

The role of expectations in inflation dynamics in the Philippines – has it changed following the global financial crisis?

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Abstract

This paper discusses the role of inflation expectations in the inflation dynamics of the Philippines since its adoption of inflation targeting in 2002. It places a particular focus on the post-crisis period. A key finding is that agents have become more forward-looking with the adoption of inflation targeting. With the increased credibility of monetary policy, expected inflation started to weigh more on the pricing decisions of firms and households. Moreover, inflation expectations have become increasingly tied to the BSP's inflation target, even in the face of the recent below-target inflation rate. The change in the inflation gap has the largest impact on inflation expectations, holding other factors constant. The other factors that affect inflation expectations include the policy interest rate, past inflation, past inflation volatility, nominal wage growth and industrial production growth.

Keywords: Inflation expectations, inflation targeting, monetary policy, Philippines

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1. The context

An important element for the successful conduct of monetary policy is the central bank's ability to manage and anchor inflation expectations. It is crucial that inflation expectations are well anchored, as this allows central banks to achieve price stability while helping to reduce the volatility of other important variables, such as interest rates and output (Côté (2015)). Studies have shown that the adoption of inflation targeting in a number of emerging and developing economies have supported the anchoring of inflation expectations (eg Davis and Presno (2014); Gürkaynak et al (2010); Johnson (2002)). Inflation targeting enhances monetary policy credibility through its emphasis on transparency, accountability and good communication strategy. These, in turn, contribute to better anchored inflation expectations.

In the Philippines, the expectations channel took on more importance in the transmission of monetary policy following the adoption of inflation targeting in 2002. The increased transparency associated with inflation targeting has increased policymakers' awareness of the importance of gauging public inflation expectations in the conduct of monetary policy (Guinigundo (2008)). Thus, the BSP initiated and institutionalised expectations surveys to better assess firms' and consumers' views on the future path of inflation.

While there is wide agreement that increased central bank credibility led to better anchoring of inflation expectations in developed and emerging market economies, developments during the recent Global Financial Crisis (GFC) have caused inflation expectations to become less anchored, particularly in advanced countries (Galati et al (2011)). It has likewise been observed that the behaviour of expectations is asymmetrical, depending on whether inflation lies above or below the target. There is a greater risk that expectations will become unanchored when inflation is persistently low, as is currently the case in a number of economies. This implies that when inflation is low for an extended period, central banks have to expect a longer delay in returning it to the target (Côté (2015)).

In the light of these observations, this paper discusses the role of inflation expectations in the inflation dynamics of the Philippines since its adoption of inflation targeting in 2002. It focuses on the behaviour of inflation expectations after the GFC. It finds that during the initial years of the implementation of inflation targeting in the country (ie 2002–08), agents were more backward-looking, with lagged inflation weighing more on the determination of current inflation. However, starting in late 2008, agents had become more forward-looking, with inflation expectations playing a more significant role in the determination of current inflation. This observation is attributed partly to inflation having remained within the set target range. With the increased credibility of monetary policy, expected inflation started to weigh more on the pricing decision of firms and households. Moreover, inflation expectations have been increasingly tied to the BSP's inflation target. It is for this reason that, even with the recent below-target inflation rate, inflation expectations remain anchored. This is confirmed by looking at the drivers of inflation expectations. Some regression analysis reveals that a change in the inflation gap has the largest impact on inflation expectations, holding other variables constant. The other factors that affect inflation expectations include the policy interest rate, past inflation, past inflation volatility, nominal wage growth and industrial production growth.

The rest of this paper is organised as follows. Section 2 discusses the dynamics of inflation expectations since the adoption of inflation targeting in 2002. Section 3

evaluates the determinants of inflation expectations in the country. The last section concludes.

2. Role of inflation expectations in inflation dynamics

Prior to the adoption of inflation targeting, the BSP adhered to monetary aggregate targeting as its framework for monetary policy. Monetary aggregate targeting was adopted in an attempt to reduce inflation, which rose to double-digit levels and peaked at 60% in 1984.² Under this framework, the BSP managed to bring down inflation to single digits by tightening monetary policy. The average year-on-year inflation rate during the 1988–2001 period stood at 9.4%.³

In 2002, the BSP formally adopted inflation targeting as its framework for monetary policy. Inflation targeting focuses mainly on price stability as the ultimate objective of monetary policy. Under this approach, the central bank announces an explicit inflation target and promises to achieve it over a given time period. Following the implementation of inflation targeting, average inflation declined to 4.7% between 2002 and 2008 and further to 3.5% during the 2009–15 period (Table 1). Inflation volatility likewise declined from 4.0% during the pre-inflation targeting period (ie 1988–2001) to 2.3% during the first eight years of inflation targeting (ie 2002–08) to 1.3% in the years after the GFC.

Year-on year average and volatility of inflation

Standard deviations, percentage points

Table 1

	Year-on-year average	Volatility
1988–2001 (Pre-IT)	9.4	4.0
2002–08 (Pre-GFC IT)	4.7	2.3
2009–15 (Post-GFC IT)	3.5	1.3

Source: Author's estimates.

The decline in the inflation rate and volatility was traced to the BSP's ability to bring inflation down to within target levels. This, in turn, led to the better anchoring of inflation expectations. Levin et al (2004) observe that inflation targeting plays a key role in anchoring inflation expectations and in reducing inflation persistence. Inflation targeting requires monetary authorities to ascertain that policy decisions and actions are properly communicated to the public. When market agents are better informed

² Based on the CPI (2000=100).

³ In the second semester of 1995, the BSP adopted modified monetary aggregate targeting. This framework puts greater emphasis on price stability instead of strictly observing the targets set for monetary aggregates. The modified monetary targeting framework was intended to enhance the effectiveness of monetary policy by complementing monetary aggregate targeting with some form of inflation targeting (Guinigundo (2014)). Monetary targets could thereby be exceeded as long as inflation targets are met. Under this modified approach, the BSP monitors a larger set of economic variables in making decisions regarding the appropriate stance of monetary policy. This includes movements in key interest rates, the exchange rate, domestic credit and equity prices, indicators of demand and supply, and external economic conditions, among other variables.

about the goals and intentions of the central bank, they are less likely to change their expectations about future inflation drastically even with transitory shocks to inflation (Davis and Presno (2014)). This improves the efficiency of monetary policy in attaining its primary objective of price stability, notwithstanding shocks to the economy. The enhanced transparency and accountability associated with the shift to inflation targeting in 2002 increased the significance of the expectations channel in the conduct of monetary policy (Guinigundo (2014)).

The changes in inflation expectations dynamics can be assessed using some inflation models. However, Fuhrer (2012) noted that full-sample estimates of inflation models are underpinned by an array of results for subsamples within the study period. These results provide a better picture of the evolving dynamics of the variables under observation over a given period. Thus, to capture the changes that occurred in the behaviour of lagged inflation and expected inflation under inflation targeting, their coefficients are estimated over different subsamples during the period Q1 2002–Q3 2015. One way of doing this is by using a rolling regression. The following specification of an expectations-augmented Phillips curve is estimated over a 16-quarter rolling window:

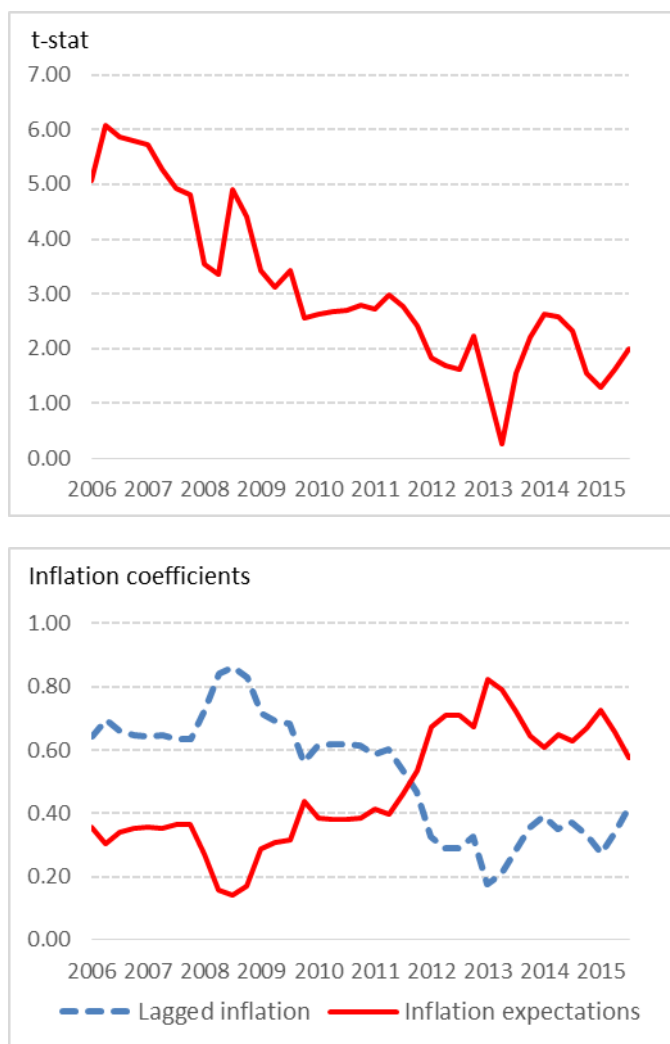
$$\pi_t = \alpha + \beta_1 \cdot \pi_{t-1} + (1 - \beta_1) \cdot E_t \pi_{t+1} + \beta_2 \cdot ygap_{t-1} + \beta_3 \cdot zgap_t + \varepsilon_t, \quad (1)$$

where: π_t is quarterly inflation, $ygap$ is an estimate of the output gap and $zgap$ is the deviation of real exchange rate from its trend. Current inflation is partly dependent on the weighted average of its lagged and expected values. The lags of inflation are meant to capture the observed persistence in inflation.⁴ The $zgap$ captures potential external supply shocks. All data used are quarterly time series over the period Q1 1988–Q3 2015. Inflation is measured as the quarterly year-on-year percent change in the CPI. For expected inflation, survey-based inflation expectation estimates are used.⁵ Output gap and the real exchange rate gap were estimated using an HP filter.

Graph 1 shows that, during the initial years of the implementation of inflation targeting, agents were more backward-looking, with lagged inflation weighing more on the determination of current inflation. Bayangos et al (2010) arrived at a similar conclusion when they looked into the expectations channel for the Philippines between Q1 2002 and Q1 2008. Nonetheless, starting in the last quarter of 2008, the coefficient of lagged inflation began to steadily decline. This indicates that inflation expectations started to weigh more on the assessment of current inflation. By the latter part of 2011, the inflation process had become more forward-looking.

⁴ The coefficients on the lags of inflation are often restricted to sum to 1 (with the constant restricted to be 0). This is to ensure that, in the long run, the Phillips curve is vertical (ie the “accelerationist” model of inflation).

⁵ Based on the AP Consensus Forecast 12-months ahead inflation forecast.



Source: CMFP estimates.

Another way of examining changes in the inflation coefficients is by using the Kalman filter. The main advantage of the Kalman filter is that it provides two-sided estimates, or it uses all the information in the entire sample at all points of time.⁶ Results from this exercise describe a picture that is similar to the rolling regression (Graph 2). The coefficient of lagged inflation started to decline during the latter half of 2008 (ie a quarter earlier than in the rolling regression) implying an increasingly forward-looking inflation process.

Interestingly, the changes in inflation dynamics denoted by the results from both the rolling regression and Kalman filter exercises coincided with important developments in the implementation of inflation targeting. During the first seven years of inflation targeting in the country (ie 2002–08), actual inflation breached the inflation targets (ie upper or lower-bound). The breach in targets during this period

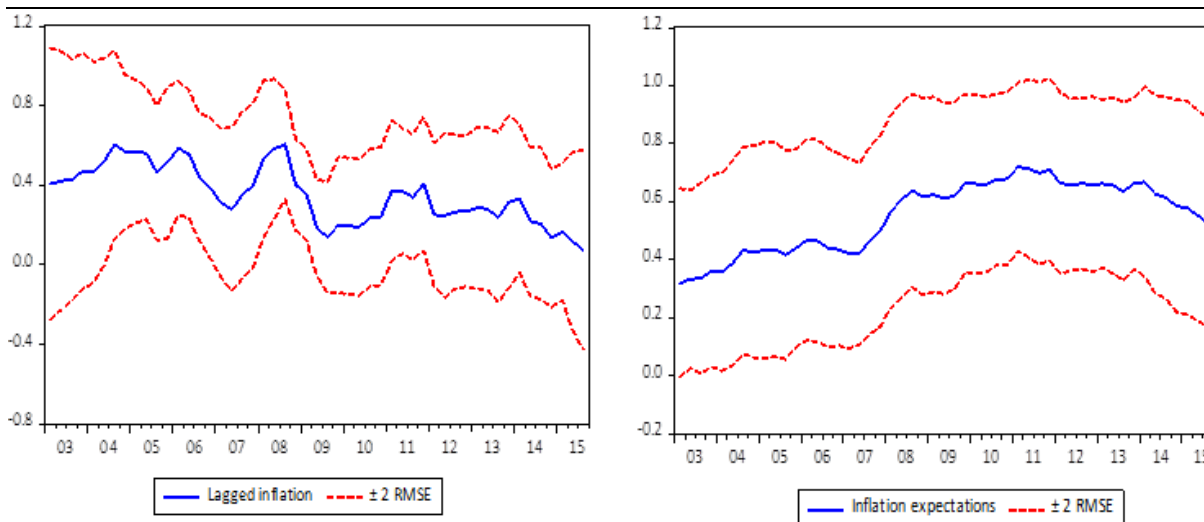
⁶ Lagged inflation follows a random walk process while inflation expectations is a function of both the current inflation and the inflation target.

was primarily traced to supply shocks, such as increases (or decreases) in the world price of oil and higher (lower) rice and other food prices. Moreover, second-round effects affected the wage and price-setting behaviour of businesses and households as well as inflation expectations. Nonetheless, for six consecutive years (2009–14), the BSP managed to keep inflation within the National Government’s inflation target range. For 2015, the inflation rate averaged 1.4% due mainly to slower increases in the prices of food items caused by ample domestic supply and falling oil and commodity prices. Inflation remained relatively stable even as the Philippine economy emerged as one of the strongest in Southeast Asia and experienced substantial capital inflows.

Inflation coefficient estimates

(+/- two standard error band)

Graph 2



Source: CMFP estimates.

A crucial insight that emerges from these observations is that the BSP’s ability to keep inflation within the target range led agents to adopt a more forward-looking orientation in their assessment of current inflation. With the increased credibility of monetary policy, expected inflation started to weigh more on the pricing decisions of firms and consumers. Guinigundo (forthcoming, 2016) arrived at a similar conclusion when he assessed the changes that occurred in the inflation dynamics between two periods: Q1 1988–Q4 2001 (ie pre-inflation targeting period) and Q1 2002–Q2 2015 (ie the inflation targeting period). His results showed that, with the adoption of inflation targeting, inflation persistence gradually declined as the inflation process shifted from being more backward-looking to being more forward-looking. This implies that market agents now put more weight on expected inflation in their assessment of current inflation. Moreover, the correlation between private sector inflation expectations and the BSP’s inflation target (ie midpoint) markedly rose from 0.15 in the 2002–08 period to 0.46 in the Q1 2009–Q3 2015 period. This signifies that private sector inflation expectations have increasingly been anchored to the BSP’s inflation target.

Supply shocks, such as movements in food and oil prices, have been identified as the major contributing factors to the breach in inflation targets during the early years of inflation targeting. They likewise contribute to second-round effects, which drive the wage and price-setting behaviour of businesses and households. Consequently, this leads to higher inflation expectations. Table 2 presents the correlation between inflation expectations, food inflation, particularly changes in rice and oil prices.

The correlation between inflation expectations and food inflation declined from 0.48 in 2002–08 to 0.40 in Q1 2009–Q3 2015. Also, the contribution of rice price changes to inflation expectations weakened from 0.45 in 2002–08 to 0.16 in Q1 2009–Q3 2015. This may indicate that agents have come to view fluctuations in food and rice prices as being temporary and, thus, does not necessarily lead to changes in inflation expectations. The results, however, differ for oil prices. Inflation expectations appear to be weakly correlated with oil price changes in the period characterised by high and volatile oil prices (ie 2002–08). Meanwhile, in the period with relatively low oil prices, the correlation between inflation expectations and oil prices appears to be stronger. This may be due in part to the factors driving the oscillations in international oil prices. During the 2002–08 period, geopolitical tensions and natural disasters led to strong short-term movements in oil prices. The changes are perceived as being temporary. However, the recent episode of low oil prices has a more structural dimension to it, in that it is attributed to global excess capacity. There may be some perception among agents that this development could result in some fundamental changes to international oil markets and prices.

Inflation expectations and supply-side factors				Table 2
	Food inflation	Rice price changes	Oil price changes	
2002–Q3 2015	0.47	0.35	0.41	
2002–08	0.48	0.45	0.04	
2009–Q3 2015	0.40	0.16	0.47	

Source: Author's estimates.

Ehrmann (2015) observed that, under persistently low inflation, inflation expectations are not as well anchored as when inflation is around target – that is, inflation expectations are more dependent on lagged inflation and inflation forecasters tend to disagree more. Furthermore, inflation expectations are revised in response to lower-than-expected inflation but do not respond to higher-than-expected inflation. Since the last quarter of 2014, the Philippines has experienced low inflation. Average inflation in 2015 stood at 1.4%, below the low-end inflation target of 2.0%. Nevertheless, inflation expectations based on the latest surveys of private sector economists⁷ remained within the inflation target range over the policy horizon but fell below the lower bound of the target range for 2015. The latest inflation forecasts for 2016 and 2017, however, yielded lower means relative to previous forecasts. This may reflect downward revisions to inflation expectations given lower-than-expected inflation.

⁷ Based on the October 2015 BSP survey of private sector economists.

3. What drives inflation expectations?

Empirical results in the previous section highlight the importance of the inflation expectations channel in influencing inflation under inflation targeting. Hence, the BSP closely monitors inflation expectations and ensures that they are consistent with the institution's policy objectives. There are various measures of inflation expectations that the BSP considers in its assessment of inflation developments. The BSP utilises survey-based measures of inflation expectations, which include results from quarterly consumer and business expectations surveys, a monthly survey of private forecasters, which is part of the report of the staff to the Monetary Board on the monetary policy stance, and other monthly surveys conducted by private organisations such as the Asia Pacific (AP) Consensus and Bloomberg. Another important indicator is the yield curve, which provides information on expected inflation based on the price of financial market assets.

Since the adoption of inflation targeting in 2002, inflation expectations have appeared to be on a declining trend except for upward shifts in the latter part of 2005 and in 2008. Starting in 2011, inflation expectations have likewise become less volatile. The upward shift in the latter part of 2005 could be attributed in part to the expected price adjustments arising from the implementation of the reformed value added tax (RVAT). However, this was only short-lived as the BSP's policy pronouncements continued to emphasise that the RVAT's impact would consist mainly of one-off price increases, and would thus be unlikely to fuel a sustained rise in inflation. Such a policy message helped ease public expectations about the price increases from RVAT, particularly when combined with mitigating measures to stabilise commodity supplies through timely imports and strict enforcement of regulations against unreasonable price increases.

Moreover, there is also some evidence that supply side developments, particularly the increases in oil prices, were already feeding into inflation expectations. In 2008, the upward spike in inflation expectations was due partly to supply shocks from rising food and energy prices that continued over a longer period and contributed to second-round effects. These affected the wage- and price-setting behaviour of businesses and households, but the BSP responded with decisive action, raising key policy rates by a total of 100 basis points from June to August, and making strong anti-inflation pronouncements. The reduced volatility of inflation expectations particularly from 2011 can be attributed in part to within-target actual inflation since 2009.

Understanding the changes in inflation expectations dynamics requires the key variables that drive these developments to be determined. A simple OLS regression of Philippine monthly data during the period 2002–15 was undertaken to identify the factors that feed into inflation expectations in the country. Results show that a change in the inflation gap is expected to have the largest impact on inflation expectations, holding other variables constant (Table 3). Other economic variables that affect inflation expectations include policy interest rates, past inflation, past inflation volatility, nominal wage growth and industrial production growth. The coefficients of public debt, asset price growth, NEER and primary fiscal balance are not statistically significant but they exhibit the expected signs (ie positive for public debt and asset price growth and negative for NEER and primary fiscal balance).

Determinants of inflation expectations

Table 3

Dependent variable: inflation expectations		
Independent variables	Estimated coefficients	Standard error
Inflation gap	0.39***	0.14
Policy rate (RRRP)	0.28**	0.12
Past inflation (2 months lag)	0.15***	0.05
Past inflation volatility (3 months lag)	0.13*	0.07
Nominal wage growth rate	0.02*	0.02
Industrial production growth rate	0.01**	0.00
Public debt to GDP	0.01	0.01
Asset price growth	0.00	0.00
Primary balance to GDP	-0.00	0.01
NEER growth rate	-0.01	0.01

Notes: * Significant at 10%. ** Significant at 5%. *** Significant at 1%.

Source: Author's estimates.

It is worth noting that between two periods (ie pre-2008 and post-2010), the sign for the coefficient of the inflation gap has shifted from positive to negative and it has become statistically more significant. Thus, when actual inflation deviates from the target, agents expect that the BSP will undertake the necessary measures to bring inflation back to target. As the BSP was able to achieve its inflation target for six consecutive years from 2009 to 2014, this has led to an increase in market confidence in the BSP's capacity to implement inflation targeting. This also indicates that inflation expectations in the country are well anchored to the inflation target.

The role of policy interest rates in the formation of inflation expectations appears to have also improved post-2010 as the coefficient⁸ of policy interest rates became statistically significant under a regression that considered the post-2010 period. Like the inflation gap, this could be attributed to the increasing credibility of monetary policy. The role of past inflation and past inflation volatility seems to have decreased as their coefficients under regression estimates that considered the post-2010 period were lower relative to regression estimates that considered the pre-2008 period. This could be due to the increasing influence of other variables, particularly the inflation gap, and the changing structure of and recent developments in the Philippine economy that affect the outlook and the level of confidence of public agents. In terms of nominal wage growth, this variable's role in the evolution of inflation expectations appears to have not changed and this could be attributed to the greater influence of other factors, given the country's slower wage growth in recent years. The importance of industrial production growth has also not changed. This seems to indicate that the influence of manufactured goods (as against primary commodities) in the expected growth in prices of consumer basket has yet to increase.

Institutional factors have likewise contributed to the changes in inflation expectations. As inflation expectations have been within the inflation target set by the government since 2009, we deem that the central bank's independence is the most important factor in setting inflation expectations. This is primarily because of the

⁸ Please note that discussions on estimated coefficients under this section are based on preliminary runs. Results may change with further study and use of more analytical techniques.

timely and clear communication that goes with the inflation targeting framework to facilitate the management of inflation expectations.

Bayangos et al (2010) attributed the backward-looking behaviour of inflation expectations during the initial years of the implementation of inflation targeting to imperfect information about the BSP's policy intentions, which was a source of inertia in the formation of inflation expectations. By the same token, imperfect knowledge of the market's inflation expectations imparted inertia to monetary policy responses. Given these observations, the BSP took initiatives to engage in timely and clear communication of its monetary policy decisions and actions with a view to influencing inflation expectations. A clear communication of policy goals and strategies is crucial in anchoring market expectations, particularly in times of heightened volatility. The BSP initiated a number of disclosure and reporting mechanisms to help the public in gauging the BSP's commitment to attaining the inflation target. The BSP publishes various reports and publications, including the *Quarterly Inflation Report* and the *Highlights of the Meeting of the Monetary Board on Monetary Policy*. Furthermore, the BSP conducts road shows and financial literacy campaigns under its Economic and Financial Learning Program (EFLP). Through the EFLP, the BSP takes a proactive stance in promoting greater awareness and understanding of the role it plays in the economy as well as the relevant fundamental economic and financial issues confronting it. The audience of the EFLP embraces different sectors and age groups – students, academics, business sector, overseas Filipinos and their families, government employees and the banking community.

Meanwhile, the increasing importance of the policy interest rate in the formation of inflation expectations indicates that reforms in the financial sector, which serves as the channel of changes in interest rates, appear to be an important institutional factor that affects the formation of inflation expectations.

4. Conclusion

The successful conduct of monetary policy involves managing and anchoring inflation expectations. It is crucial that inflation expectations are properly anchored because this allows central banks to achieve price stability while reducing the volatility of other important variables (eg interest rates or output). With the adoption of inflation targeting in 2002, the expectations channel took on a more important role in the transmission of monetary policy.

A significant observation emerging from the empirical exercises undertaken in this short paper is the increased role of inflation expectations in the inflation process after the GFC. Since the latter part of 2008, agents have adopted a more forward-looking orientation in their assessment of current inflation. The shift in agents' behaviour is attributed to the increased credibility of monetary policy. As the BSP was able to achieve its inflation target, it led to increased market confidence in the BSP's capacity to implement inflation targeting. Moreover, private sector inflation expectations have increasingly become anchored to the BSP's inflation target. It is for this reason that, even with recent below target inflation rate, inflation expectations remain manageable and in line with the inflation target.

The behaviour of inflation expectations is driven by a number of factors. Of these, the change in inflation gap has the largest impact on inflation expectations, holding

other factors constant. Other economic variables that affect inflation expectations include the policy interest rate, past inflation, past inflation volatility, nominal wage growth and industrial production growth.

The country's low and stable inflation and manageable inflation expectations are positive outcomes of the successful implementation of inflation targeting. While much has already been achieved, there is still room to enhance inflation targeting. To improve monetary policy transmission, the BSP is looking at implementing an interest rate corridor (IRC). This is expected to strengthen the use of interest rates as the main policy instrument for inflation targeting.

Given the importance of managing inflation expectations, the BSP engaged in timely and clear communication of its monetary policy decisions and actions. Such communication is crucial in anchoring market expectations, particularly at times of heightened volatility. As central banks recognise the need for greater flexibility, there are greater pressures for more effective communication to manage expectations – not only inflation expectations but also risk aversion. This would require a more “nuanced” degree of transparency that does not amplify market expectations (ie not propagandist) but provides stability and the assurance of disciplined policymaking. To this end, the BSP started in 2015 an enterprise-wide communication plan with the aim of more systematically monitoring upcoming issues that will require market communication. This is expected to further improve the effectiveness of the BSP's monetary policy tools.

Other initiatives that the BSP will undertake include a review of inflation expectations measures, data improvement and the use of financial market information. These are intended to further enhance inflation targeting and keep inflation expectations at manageable levels. This is essential to achieving more durable and inclusive economic growth.

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