Soft Landing in Perspective: The Case of Brazil

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In mid-2022, we had a much more optimistic view than the consensus regarding GDP growth while being pessimistic about inflation[1]. We predicted an economic growth rate above potential, resulting in an even tighter labor market. This scenario would be quite problematic for service inflation, which was running close to double digits at the time. We were correct in our activity outlook but significantly wrong in translating this stronger activity into inflation. The IPCA inflation index ended 2023 at 4.6%.

Nearly two years have passed, and we still maintain an optimistic view of economic activity and inflation. Our thesis remains the same: strong household income (real growth above 5%) will drive robust consumption growth. Additionally, the current savings rate is already significantly high, a change from the end of 2022. This will support a family consumption increase of over 4% this year and, consequently, GDP growth above 2.5%.

We believe that the main difference between our view and the market consensus lies in the projection of the unemployment rate for the end of 2024. The consensus is for an unemployment rate of 8% despite growth above 2%. It seems difficult to reconcile these two projections. Either one believes that productivity will increase considerably or that there will be a significant recovery in the participation rate. We consider neither of them. We project an unemployment rate of 7%, with a significant risk of being below that.

In 2023, the strong economic activity and the reduction in the unemployment rate did not result in higher service inflation as we predicted. Why do we believe it will be different in 2024-2025? The answer lies in the absence of contributions from IPCA components related to supply shocks. Between mid-2021 and 2023, wholesale inflation decreased from 3.6% to -7.5%. This oscillation in goods inflation was transmitted to service inflation via the inertial channel. Service inflation was not supposed to be above 10% in 2022, but it is also not supposed to be below 5% now.

This up-and-down that we expect for service inflation between 2022 and 2025 has historical support. Since the implementation of the inflation targeting system, we have had three episodes of significant service inflation reduction. The current one with Meirelles in 2005-2007 and another with Ilan in 2016-2017.

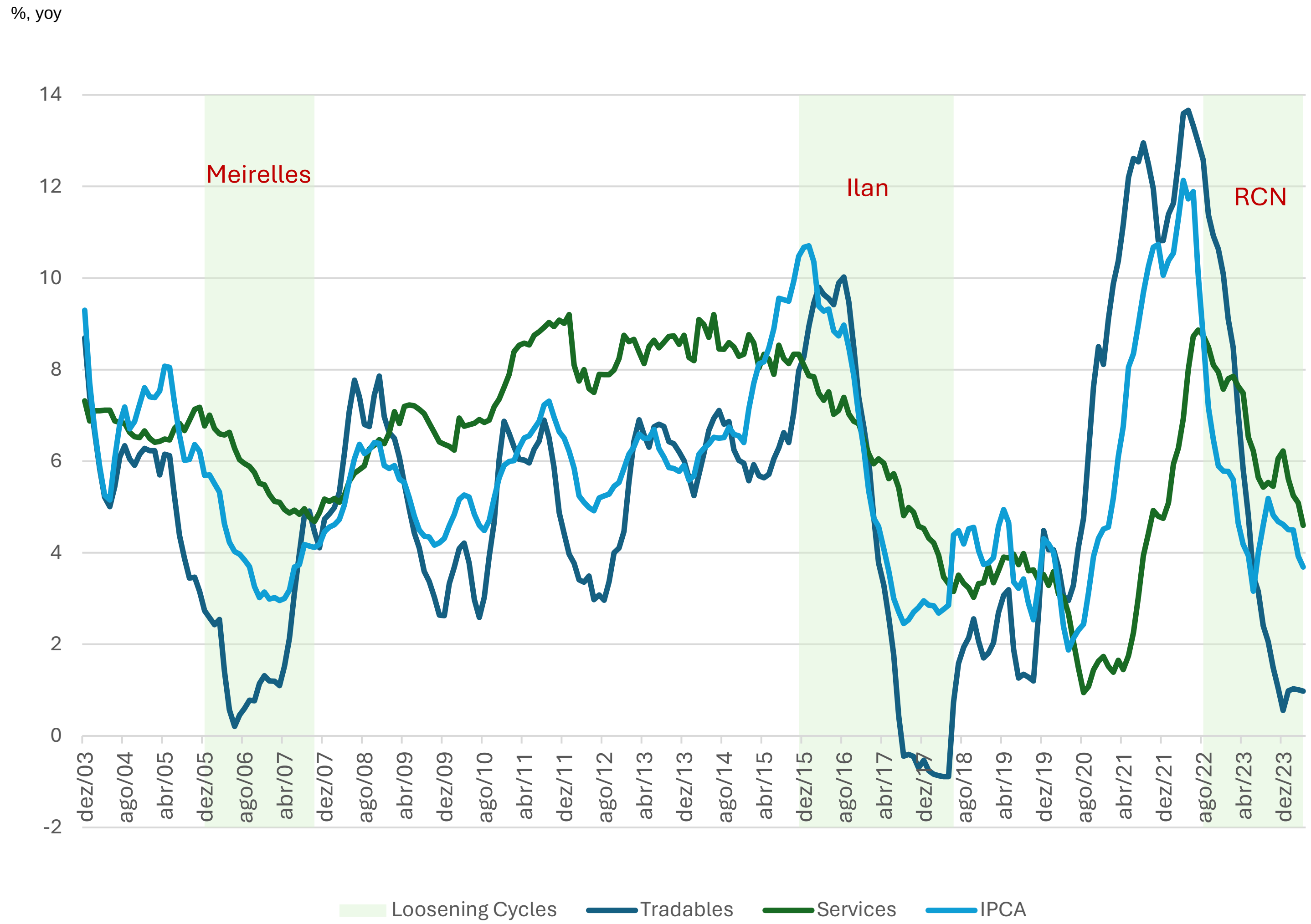
The Ilan cycle followed the textbook - opening of the gap, increase in the unemployment rate, re-anchoring of expectations, and fiscal contraction. Service inflation, which was at 8.1% at the end of 2015, began to decline from 2016, reaching the target in mid-2018 (Chart 1). This

[1] Refer to our study "Interest rate in Brazil – first to go up, first to come down?" (link).

reduction was consistent with service inflation staying around the target in the following years.

The reduction in inflation seen with Meirelles was temporary. After a strong currency appreciation in the early years of the Lula government, tradable goods inflation became negative. While this was the case, service inflation showed a reduction for several consecutive quarters via the inertial channel, reaching the target in 2006. Despite the recovering in the activity, the Brazilian Central Bank (BCB) saw an opportunity to start a cutting cycle due to the widespread reduction in inflation.

Chart 1: Headline (IPCA), Services and Tradables Inflation



Source: IBGE (Brazilian Institute of Geography and Statistics), BCB (Brazilian Central Bank), Mar Asset Management

However, the economic context was completely different. The gap continued to close, the falling unemployment rate, fiscal spending expanding and nominal wages continued to grow well above inflation. As a result, after the deflationary effect of tradable goods dissipated, service inflation began to increase and exceeded the target set at the time. The BCB was forced to initiate a tightening cycle in 2008, but inflation measured by the IPCA was only controlled 10 years later during Ilan's cycle.

What kind of cycle are we in currently? With an unemployment rate of 7.5%, fiscal spending growing just under 10% in real terms, and GDP growth of 2.5%, it seems to us that the current cycle will have an inflationary dynamic similar to Meirelles' easing cycle. Most likely, after the deflationary effect of tradable goods, service inflation will resume an upward trajectory. This is a scenario where longer-term inflation expectations would move even further away from the target.

The BCB's job will be much harder ahead if it wants to control inflation. With a government so sensitive to growth/popularity[2], this necessary tightening will be very noisy and likely counterbalanced by an expansionary fiscal/quasi-fiscal policy. The recent change in Petrobras' leadership supports this view. Added to this is the risk of having a more adverse international context than expected. The outlook is not promising.

In the following sections, we will detail the economic conditions and the Central Bank's reaction in the two previous episodes of significant service inflation reduction. Then we will compare them with the current moment.

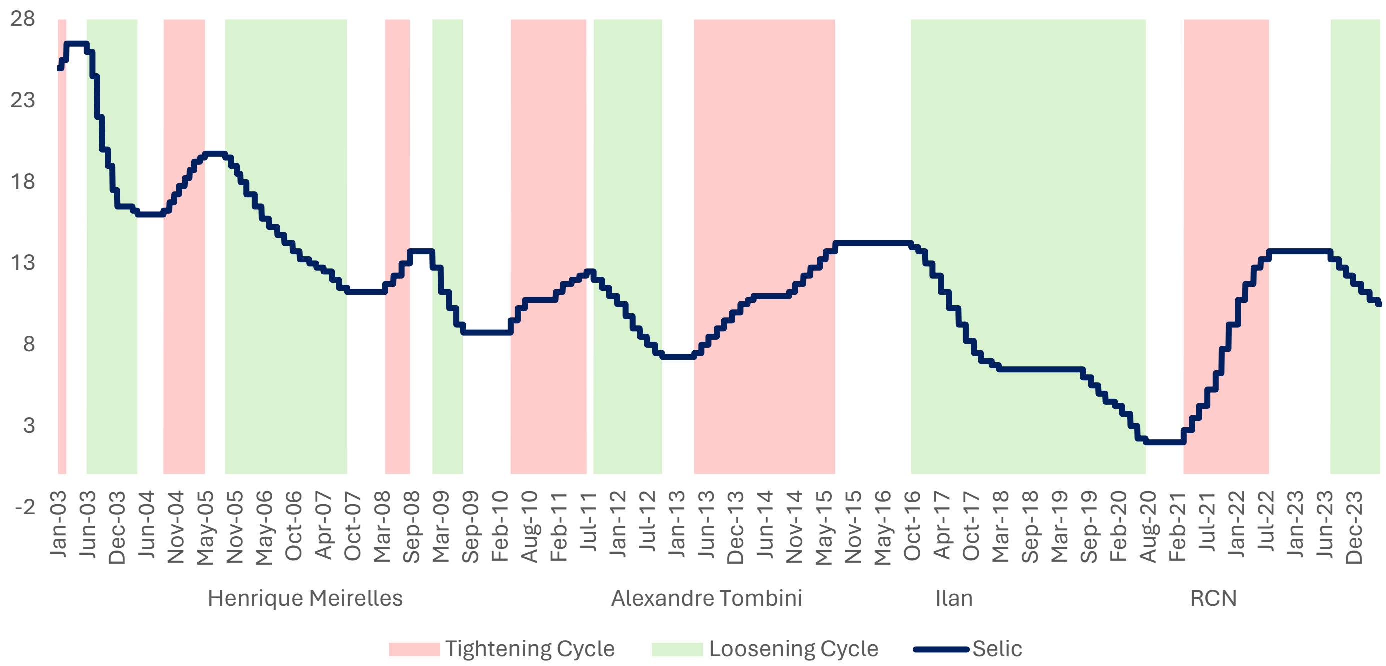
Central Bank Monetary Cycles under Henrique Meirelles

The first episode occurred during Henrique Meirelles' tenure when the BCB implemented three distinct monetary policy cycles between 2004 and 2008. The first cycle was a monetary tightening initiated in September 2004 and ended in May 2005. The second cycle was a monetary easing starting in September 2005 and concluded in September 2007. The third cycle was a monetary tightening initiated in April 2008 and abruptly interrupted in December 2008 due to the global financial crisis.

[2] Topic discussed in previous letters, for example here, and here.

Chart 2: Monetary Cycles since 2003

%, per year



Source: Brazilian Central Bank, Mar Asset Management

Monetary Tightening Cycle (September 2004 to May 2005)

At the beginning of the monetary tightening cycle in 2004, the Selic rate was at 16%. Twelve-month accumulated inflation was high, around 7%, mainly pressured by increases in administered prices such as fuels and food. Wholesale industrial goods inflation was also rising, and the BCB was concerned about international oil prices as Brent was trading around $40, the highest price of the decade, with prospects for further increases.

Meirelles' BCB described the domestic scenario as a *"vigorous economic recovery"* (Chart 3). The BCB was concerned about the sharp industrial growth, believing that the high pace of the last few quarters had brought the sector's output gap close to zero. Installed capacity utilization (NUCI) was at historically high levels, and industrial production was growing at high rates (Chart 4).

This scenario led to a deterioration in inflation expectations. The inflation projected by BCB models was above the target in both the market and reference scenarios. Despite having an official target of 4.5% for 2005, the BCB explicitly announced that it was pursuing 5.1% due to the high inertia from the previous year. The Gerin survey showed that the market had similar expectations to this adjusted target (Chart 5).

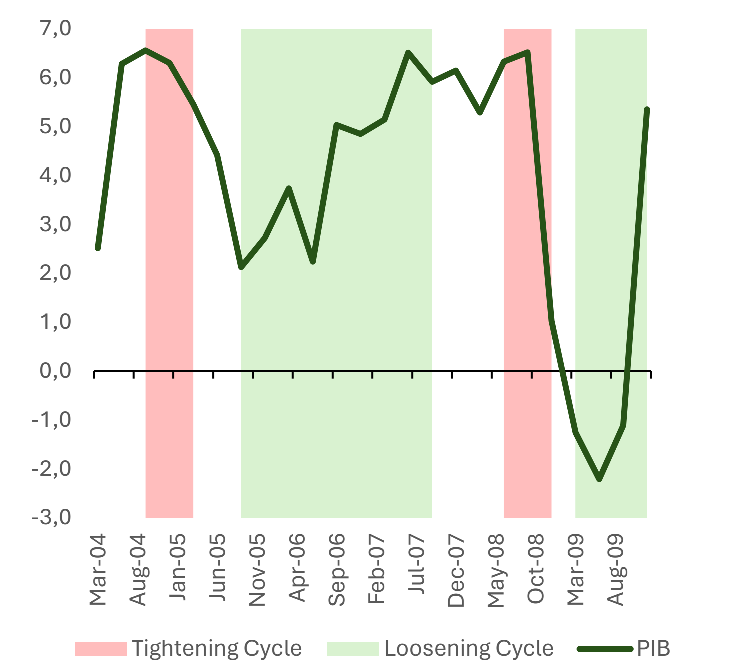
Thus, the BCB initiated a monetary tightening cycle starting with a 25 basis points increase and accelerating to 50 basis points in subsequent meetings, taking the Selic rate from 16% to 19.75%. During the cycle, the unemployment rate decreased by 2.3 percentage points[3], and service inflation remained around 7%.

The tightening cycle lasted until June 2005 when the COPOM (Monetary Policy Committee) decided to end it. In the committee's view, the effects of monetary policy were already visible in both activity and inflation despite the 12-month IPCA being at 8.0% year-over-year. According to the COPOM, *"Economic activity should continue to expand but at a slower pace and more in line with supply conditions, so as not to result in significant inflationary pressures. Additionally, the COPOM evaluates that there was a reduction in the persistence of localized inflationary pressures and an improvement in the external scenario"*. The Central Bank's models pointed to inflation at the target, as did longer-term inflation expectations.

Indeed, GDP growth slowed in the second half of 2005. GDP contracted in the third quarter of 2005, but this slowdown was concentrated in investments and was soon reversed.

Chart 3: GDP Growth

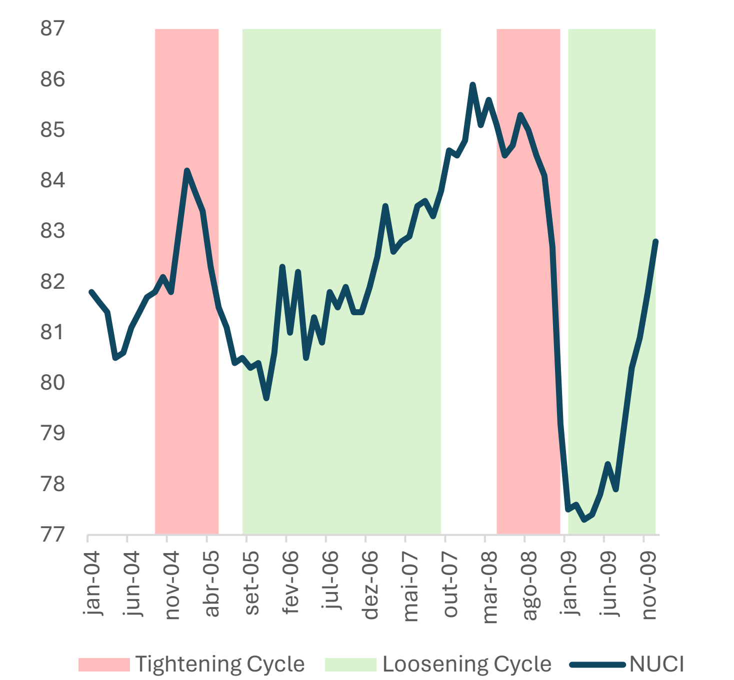
% yoy



Source: IBGE (Brazilian Institute of Geography and Statistics), Mar Asset Management

Chart 4: Level of Installed Capacity Utilization

%, seasonally adjusted



Source: FGV, Mar Asset Management

[3] PME (Monthly Employment Survey)'s Data survey widely used before the new PNAD-C (National Household Survey – Continuous) being implemented.

Monetary Easing Cycle (September 2005 to September 2007)

After a five-month hiatus, the BCB began a monetary easing cycle that lasted from September 2005 to September 2007. During this period, the Selic rate was reduced from 19.75% to 11.25% per year.

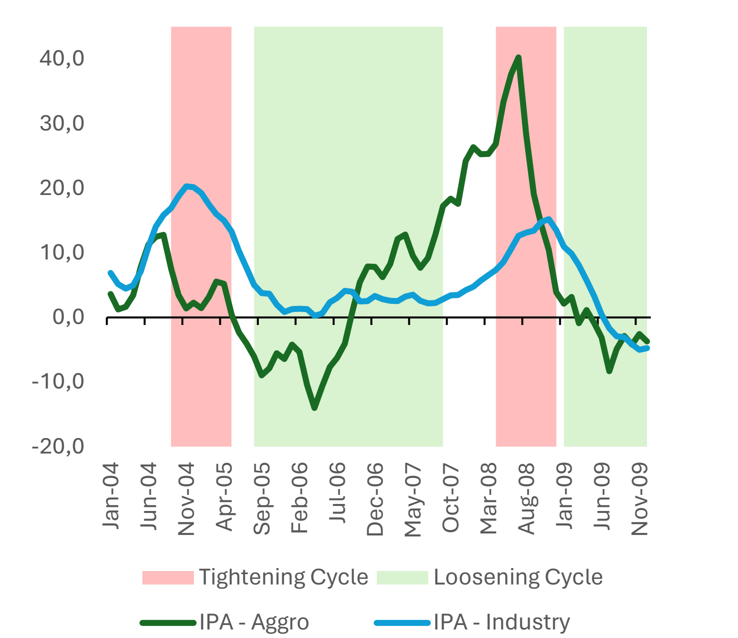
Food inflation showed a very benign behavior, with the BCB seeing a *"reduction in food prices greater than usual."* International oil prices appeared to have peaked, and the exchange rate continued to appreciate. Economic growth was strong, concentrated in domestic demand, and installed capacity utilization remained at historically high levels.

The labor market was evolving *"in line with historically high levels of activity,"* with the unemployment rate reaching the lowest levels since 2001. Despite this description of the level of factor utilization, the Central Bank considered that *"the output gap continued to widen."*

The IGPs were well-behaved (Chart 5), prompting a revision in the prices of administered items by -0.4%. The drop in current inflation led to a reduction in expectations for 2004 and 2005, both falling by around 20 basis points and approaching the targets set for those years (Chart 6).

Chart 5: Wholesale Price Inflation

%, yoy



Source: FGV, Mar Asset Management

Chart 6: Inflation Expectations - Deviation from Target

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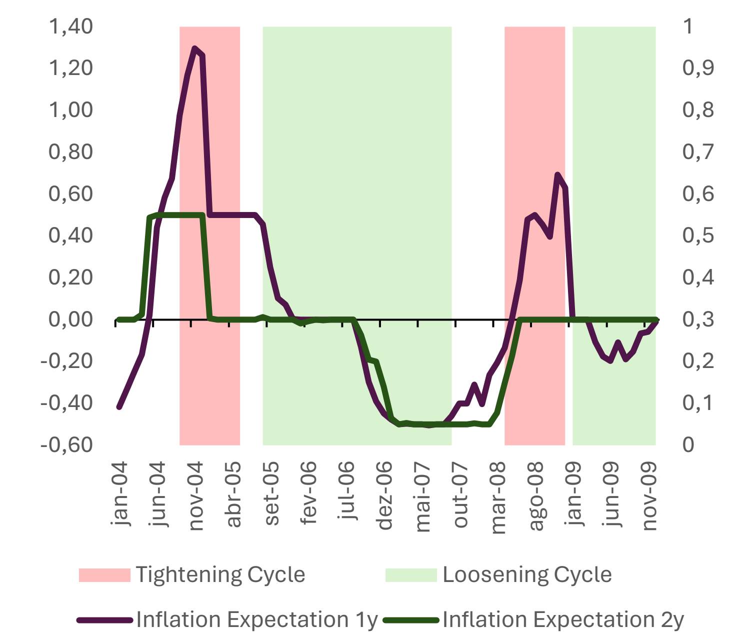


Source: Brazilian Central Bank (BCB), Mar Asset Management

Inflation projections in the Central Bank's models continued to be above the target in shorter horizons, but in *"horizons whose results are more sensitive to current monetary policy decisions"*, estimates were already compatible with the target. Thus, the Central Bank assessed that the expansion of activity would not result in inflationary pressures as it considered it compatible with supply conditions at the time, i.e., in line with its judgment about potential growth.

The term was not in vogue at the time, but the BCB's diagnosis was that it had delivered a soft landing. With minimal cost in terms of growth and social welfare, inflation was under control. It went beyond a simple soft landing. The BCB saw that its actions *"contributed significantly to the consolidation of an increasingly favorable macroeconomic environment in the longer term."* It understood that its actions were working to increase potential growth in the medium and long term.

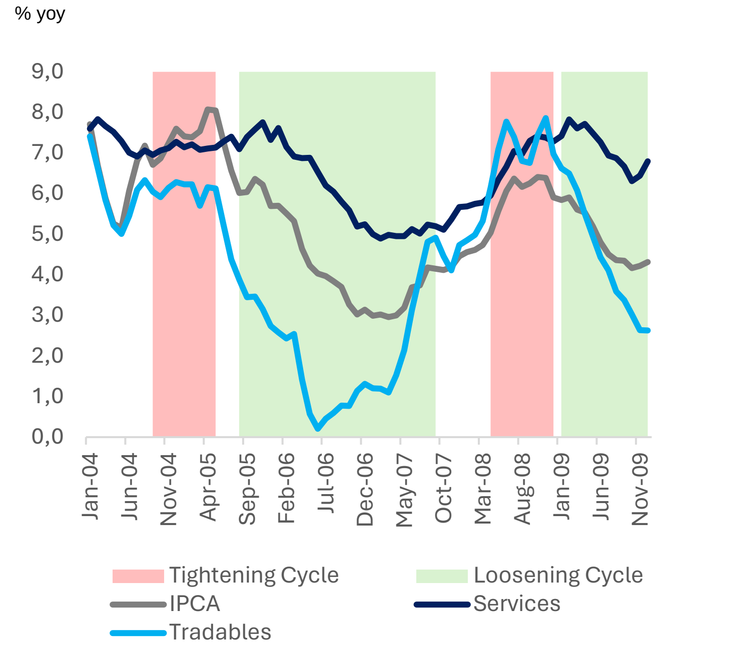
In retrospect, it is not clear if the Central Bank should have initiated an interest rate cut cycle in 2005. What we saw at the end of that year was a recovery in aggregate demand that proved to overheat in the following years. Nonetheless, it was not possible to anticipate future fiscal/quasi-fiscal policy changes, continued strong external demand for Brazilian products, and what the delayed effects of monetary policy on the economy would be (the inflation targeting regime was only a few years old since its implementation). The scenario at the end of 2005 seemed very conducive to monetary easing considering the information available at that time. The main concern at the time was about the anchoring of expectations. Since these were at the target, there was a perception that there was room for interest rate cuts.

In the months following the start of the cycle, the Central Bank saw room to even accelerate the pace of cuts, which reached 75 basis points per meeting. Tradable goods inflation continued to fall, and the IPCA reached 3% in mid-2006 (Chart 7). Market expectations and official BCB projections pointed to an IPCA below the target for the entire relevant horizon. By the end of 2006, the Selic rate was at 13.25%.

The Central Bank's perception was that it was acting cautiously. It judged that the interest rate was still in restrictive territory (Chart 8). However, certainly, monetary policy did not appear to be weighing on economic activity. The unemployment rate fell in the years following the start of the rate cut cycle, and GDP resumed growing at an accelerated pace. It may be that the real interest rate was restrictive but not enough to counterbalance other factors such as strong external demand and... a very expansionary fiscal/quasi-fiscal policy[4].

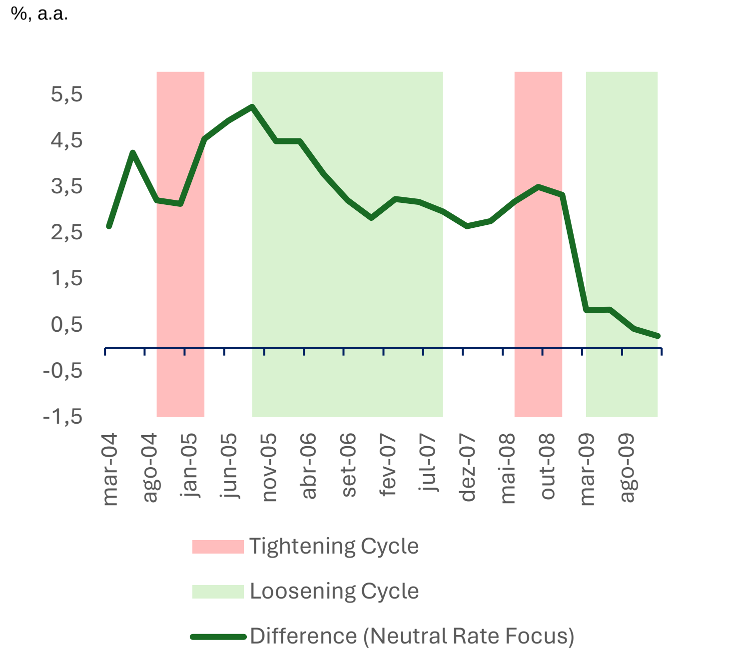
[4] For a more detailed discussion on the evolution of fiscal and parafiscal policies during the Lula I and II administrations, please refer to our study "Lula from a fiscal policy perspective" (link).

Chart 7: IPCA: Headline, Services and Tradable Goods



Source: IBGE (Brazilian Institute of Geography and Statistics), Mar Asset Management

Chart 8: Ex-Ante Interest Rate - Difference from Neutral Rate Implicit in Focus Bulletin



Source Brazilian Central Bank (BCB), Mar Asset Management

This caution appeared at the end of 2006. With the first indication that tradable goods inflation had returned to more normal levels (especially an increase in food inflation), the November meeting decision had three dissents in favor of a smaller 25 basis point cut instead of the one implemented by the majority. In January 2007, the scoreboard was reversed, and the reduction in the pace of cuts was implemented. The BCB foresaw robust activity with momentum coming from a heated labor market, government transfers, and delayed effects of monetary easing. Additionally, it judged it was closer to the neutral rate (referred to as "the rate that should prevail in medium-term equilibrium").

However, this caution was set aside in mid-2007. After two years of declining IPCA inflation and running below the CMN (National Monetary Council) target, part of the COPOM decided to take risks. Activity was clearly heated, with GDP growing above 5%. Measures of economic slack already showed a closed gap - unemployment rate at lows, NUCI near highs, and high wage inflation. In the short term, tradable goods inflation was no longer deflationary; on the contrary. Even so, a new round of currency appreciation was enough to lead the COPOM to return to a 50 basis point cut pace.

Ex-post analysis of actions taken by a monetary authority is usually an unfair exercise. That said, the continuation and especially the reacceleration of the Selic cut pace in 2007 was a COPOM error. It was clear that growth was very strong, with a buoyant labor market and an even more stimulative fiscal policy. Furthermore, they themselves acknowledged that a large part of the impact of monetary easing was still to come.

When tradable goods inflation stopped being a significant deflationary influence, the IPCA accelerated again. Service inflation returned to an upward trajectory compatible with the tight labor market, and in October 2007, the COPOM decided to end the easing cycle *"given the uncertainties associated with the transmission mechanism of monetary policy and the prospective pace of growth in supply and demand."*

Monetary Tightening Cycle (April 2008 to December 2008)

Merely maintaining the Selic at the prevailing level was not enough to control inflation. In April 2008, the Central Bank of Brazil started a new monetary tightening cycle. At that time, the Selic rate was at 11.25%. Inflation was accelerating, driven by services and tradable goods, which were rising both in the IPCA and in the IPAs despite the favorable currency dynamics. The BCB's perception was that *"the recent behavior of the IPCA has been notably less favorable than in previous quarters, so since the end of 2007, inflation has shown signs of diverging from the target trajectory."*

In the last quarter of 2007, annual GDP growth reached 6.2% compared to 5.6% in the previous quarter, indicating a *"substantial acceleration in the growth rate."* Unemployment remained near historically low levels, and the NUCI was close to historical peaks. CAGED showed record numbers in the creation of formal jobs.

In the BCB's prospective scenario at the time, *"the growth of credit and the expansion of the real wage mass should continue to drive economic activity,"* and *"these factors supporting demand should be supplemented by the effects of government transfers and other fiscal stimuli expected for this and the coming quarters."* The committee feared that the output gap had finally closed and that the accelerated growth rate would result in additional inflationary pressures amid an unfavorable external scenario for tradable goods inflation in Brazil. It was clear that merely anchoring expectations was not enough to control inflation.

Thus, the BCB initiated a monetary tightening cycle, increasing the Selic rate by 250 basis points until the outbreak of the 2008 crisis. This tightening had little effect on aggregate demand, and inflation ended the year at 6%, with a significant contribution from service inflation, which reached 7.3% and accelerated on the margin.

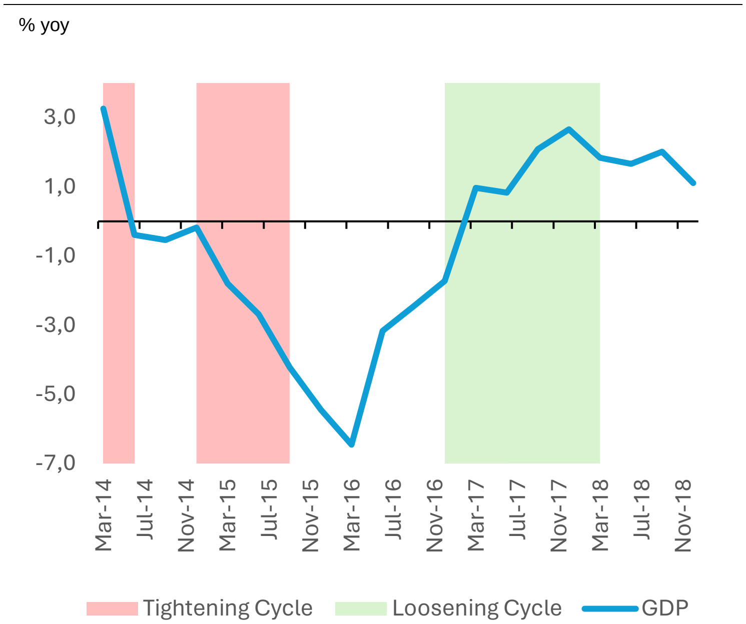
What we saw in that cycle was that when commodity prices in reais were no longer favorable, the heated labor market led to inflation moving away from the target. The cautious reaction of the Central Bank cost inflation control for several years. Except for brief periods in 2009, IPCA inflation consistently stayed above the target in the following years. The economy remained heated due to fiscal expansion, and the BCB was not firm enough to counterbalance all these stimuli. Thus, service inflation remained consistently above 8%, and expectations entered an unanchoring process that was only reversed almost a decade later during Ilan's cycle.

Central Bank Monetary Cycle under Ilan Goldfajn

Conditions at the beginning of the Central Bank's monetary easing cycle in 2016 were completely different from those observed in Meirelles' cycle. In reality, they were the opposite. In 2016, the cycle's moment demanded monetary easing, but inflation was very high. In 2006, the cycle's moment did not prescribe easing, but current inflation opened space for a Selic reduction.

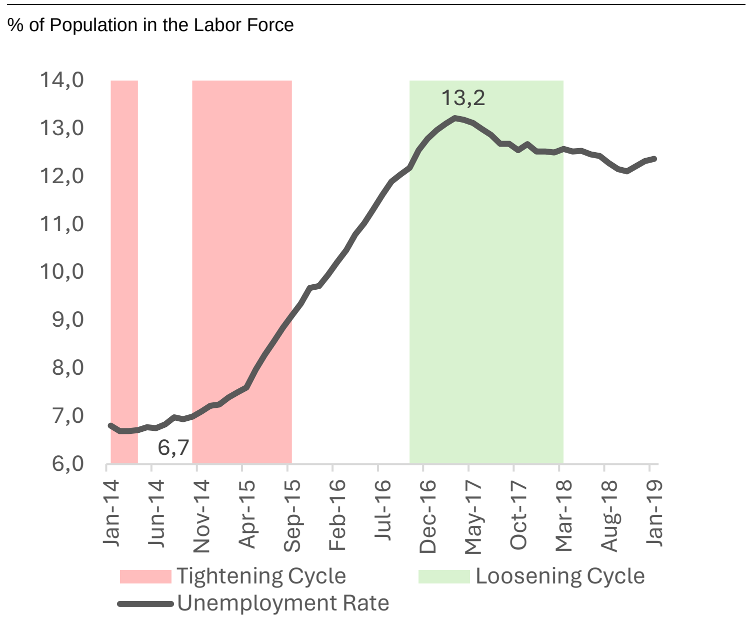
Shortly before the easing cycle, Brazil had just gone through the greatest recession in its history. GDP contracted -6.8% in the biennium 2015-2016, and the unemployment rate increased from 6.7% in 2014 to 13.2% in December 2016 (Charts 9 and 10). The super delicate fiscal situation did not allow for countercyclical fiscal policies. On the contrary, the scandals related to Operation Car Wash froze public loans, and the sharp drop in international oil prices led the heavily leveraged Petrobras to restrict any type of investment. The loss of investment grade led to foreign capital outflows for several consecutive quarters. It was a brutal contraction in domestic demand.

Chart 9: GDP Growth



Source: IBGE (Brazilian Institute of Geography and Statistics), Mar Asset Management

Chart 10: Unemployment Rate



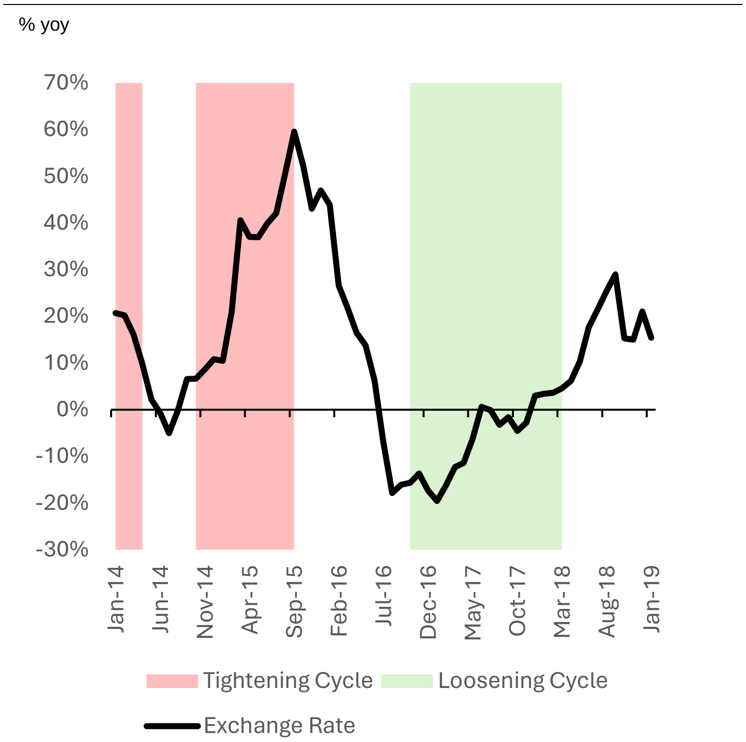
Source: IBGE (Brazilian Institute of Geography and Statistics), Mar Asset Management

In this environment, the exchange rate depreciated by more than 60% between mid-2014 and the end of 2015 (Chart 11). Coupled with the adjustment of administered prices that had been artificially held back for years, IPCA inflation increased to 10.7% in 2015 compared to 6.2% on average over the previous two years.

Despite the strong contraction in demand, there was no room in 2015 for the Central Bank to think about initiating a monetary easing cycle. Due to the nature of the shock, the inflation increase was initially concentrated in tradable goods inflation. This shock caused service inflation to remain high throughout the year due to the inertial channel, despite the strong opening of the output gap. To make matters worse, inflation expectations continued to rise throughout the year.

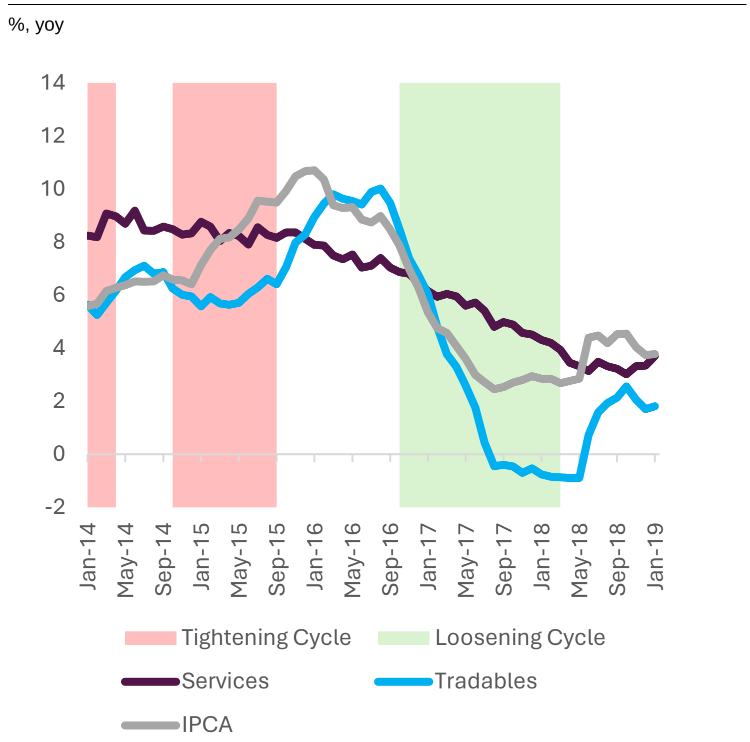
Starting in 2016, the weight of the gap was so great that prices began to respond to the economy's idle capacity. The gap's opening overrode inertia, and wage and service inflation began to decline (Chart 12). It was a version of a hard landing in Brazil.

Chart 11: Depreciation of the USD/BRL Exchange Rate



Source: Brazilian Central Bank, Mar Asset Management

Chart 12: Headline (IPCA), Services and Tradables Inflation

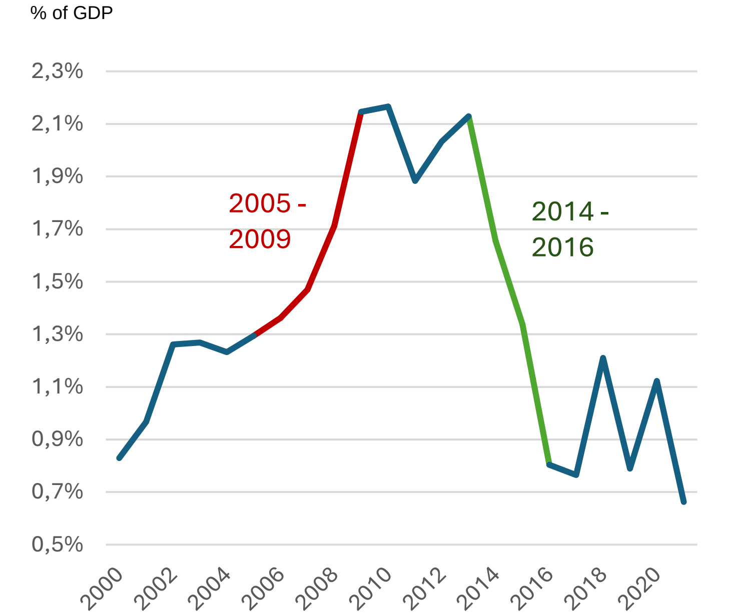


Source: IBGE (Brazilian Institute of Geography and Statistics), Mar Asset Management

The COPOM decided to act cautiously and postponed the start of the rate cut cycle despite the strong opening of the gap and the first signs of inflation cooling. The first cut occurred only in October 2016 when expectations were already anchored and service inflation showed clear weakening. The result was that IPCA inflation was consistently at the target. The cycle was quite extensive, even resumed by Roberto Campos Neto in 2019.

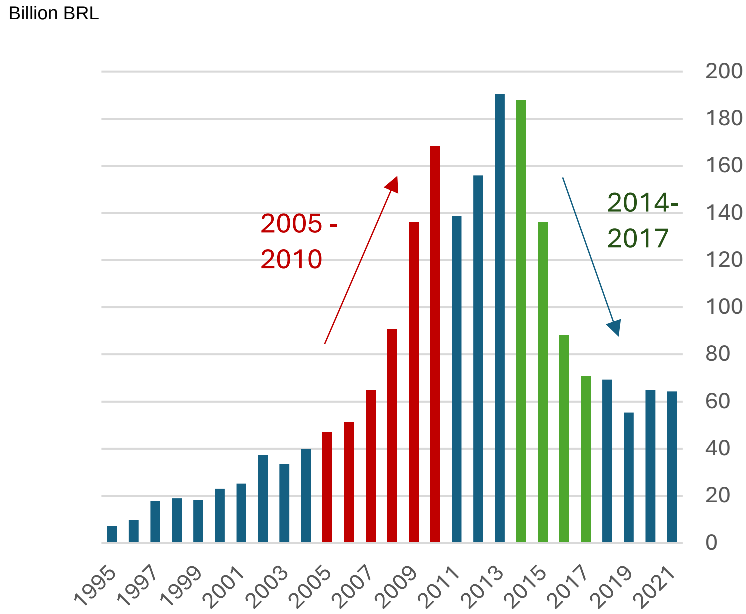
During the entire 2016-2019 cycle, the growth pace was very slow. There were no impulses for the economy as there were restrictions on fiscal spending growth imposed by Constitutional Amendment 95/2016 (Spending Cap), and both public and private companies were in the process of financial deleveraging (Charts 13 and 14). This context allowed for a long monetary easing cycle. It does not resemble the background of the current Selic reduction cycle.

Chart 13: State-Owned Company Investments



Source: Ministry of Finance, Mar Asset Management

Chart 14: BNDES Disbursements



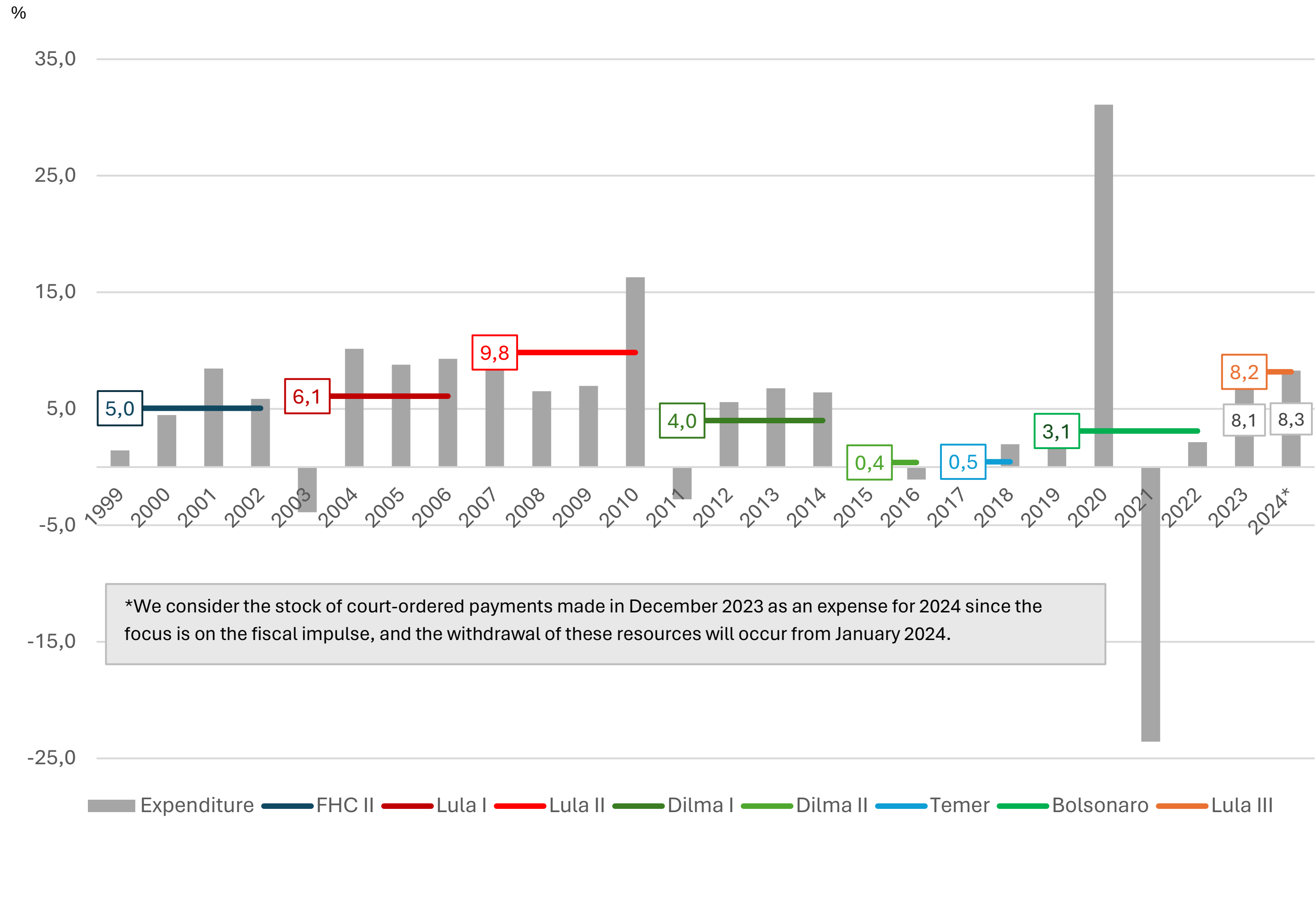
Source: BNDES (Brazilian National Development Bank), Mar Asset Management

2024 rhymes with two thousand and... seven

In fact, the easing cycle started in 2023 bears strong similarities to the one seen during Meirelles' time. Just like in 2005 and 2006, inflation consistently surprised to the downside of market projections and expectations throughout 2023, while activity proved stronger than anticipated. In both periods, the reduction in inflation first occurred among tradable goods and only in a second moment among services.

The current easing cycle began in August 2023. The COPOM saw that *"data related to growth"* continued *"compatible with the base scenario of activity moderation anticipated by the Committee."* Just like in 2005, there was a perception that the economy was already slowing in response to the restriction imposed by monetary policy, and its delayed effects would still weigh on growth in the near future. In both cases, the Central Bank saw the real interest rate as excessively high. With inflation proving very benign, a new soft landing became the COPOM's base scenario.

Chart 15: Growth of Central Government's Primary Expenditures in Real Terms



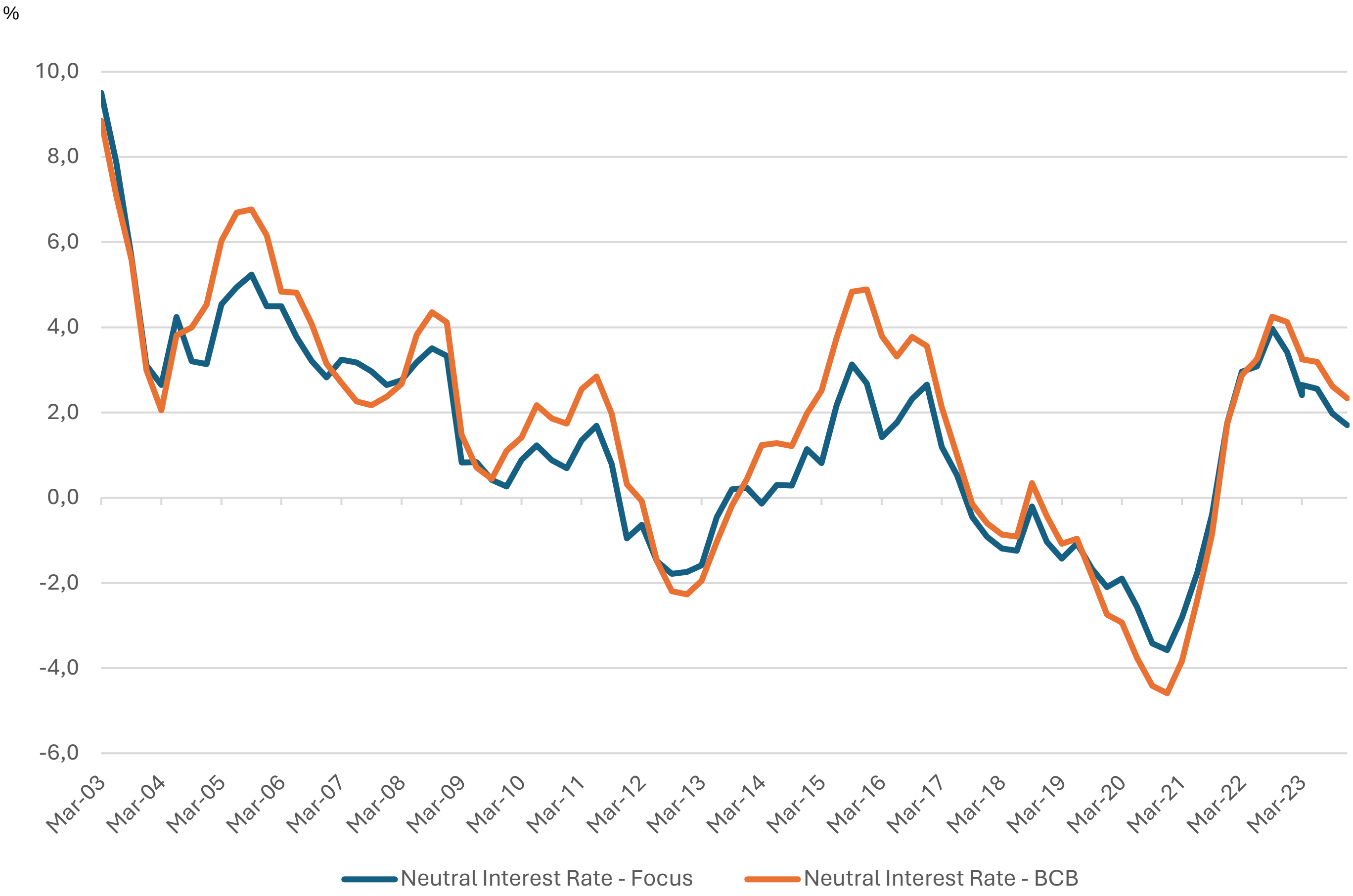
Source: National Treasury, Mar Asset Management

What was seen in both cases was much stronger activity than expected given the degree of monetary policy restriction (Chart 16). And the reasons were the same. The recovery of the labor market combined with an expansionary fiscal policy (Chart 15) supported consumption growth above potential. Between 2005 and 2008, the average annual growth of central government primary expenditures was close to 9%. Between 2023 and 2024, it will be close to 8%.

The similarity is so strong that the following excerpt from the COPOM minutes of July 2006 could fit perfectly in the minutes of the last COPOM meeting

> *"Over the coming months, the expansion of employment and income and the growth of credit will continue to drive economic activity. As mentioned in the May Copom Notes, these factors should be supplemented by the effects of the increase in transfers due to the new minimum wage value and the fiscal impulses already occurred since the last quarter of last year and expected for the remainder of this year. Thus, the effects on aggregate demand from interest rate cuts will be added to other factors that will also contribute significantly to its expansion."*

Chart 16: Ex-Ante Interest Rate - Difference from Neutral Rate[5]

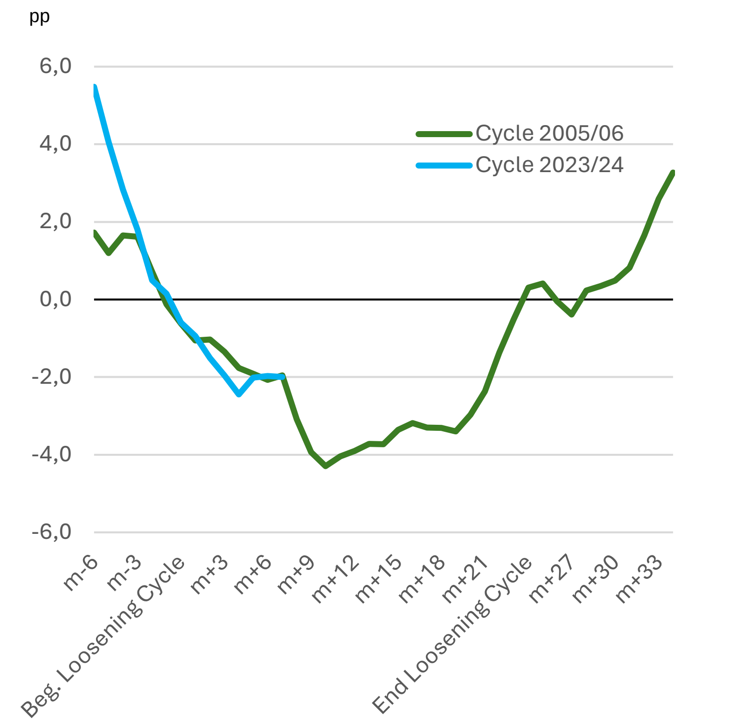


Source: Brazilian Central Bank, Mar Asset Management

We believe that the benign dynamics of the IPCA in recent quarters were due to a positive supply shock. The source of the shock was different but had the same consequence. With Meirelles, it was a strong and extensive appreciation of the BRL. The exchange rate went from R$2.62/US$ at the end of 2004 to R$1.76/US$ at the end of 2007. In the current cycle, it was a strong reversal in commodity prices due to both a very benign harvest and the normalization of global production chains. In the end, the result was a deflation of wholesale goods that was first transmitted to tradable inflation and, in a second moment, to service inflation. The magnitude of the shock in tradable goods in the first eight months of the cycle and its transmission to service inflation were similar in both periods (Charts 17 and 18).

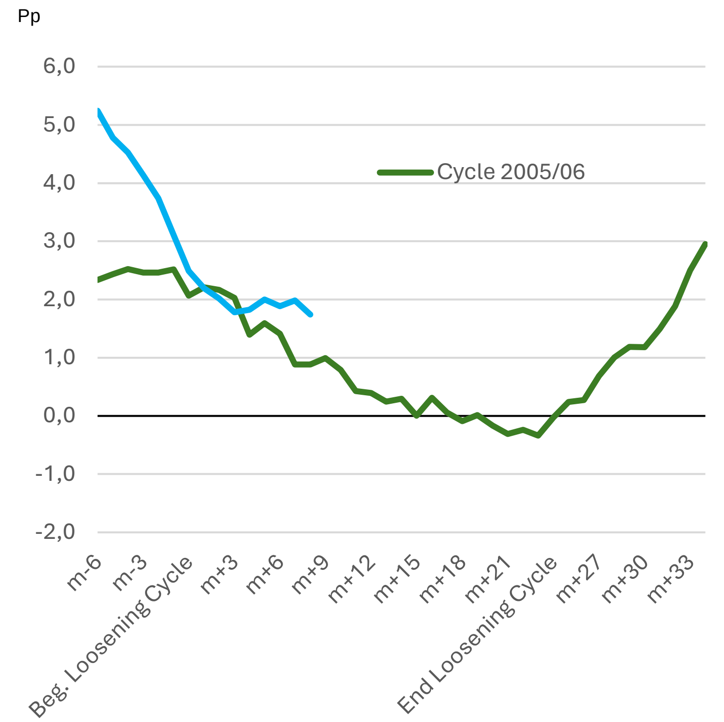
[5] We calculate the neutral rate implicit in the Focus survey as the difference between interest rate and inflation expectations over long horizons. The neutral rate estimated by the Central Bank was taken from the June 2023 Inflation Report.

Chart 17: Tradables Inflation - Difference from Target



Source: IBGE (Brazilian Institute of Geography and Statistics), Brazilian Central Bank, Mar Asset Management

Chart 18: Core Services Inflation - Difference from Target



Source: IBGE (Brazilian Institute of Geography and Statistics), Mar Asset Management

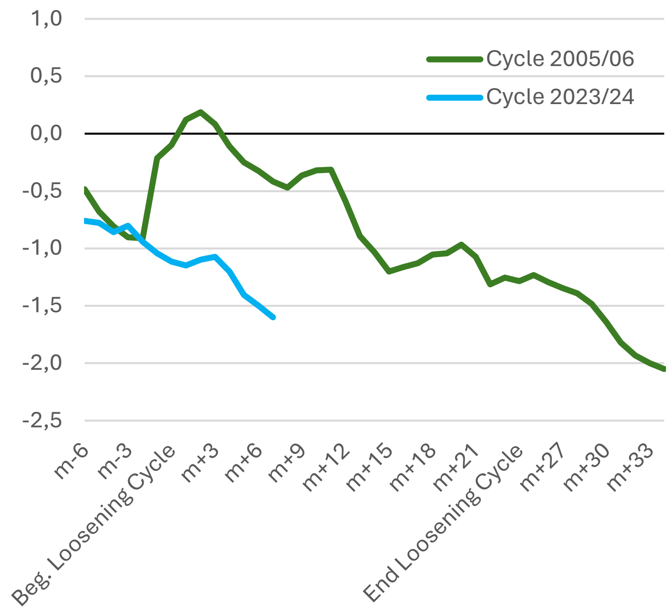
Our conjecture is that the benign behavior of IPCA inflation will be reversed when the deflationary influence of tradable goods dissipates. That is what happened in 2007. It did not take a reversal of the tradable goods shock. It was enough for the inflation of this group to return to a normal level for service inflation to start rising and moving away from the target.

It appears that the influence of tradable goods will be shorter in the current cycle. The latest wholesale inflation data (IGPs) already suggest normalization. Meanwhile, activity continues to surprise positively, mainly due to a heated labor market.

In some crucial aspects, the current situation is even more delicate. The unemployment rate now close to 7.5% is much lower than seen at that time and near historical lows (Chart 18). The only time we saw unemployment at this level during the Dilma Rousseff government, inflation was well above the target. Additionally, expectations are now unanchored, which is different from what was observed in that cycle (Chart 19).

Chart 19: Unemployment Rate - Deviation from NAIRU[6]

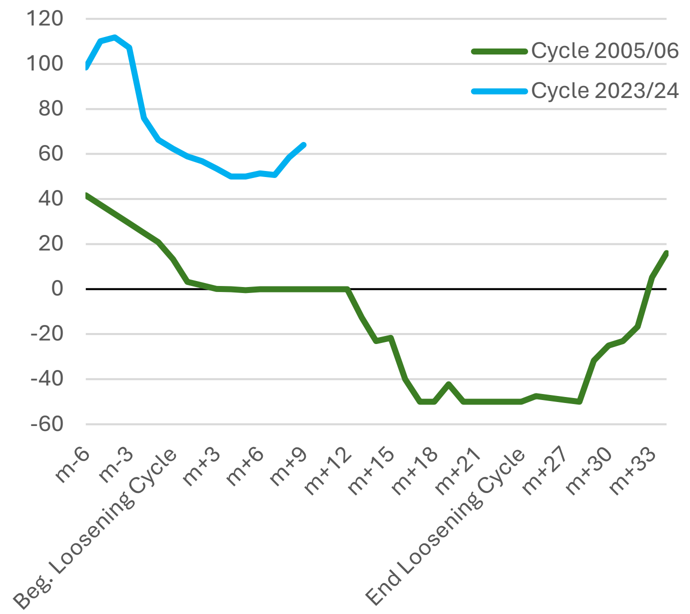
% of people in the Labor Force



Source: IBGE (Brazilian Institute of Geography and Statistics), Mar Asset Management

Chart 20: Inflation Expectations 12-24 Months Ahead - Difference from Target

bps, median



Source: Brazilian Central Bank, Mar Asset Management

2024 does not rhyme with two thousand and… seventeen

The Central Bank acted correctly in 2016. Waiting to start the cycle only after anchoring expectations contributed to the sustainability of inflation convergence to the target. Nonetheless, this postponement of a few months was not the main determinant of the convergence process in that cycle. In our view, it was the degree of economic slack generated by fiscal/quasi-fiscal contraction, confidence crisis, reduced directed credit, and the monetary tightening promoted by the previous administration that did most of the work of breaking the inflationary spiral.

That is why that scenario has very little similarity with what we currently experience.

Besides the unemployment rate showing an opposite dynamic (Chart 21), now expectations are very unanchored (Chart 22). In fact, the last few weeks have shown expectations moving even further above the target. This is a scenario that resembles 2007 much more than 2017. A sequence of upward IPCA surprises could intensify the unanchoring process of expectations, and with the degree of economic overheating, it would soon be transmitted to

[6] We used a hypothesis for the NAIRU of 10% for the period up to 2020, and 9% for the subsequent period. This hypothesis is similar to those used in studies on this topic (link).

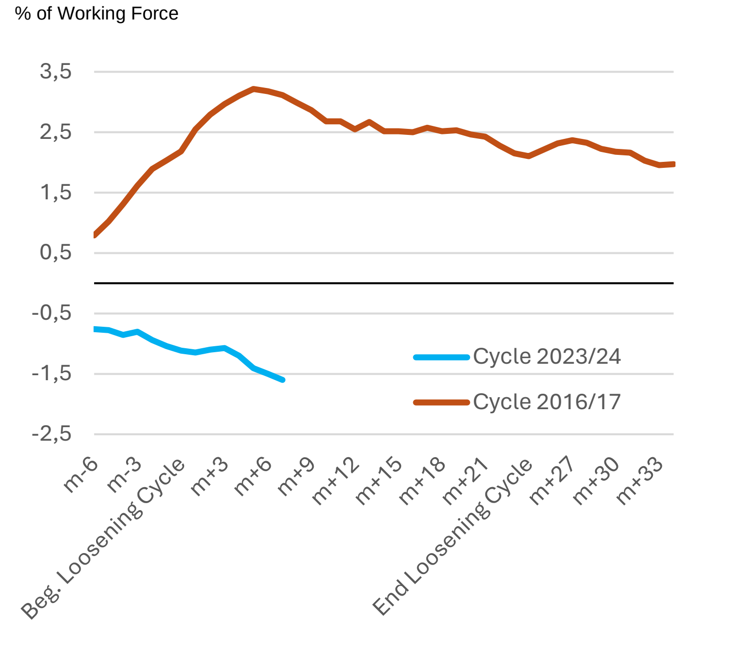
service inflation via the inertial channel. The examples of the USA and Chile in the first quarter of this year remind us that these types of inflation surprises happen unexpectedly.

Additionally, the situation makes Brazil particularly vulnerable to external shocks. If there is another movement of exchange rate depreciation, it is quite possible that it will be transmitted to inflation quickly and intensely. The unanchoring of expectations would intensify, long-term interest rates would rise, and the discussion about fiscal sustainability would return, leading to greater exchange rate depreciation. Last year, we were shielded by a favorable external scenario. It is quite possible that this will not be the case this year.

In summary, we do not see room for additional Selic rate reductions. The continuation of the cycle, while inflation expectations move away from the target, would be an almost unprecedented situation since the implementation of the inflation targeting system. The only time this happened was in 2011-2012 during Alexandre Tombini's tenure.

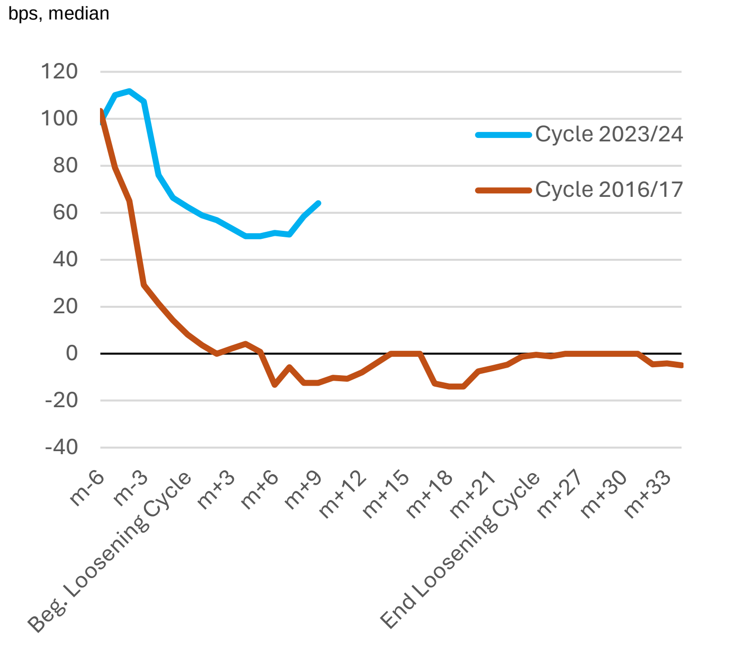
It is also quite possible that the context at the end of the year will prescribe a new tightening of monetary policy. What could delay it would be a very favorable external scenario, such as a much more intense reduction in the Fed Funds rate than the market expects.

Chart 21: Unemployment Rate - Deviation from NAIRU



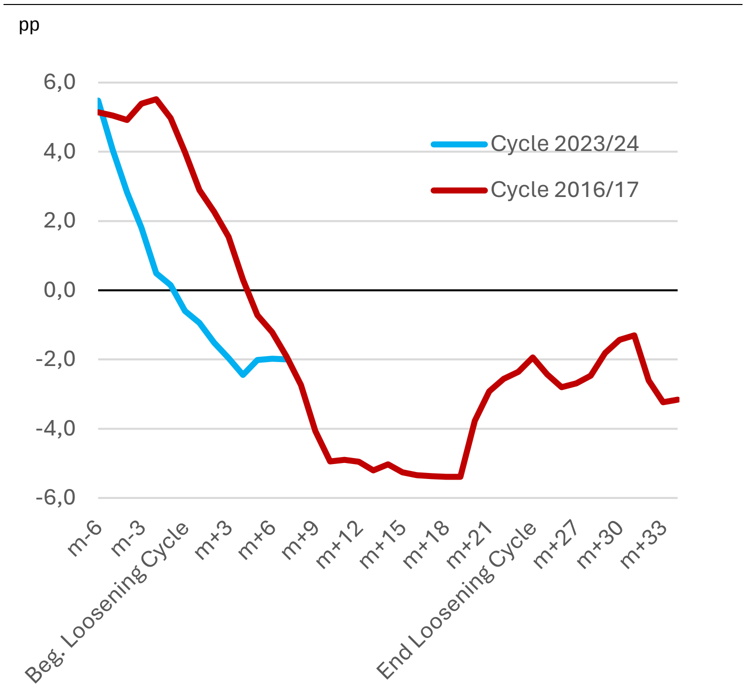
Source: IBGE (Brazilian Institute of Geography and Statistics), Mar Asset Management

Chart 22: Inflation Expectations 12-24 Months Ahead - Difference from Target



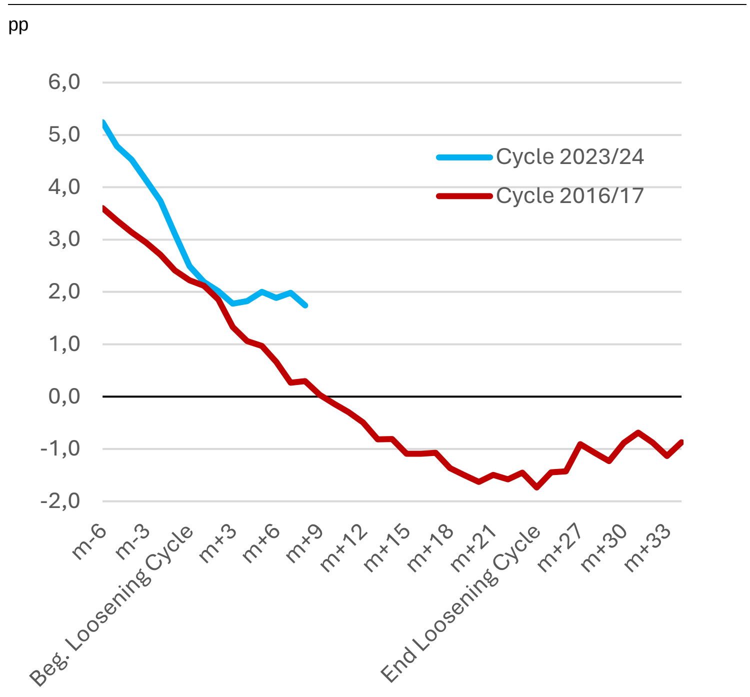
Source: Brazilian Central Bank , Mar Asset Management

Chart 23: Inflation of Tradable Goods – Difference from the Target



Source: IBGE (Brazilian Institute of Geography and Statistics), BCB, Mar Asset Management

Chart 24: Core Services Inflation – Difference from the Target



Source: IBGE (Brazilian Institute of Geography and Statistics), Mar Asset Management

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