How Much Could Inflation Expectations Fall If the Target Is Reaffirmed at 3.0%?

Daniel Karp*
daniel.karp@santander.com.br
+55 11 3553 9828

Felipe Kotinda*
felipe.kotinda@santander.com.br
+55 11 3553 8071

- **Recently, there has been public debate about a possible change in the inflation target by the CMN (National Monetary Council). In this report, we aim to contribute to the debate by estimating (through an econometric model) how much of the de-anchoring of inflation expectations can be explained by the risk of a target change — and, consequently, how much expectations could fall if the target is not changed.**
- **We estimate an impact of +60 bps on inflation expectations given the debate on raising the target. Hence, the implicit target embedded in the Focus Survey expectations is currently around 3.6% (vs. the current 3.0% long-term target).**
- **Therefore, we conclude that a reaffirmation of the target at 3.0% would be able to generate a fall of 60 bps in medium-/long-term inflation expectations (2024, 2025, and 2026), potentially bringing the 36-month-ahead expectation down to 3.4% from 4.0% (although considering the uncertainty inherent in any model, we are more confident of a decline of 30-40 bps).**
- **Additionally, we show that the fiscal dynamics have also contributed to an increase in long-term expectations: +15 bps from March 2020 through October 2022, and then +10 bps from October 2022 until now. Therefore, if there is a positive change in the perception of the fiscal dynamics, expectations could fall an additional 25 bps.**
- **Conversely, a change in the target to above 3.6% would generate another round of deterioration in inflation expectations. By our estimates (assuming full re-anchoring at the new target, which is highly uncertain), if the target is raised to 4.0%, expectations could reach at least 4.5%; if the target goes to 4.5%, expectations could go at least as high as 5.1%. Moreover, if the fiscal dynamics perception worsens, inflation expectations could deteriorate further.**

Introduction

Since the beginning of the year, there has a public debate around the possibility that the CMN (National Monetary Council) could change (raise) the Brazilian inflation target, which, in our view (explained econometrically in this report), has been the main driver of the de-anchoring of inflation expectations from the target.

In this report we focus on estimating the direct impact of this debate on inflation expectations, and we show how much expectations could fall if the target is not changed. We will refrain from discussing the possible implications of a target change on the monetary policy cycle and on long-term social welfare and will let readers draw their own conclusions on those topics given our estimates for the impact on expectations.

Our strategy is to estimate a model for inflation expectations using as explanatory variables (i) the target itself, (ii) a measure of fiscal anchoring, and (iii) a measure of current inflation de-anchoring (as short-term shocks can contaminate even long-term expectations). Using the assumption that we are not omitting any explanatory variables in the model, we consider that the impact of the discussion of a possible target increase is fully accounted for in the error of the model. Therefore, we have a proxy estimate of what is the marginal increase in the target expected by economists and can calculate how much expectations could fall if the target is kept at 3.0% for the medium/long term.

Model and Results

The data we use for inflation expectations comes from the Focus Survey (carried out by the BCB, using data from around 160 financial institutions/economists). The long-term inflation expectation is calculated as a rolling 36-month-ahead series (π_t^{e36m}). As explanatory variables we use the target itself (π_t^{T36m}), because assuming full monetary and fiscal anchoring, long-term inflation expectations should always be (around) the target. However, to account for the possibility of monetary or fiscal de-anchoring, we use two variables as proxies for them. For monetary anchoring, we use the deviation of current inflation (π_t) from the target (π_t^T), with the underlying idea that shocks affecting current inflation could have spillovers to long-term expectations. For fiscal anchoring, we first use the Focus Survey data regarding the primary fiscal result expectations (as a percentage of GDP) and construct a rolling 36-month series ($fiscal_t^{e36m}$), and then we calculate measures of potential output and neutral interest rate, interact them with the level of debt, and estimate at each point in time what would be the necessary surplus to stabilize the debt-to-GDP ratio (nec_fiscal_t). Finally, we calculate the deviation of the primary result expectations 36 months ahead from the necessary surplus to stabilize the debt-to-GDP, which ends up being our measure of fiscal de-anchoring ($fiscal_t^{e36m} - nec\_fiscal_t$). The sample goes from December 2006 until April 2023, summing up 197 monthly observations.

$$\pi_t^{e36m} = c + \beta_1 \pi_t^{T36m} + \beta_2(\pi_t - \pi_t^T) + \beta_3(fiscal_t^{e36m} - nec\_fiscal_t) + \epsilon_t$$

The estimated results are:

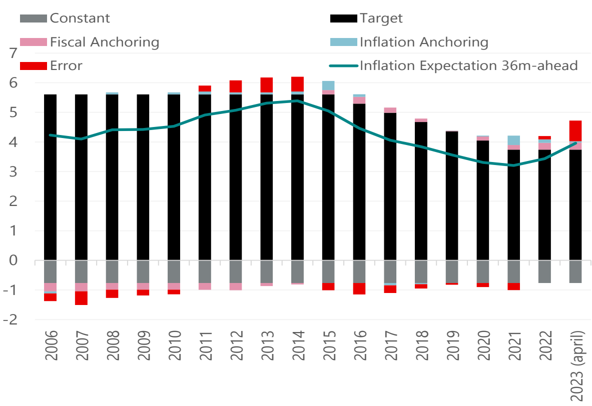
Figure 1. Regression Estimates

Dependent Variable: Infl_expec36m
Method: Least Squares
Date: 05/19/23 Time: 12:50
Sample (adjusted): 2006M12 2023M03
Included observations: 196 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.77	0.22	-3.42	0.00
Target_36m	1.25	0.06	22.31	0.00
Inflation_anch	0.05	0.01	5.02	0.00
Fiscal_anch	-0.09	0.02	-5.53	0.00
R-squared	0.78			

Sources: Santander estimates, with data from BCB and IBGE

Figure 2. Breakdown of Contribution of Each Variable of the Regression



Sources: Santander estimates, with data from BCB and IBGE. Note: We show year-end data (instead of monthly data) for improved visualization.

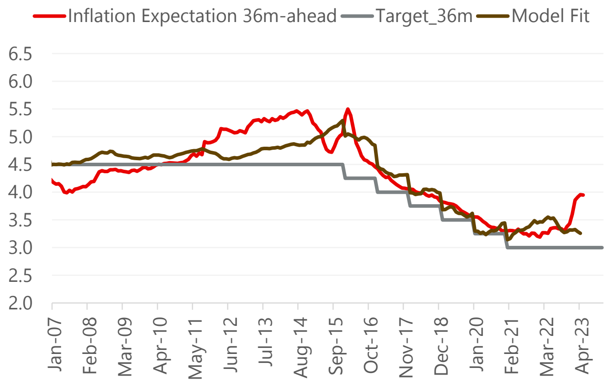
The highlights of the model are: (i) in Figure 1, the inflation target coefficient is above 1, so an increase of 1% in the inflation target would raise expectations by more than 1%, or more specifically, by 1.25%, (ii) in Figure 2, the target has the highest contribution as explanatory variable, showing it is the main variable driving long-term expectations.

Now, our strategy to estimate the implicit target embedded in expectations is as follows: we assume the hypothesis that we are not omitting any explanatory variable[1] and then we also assume that the impact of the

[1] To stress our hypothesis that we are not omitting any variable (besides the unobservable "risk of change in the target" one), we tested other likely explainers, like U.S. inflation, commodity prices, the BRL and a gauge of output gap, but the results did not change noticeably.

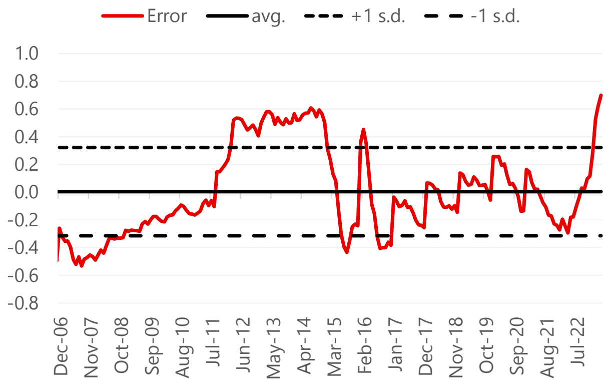
discussion of the possible change in the inflation target is being fully captured by the error of the model[2]. Calculating the model fit now, it stands at 3.26%, so, as expectations are at 3.96%, the error of the model is 0.70%. Finally, if this error is an implicit change in the inflation target, we need to account for it in the inflation target variable, so we need to divide the error by β_1, the coefficient of the inflation target, to estimate the real marginal increase economists are considering in the inflation target (and make the error go to zero). The result is 0.56%, meaning that if our assumptions are valid (and if the other variables remain unchanged), then the implicit inflation target that economists are using in their expectations is actually 3.56%, instead of the current 3.0% target.

Figure 3. Inflation Expectations, Target and Model fit



Sources: Santander estimates, with data from BCB and IBGE

Figure 4. Model's Error



Sources: Santander estimates

Therefore, if the target is indeed not raised, then there could be a potential decline of ~60 bps in long-term expectations over time — although given the inherent uncertainty of any model, we would be more comfortable considering that a fall of 30-40 bps[3] is more plausible in the short term.

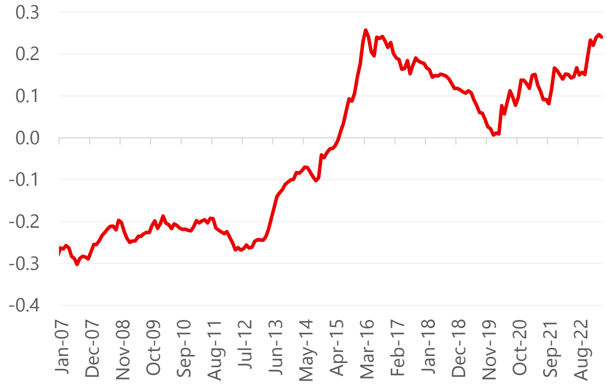
Conversely, if the target is increased above the ~3.6% level, there could be another round of deterioration in inflation expectations. **In the example of a change to 4.0%, and assuming full re-anchoring at the new target (which is a strong assumption), then expectations could reach at least 4.5%; if the change of the target is to 4.5%, expectations could at least as 5.1%. If expectations are not fully re-anchored at the new target, expectations could go even higher than these estimates.**

Another interesting topic is the impact of the fiscal dynamics on inflation expectations, as the ongoing changes in the fiscal framework are also cited in the public debate as possible drivers of the worsening in expectations. Indeed, our results show that the negative impact of the fiscal dynamics on inflation expectations began to be felt in March 2020, at the beginning of the pandemic, when the first exceptions to the former fiscal framework started to be put into effect. The impact increased over time (as new exceptions were added) until reaching +15 bps of impact on inflation expectations by the end of 2021 and staying at that level until October 2022. Then, after the elections and as the discussions on the new fiscal framework got under way, another round of impact started, adding +10 bps to inflation expectations. **Hence, the full impact of the fiscal dynamics on long-term expectations since 2020 adds up to +25 bps.**

[2] One could argue that good econometric practice says the error of the model should be normal, independent (not autoregressive), with 0 mean and constant variance (homoscedasticity). In Figure 1 it seems that the errors are autoregressive at least during some periods, being a valid critic inherent in the strategy we decided to use here. To relativize this critic we argue that the source of the autoregressive pattern is exactly the variable we are trying to measure, the risk of a change in target (being incorporated by economists' estimates over time), which in our view reduces the relevance of this possible critic.

[3] The standard deviation of the model is ~0.30, so taking just the portion of the error above the 1 standard deviation, we arrive at this more confident estimate of a of possible fall in expectations of 30-40 bps.

Figure 5. Contribution of Fiscal Dynamics to Inflation Expectations



Sources: Santander estimates, with data from BCB and IBGE

This is also an important result, as it shows that if fiscal dynamics improve — or if economic agents start to perceive an improvement — there is room for a decline in inflation expectations from that front as well (a 1% reduction in the deviation of the expected primary result from the necessary result needed to stabilize debt reduces inflation expectations by 10 bps). Although, conversely, if agents start to expect an even looser fiscal policy ahead, we could also see more deterioration in inflation expectations on that front.

Conclusion

Our model shows that the discussion of a possible rise in the inflation target has already led economic agents to anticipate that change and consider in their expectations an increase of ~60 bps in the inflation target, to 3.6% (from 3.0%). As a result, we estimate that, if the target is not changed, agents would have to reassess their hypothesis, which could lead to a potential decrease of 60 bps in inflation expectations, from the current level of ~4.0% to somewhere closer to 3.4%. We highlight that given the uncertainty of the model estimates, we consider a fall of 30-40 bps more likely, at least as a first-leg movement of the reassessment.

In addition, we conclude that the fiscal dynamics played a role in the increase in inflation expectations, suggesting that an improvement in economic agents' perception of the fiscal accounts could also generate a reduction in expectations.

Finally, it is important to mention alternative scenarios where, for example, the target is raised above 3.6% (to, say, 4.0% or 4.5%) and/or the fiscal dynamics perception worsens, because current inflation expectations do not consider those scenarios. Therefore, if they materialize, another round of deterioration in inflation expectations would follow.

CONTACTS / IMPORTANT DISCLOSURES

Brazil Macro Research			
Ana Paula Vescovi*	Chief Economist	anavescovi@santander.com.br	5511-3553-8567
Mauricio Oreng*	Head of Macro Research	mauricio.oreng@santander.com.br	5511-3553-5404
Jankiel Santos*	Economist – External Sector	jankiel.santos@santander.com.br	5511-3012-5726
Ítalo Franca*	Economist – Fiscal Policy	italo.franca@santander.com.br	5511-3553-5235
Daniel Karp*	Economist – Inflation	daniel.karp@santander.com.br	5511-3553-9828
Tomas Urani*	Economist – Global Economics	tomas.urani@santander.com.br	5511-3553-9520
Felipe Kotinda*	Economist – Commodities	felipe.kotinda@santander.com.br	5511-3553-8071
Gabriel Couto*	Economist – Special Projects	gabriel.couto@santander.com.br	5511-3553-8487
Gilmar Lima*	Economist – Modeling	gilmar.lima@santander.com.br	5511-3553-6327
Global Macro Research			
Maciej Reluga*	Head Macro, Rates & FX Strategy – CEE	maciej.reluga@santander.pl	48-22-534-1888
Rodrigo Park *	Economist – Argentina	rpark@santander.com.ar	54-11-4341-1272
Ana Paula Vescovi*	Economist – Brazil	anavescovi@santander.com.br	5511-3553-8567
Juan Pablo Cabrera*	Economist – Chile	jcabrera@santander.cl	562-2320-3778
Guillermo Aboumrad*	Economist – Mexico	gjaboumrad@santander.com.mx	5255-5257-8170
Piotr Bielski*	Economist – Poland	piotr.bielski@santander.pl	48-22-534-1888
Mike Moran	Head of Macro Research, US	mike.moran@santander.us	212-350-3500
Fixed Income Research			
Juan Arranz*	Chief Rates & FX Strategist – Argentina	jarranz@santanderrio.com.ar	5411-4341-1065
Mauricio Oreng*	Senior Economist/Strategist – Brazil	mauricio.oreng@santander.com.br	5511-3553-5404
Juan Pablo Cabrera*	Chief Rates & FX Strategist – Chile	jcabrera@santander.cl	562-2320-3778
Equity Research			
Miguel Machado*	Head Equity Research Americas	mmachado@santander.com.mx	5255 5269 2228
Alan Alanis*	Head, Mexico	aalanis@santander.com.mx	5552-5269-2103
Andres Soto	Head, Andean	asoto@santander.us	212-407-0976
Walter Chiarvesio*	Head, Argentina	wchiarvesio@santanderrio.com.ar	5411-4341-1564
Aline de Souza Cardoso*	Head, Brazil	aline.souza.cardoso@santander.com.br	5511-3553-1684
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