraguayan monetary policy, thus constituting an anchor that serves as a guide for the formation of these expectations (Figure 6). According to the observed inflation data, which were reduced both in levels and in variability, and the inflation targeting

Figure 6

INFLATION EXPECTATIONS FOR YEAR T AND T+1,
AND 12 MONTHS FORWARD

Percentage



Source: Banco Central del Paraguay

framework, the monetary policy in Paraguay has achieved important credibility with economic agents. In part, this is reflected in the fact that when effective inflation data were adjusted around the target after the implementation of the inflation targeting scheme, expectations were also adjusted to the inflation target determined by the Banco Central del Paraguay.

For the correct functioning of the expectations channel, it is essential that the monetary authority has sufficient credibility. Economic agents must trust that the central bank will do everything necessary to achieve price stability and its inflationary objective in the medium term. Credibility would be able to neutralize, in part, the effects of economic shocks on prices that are transmitted through the channel of expectations.

In this sense, to try to capture the effect of the credibility that the Banco Central del Paraguay has acquired during the inflation targeting regime, a credibility index has been constructed following

the work of Mendonça (2007), in which it is assumed that the central bank is able to guide inflation expectations towards the target and reaffirm its commitment to the inflation ranges. Thus, when expectations are equal to the inflation target the credibility index is equal to one, and decreases when expectations move away from the target. In cases where inflation expectations are located outside the inflation target bands, the index is equal to zero (see Annex).

Finally, it may be thought that a priori changes in the nominal exchange rate (guarani-dollar) should influence the formation of inflation expectations of economic agents on the cost side of imported goods (and inputs), especially when considering that Paraguay is a relatively open economy.⁴ A similar analysis could be made when considering variations in oil price, since this product directly affects the price of fuels, an important input for any production process.

4.2 Estimation of the empirical model

To guarantee the robustness of our results, the model we use has been estimated by three econometric methods: ordinary least squares (OLS), fully modified OLS (FMOLS), and the generalized method of moments (GMM).⁵ The FMOLS method assumes the existence of a cointegration relation between the variables, while the GMM method is created to avoid potential endogeneity problems with some regressors using OLS. The model has been estimated in monthly frequency. In accordance with the aforementioned information and taking into account some characteristics of the Paraguayan monetary policy, the estimated model is as follows:

$$\pi_t^e = \alpha_0 + \alpha_1 \pi_{t-1}^e + \alpha_2 \pi_{t-1} + \alpha_3 \Delta ner_{t-1} + \alpha_4 \Delta oil_{t-1} + \alpha_5 cred_{t-1} + \alpha_6 cred_{t-1} * \pi_{t-1}^e + \alpha_7 dummy_t^{IT} + \varepsilon_t,$$

where π_t^e is the inflation expectation for twelve months ahead; π_{t-1} is the annual inflation of period $t-1$; Δner_{t-1} is the annual variation of the nominal exchange rate (guarani-dollar); Δoil_{t-1} is the annual variation in the price of oil; $cred$ is a variable that measures

the credibility of the central bank,⁶ and $dummy_i^{IT}$ represents the period since the implementation of the inflation targeting regime.

According to our regressions' outcomes, inflation expectation formation in Paraguay (twelve-month-ahead) is determined mainly by the inflation expectation of the previous month (Table 1). In addition, the annual inflation information of the previous month is significant at the time of forming expectations.

On the other hand, the credibility index presents an expected negative sign, as inflation expectations have effectively aligned around the medium-term inflation target since the implementation of the inflation targeting scheme.

Changes in the exchange rate and the price of oil were not significant in the inflation expectation formation process. This could partly be due, to a relatively low pass-through of the exchange rate to total inflation, especially in the last few years.⁷ Likewise, the oil price reduction in international markets has influenced the decrease of fuel prices in the local market.

Since the establishment of the inflation targeting scheme, both the level of inflation and its volatility have decreased. This behavior is also reflected in the results of the surveys, in which it is observed that inflation and its expectations present an important variability. The credibility achieved by the monetary authority has been essential in ensuring that expectations are adjusted to the inflationary objective of the medium term.

On the other hand, as of May 2011, the estimate of a dummy variable reflects the change in the monetary policy regime. In addition, it is proven that under the inflation targeting regime inflation expectations have been adjusted downward, as observed inflation data were aligned around the inflation target.

As previously indicated, since January 2014, the fluctuation bands have been reduced from ± 2.5 pp to ± 2 pp with respect to the inflation target. To test if the lower band has had a greater effect on inflation expectations, in the base equation, a dummy variable equal to 1 has been introduced since the period in which the decrease

⁶ This index was constructed according to the work of Mendonça (2007), whose criterion is described in the Annex.

⁷ See Banco Central del Paraguay (2015, recuadro 1).

Table 1

ESTIMATED EQUATIONS FOR INFLATION EXPECTATIONS			
Dependent variable: inflation expectations (12 month-ahead)			
	Models		
	OLS	FMOLS	GMM
Sample	2006M05- 2017M12	2006M05- 2017M12	2006M05- 2017M12
Constant	2.41 (0.0000)	1.84 (0.0005)	2.57 (0.0071)
π_{t-1}^e	0.53 (0.0000)	0.62 (0.0000)	0.49 (0.0002)
π_{t-1}	0.16 (0.0000)	0.13 (0.0000)	0.17 (0.0000)
Δner_{t-1}	-0.0003 (0.9570)	-0.0006 -0.0008	-0.0003 -0.0015
Δoil_{t-1}	-0.0009 (0.5948)	-0.0008 (0.5962)	0.0015 (0.3086)
$cred_{t-1}$	-1.791 (0.0028)	-1.904 (0.0011)	-2.0967 (0.0061)
$cred_{t-1} * \pi_{t-1}^e$	0.27 (0.0047)	0.31 (0.0006)	0.32 (0.0022)
$dummy^{IT}$	-0.31 (0.0049)	-0.23 (0.0276)	-0.30 (0.0224)
Adjusted R ²	0.92	0.92	0.92

Note: *p*-values are in parenthesis.

Source: author's calculations.

Table 2

ESTIMATED EQUATIONS FOR INFLATION EXPECTATIONS FOR BANDS REDUCTION			
Dependent variable: inflation expectations (12 month-ahead)			
	<i>Models</i>		
	<i>OLS</i>	<i>FMOLS</i>	<i>GMM</i>
Sample	2006M05- 2017M12	2006M05- 2017M12	2006M05- 2017M12
Constant	2.67 (0.0000)	2.19 (0.0005)	2.92 (0.0000)
π_{t-1}^e	0.47 (0.0000)	0.55 (0.0000)	0.43 (0.0000)
π_{t-1}	0.19 (0.0000)	0.18 (0.0000)	0.20 (0.0000)
Δner_{t-1}	0.0055 (0.3606)	0.0047 (0.3744)	0.0020 (0.7441)
Δoil_{t-1}	-0.0014 (0.3760)	-0.0019 (0.1929)	0.0029 (0.0639)
$cred_{t-1}$	-0.502 (0.4371)	-0.640 (0.2710)	-0.7481 (0.1869)
$cred_{t-1} * \pi_{t-1}^e$	0.03 (0.7699)	0.07 (0.4350)	0.07 (0.4295)
$dummy^{IT}$	-0.20 (0.0598)	-0.18 (0.0564)	-0.20 (0.0552)
$dummy^{bands}$	-0.57 (0.0001)	-0.489 (0.0001)	-0.570 (0.0000)
Adjusted R ²	0.93	0.93	0.93

Note: *p*-values in parenthesis.
Sources: author's calculations.

in the range occurred. In this regard, interesting results are observed in all the estimation methodologies, as they show that the lower inflationary range has had an impact on getting inflation expectations adjusted to this new range (Table 2). This also shows that the BCP has had a significant influence on the credibility of economic agents in achieving the inflation goal under the inflation targeting regime.⁸

On the other hand, an exercise was carried out that reflects the behavior of the inflation expectations of the group of respondents categorized as financial entities (banks and financial companies). The results show that the expectations of the financial agents follow a similar pattern to the base equation (Table 3).

5. CONCLUSION

The implementation of an inflation targeting regime is relatively recent and because of this, economic agents have a learning curve with respect to the functioning of monetary policy transmission mechanisms and with respect to other macroeconomic variables that are relevant to explaining inflation. In the case of the Paraguayan economy, finding an econometric model that helps determine the main factors of inflation expectations is not a trivial task.

The establishment of the inflation targeting framework has led to an important structural change in the conduct of monetary policy in Paraguay. On top of helping reduce inflation levels and their volatility, this framework has also helped guide the inflation expectations of the economic agents through the nominal anchor of the medium-term inflation target.

Considering that the formation of prices is characterized by a change in persistence, it is reasonable to think that both the data of the observed inflation rate and that of their expectations in a previous period are important determinants at the time that economic agents define their expectations of inflation in the current period.

The observed trajectory of the inflation data shows that the implementation of the inflation targeting scheme has been satisfactory.

⁸ The introduction of the band dummy variable diminishes the significance from the credibility index. This could be due to the fact that both variables reflect greater credibility in the inflation targeting scheme, so that the two variables cannot be together in the same base equation.

Table 3

ESTIMATED EQUATIONS FOR INFLATION EXPECTATIONS OF FINANCIAL ENTITIES	
Dependent variable: inflation expectation (12 month-ahead)	
<i>Sample</i>	<i>OLS</i>
	<i>2011M02-2017M12</i>
Constant	1.82 (0.0045)
π_{t-1}^e	0.55 (0.0000)
π_{t-1}	0.14 (0.0001)
Δner_{t-1}	-0.0046 (0.4850)
Δoil_{t-1}	0.0010 (0.6300)
$cred_{t-1}$	-2.333 (0.0019)
$cred_{t-1} * \pi_{t-1}^e$	0.46 (0.0006)
Adjusted R ²	0.89

Note: *p*-values in parenthesis.
Sources: author's calculations.

This proves that the BCP has achieved significant credibility in its purpose of keeping inflation low and stable around the inflation target. Therefore, the alignment of inflation expectations around the target can be attributed to an increase in credibility.

It should be noted that the reduction in inflationary bands also reflects an adjustment of inflation expectations around the target, at-testing likewise to greater credibility of economic agents in the management of monetary policy under the inflation targeting scheme. In addition, when the respondents are grouped in the category of financial entities, it is observed that the expectations of these agents follow a pattern similar to that observed in the base equation.

ANNEX

Annex A. Credibility Index

$$\left. \begin{array}{ll} 1 & \text{if } \pi_t^e - \pi^* \\ 1 - \frac{1}{\pi^{lower} - \pi^*} [\pi_t^e - \pi^*] & \text{if } \pi^{lower} < \pi_t^e \\ 1 - \frac{1}{\pi^{upper} - \pi^*} [\pi_t^e - \pi^*] & \text{if } \pi^{upper} > \pi_t^e \\ 0 & \text{if } \pi_t^e \geq \pi^{upper} \text{ or } \pi_t^e \leq \pi^{lower} \end{array} \right\}.$$

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