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Brazil – Inflation

Revising Inflation Forecasts and Discussing the IGP x IPCA Distortion

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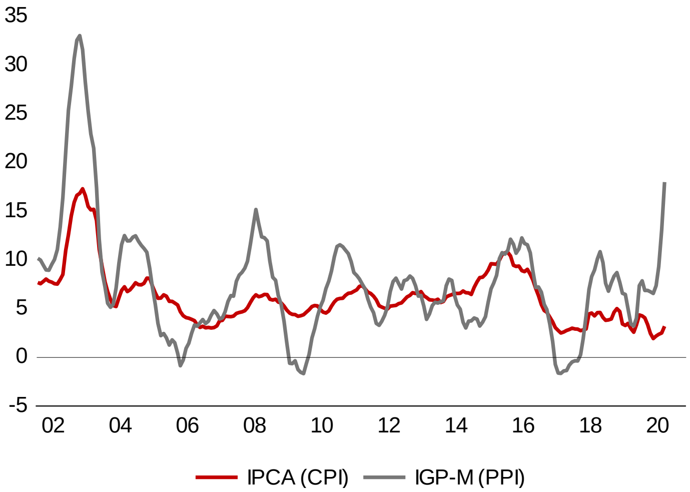
- **Inflation at the producer/wholesaler level has accelerated considerably during the last few months, raising concerns about the continuation of benign inflation dynamics at the consumer level.**
- **In this report, we revise our IPCA forecasts but present evidence (via data analysis and models) to support our view that the acceleration in inflation at the wholesale level does not change the benign outlook for the IPCA inflation trend.**
- **Part of the distortion between the IGPs and the IPCA comes from food-related items, and that distortion is already being corrected with the rise in food-at-home in the IPCA index – this is the main reason for our IPCA 2020 upward revision to 3.3% from 2.3% and for IPCA 2021 to 2.9% from 2.7%. Nevertheless, we believe this pressure should cool off throughout 2021 for both wholesale and consumer prices.**
- **Another large part of the distortion between the IGPs and the IPCA comes from industrial goods. In that case, the divergence between the two indices is typical and poses less risk of an acceleration of IPCA inflation, in our view, although we expect a partial correction, so there is an upside risk for IPCA 2020 from industrial goods. However, for 2021 we believe the high economic slack should keep pass-through low, while the BRL should also appreciate, so we see a benign path for industrial goods in the IPCA.**
- **Regarding fuel, we do not see a distortion, but in another administered price, pharmaceutical drugs, there is a significant divergence between wholesale and consumer prices. As consumer prices are lagging the increases in wholesale prices, we see upside risk for the IPCA from pharmaceuticals, but the timing is uncertain (it is likely to adjust only in 2021, in our view).**
- **Finally, the other major sector responsible for the distortion between the IGPs and the IPCA is the services sector. The IGPs do not capture those prices, which are responsible for 40% of the IPCA and are decelerating considerably. As we also expect services to be pretty well behaved during the next few months and year, that part of the distortion could continue.**
- **To sum up, the increase in IGPs prices is partially reaching the IPCA, causing us to revise upward our 2020 and 2021 IPCA forecasts (albeit to still low levels). However, we see this pressure as temporary and restricted to specific sectors, so we anticipate a benign scenario for 2021 IPCA. We forecast the headline IPCA annual inflation rate to run at very low levels: 3.30% in 2020 (CB target 4.00%), 2.90% in 2021 (CB target 3.75%), and 3.20% in 2022 (CB target 3.50%).**
- **It is worth noting that this scenario implies a favorable composition for inflation, with prices that are more linked to core measures (services and industrial goods) remaining well behaved, in our view, while the short-term upward pressures come more from volatile items that are not usually related to core measures (e.g., food-at-home).**
- **Given this benign scenario for inflation, we believe the Central Bank should be able to keep interest rates unchanged at 2.00% until the end of 2021 and then carry out a gradual normalization process to 4.00% that we expect to be concluded by 2022 year-end.**
- **We believe the main risk for inflation dynamics continues to be the fiscal environment; if the agenda of fiscal adjustments and general reforms is not resumed in the short term, inflation expectations could eventually become unanchored and the exchange rate may depreciate further, a mix that could lead to much higher current inflation, in our view.**

Introduction

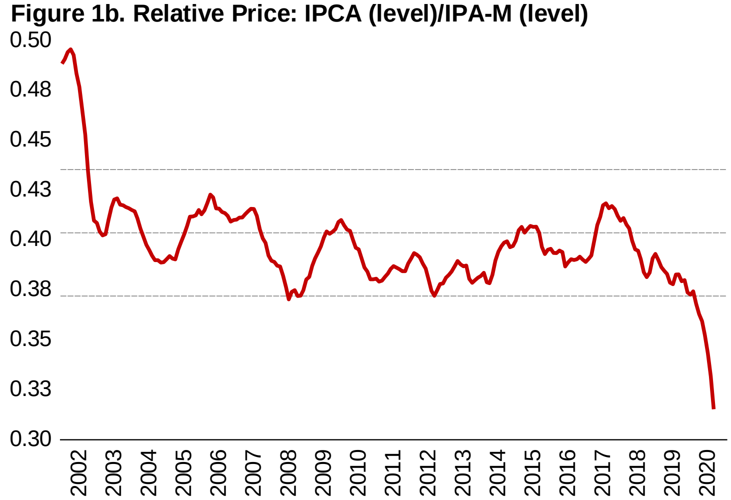
Inflation at the producer/wholesale level has accelerated considerably during the last few months, raising concerns about the continuation of the benign inflation path at the consumer level. The IGP-M (a mix of three indices built to mimic the Brazilian GDP deflator) reached as high as 17.9% in YoY terms this past September, while the IPCA (a Brazilian version of the US CPI) reached 3.1% in the same terms and for the same period. In particular, the change in the IPA-M (the IGP-M subset that captures price dynamics at the producer/wholesale level and that accounts for 60% of the total change) was even higher, at 25.3% YoY.

Figure 1a. IPCA and IGP-M % YoY



Sources: IBGE, FGV, Santander.

Figure 1b. Relative Price: IPCA (level)/IPA-M (level)



Sources: IBGE, FGV, Santander.

In this report, we also assess the relationship between changes in the IPA-M and in the IPCA by separating the IPA-M components into subsets of agro, fuel, and industrial items, and relating the dynamics of their prices to their counterparts in the IPCA. The main approach we adopt is to look at relative prices (retail price levels divided by wholesale price levels), as outlined in Figure 1b. We chose this approach because we believe there should be a stable long-term relationship between price dynamics in the wholesale and consumer segments. Furthermore, this approach makes it easier to identify eventual distortions — when the relationship does not hold, we try to find economic arguments to explain why.

In this report we also present our new IPCA forecasts, which remain at low levels (despite a short-term upward revision) for the relevant monetary policy horizon. Moreover, we highlight inflation's benign composition, with core measures running low and allowing monetary policy to continue stimulating the economy, while fiscal policy is constrained by the spending cap. In our view, the main risk for the inflation scenario remains fiscal policy; if the agenda of fiscal adjustment and general reforms is not resumed in the short term, we expect to eventually see current inflation accelerating rapidly.

Agro-PPI and Food-at-Home in IPCA

We start the analysis by separating IPA-M into Agro-PPI (25% of IPA-M) and Industrial-PPI (75% of IPA-M), given that their relationships with their counterparts in the IPCA differ substantially.

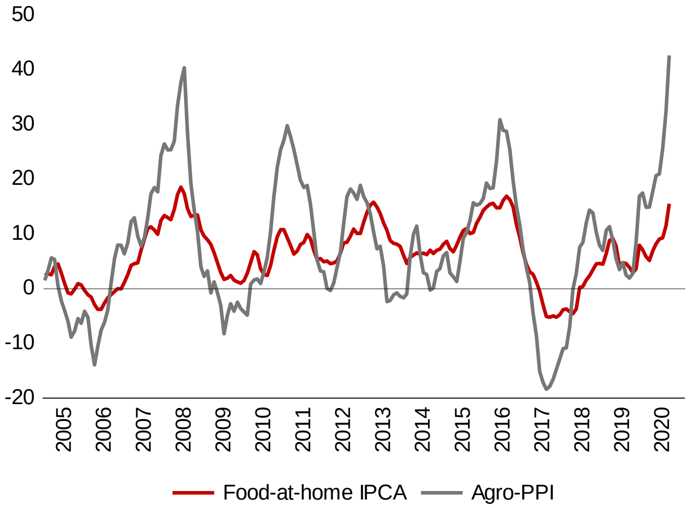
Agro-PPI climbed to around 42.5% YoY in September for a few reasons: (i) a change in the consumer basket globally[1], which increased demand for food; (ii) governments' emergency aid programs to sustain household income; (iii) a depreciated BRL; and (iv) specific demand pressure from China for proteins[2].

There are many components of the Agro-PPI also on the list of items that compose the IPCA (e.g., rice & beans, potatoes & tomatoes, fruits in general, and proteins.) The main divergence is that soybeans and corn weigh heavily in the Agro-PPI (25% and 17% of the index, respectively), but are not included in the IPCA[3]. However, as those grains account for a significant part of protein costs, they tend to affect the IPCA directly and rapidly. Indeed, we calculate the correlation between changes in corn prices in Agro-PPI and inflation in the food-at-home group in the IPCA three months later to be

[1] The lockdowns made it difficult to consume services, so the spending was redirected to goods, including food.
[2] The African swine fever destroyed 40% of China's pork herd in 2019, so China is importing much more proteins than usual.
[3] To be fair, corn appears with 0.01% of weight in IPCA.

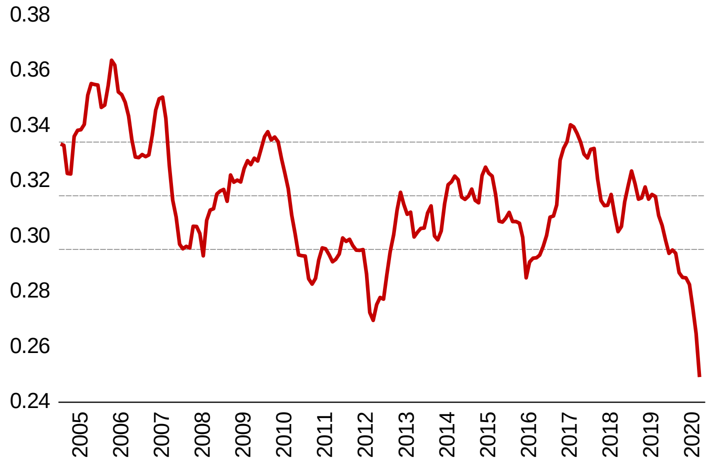
around 60%. Regarding the correlation between changes in soybean prices in the PPI and inflation in the food-at-home group in the IPCA four months later, our calculations indicate it to be nearly 70%.

Figure 2a. Food-at-Home IPCA and Agro-PPI % YoY



Sources: IBGE, FGV, Santander.

Figure 2b. Relative Price: Food-at-Home IPCA/Agro-PPI



Sources: IBGE, FGV, Santander.

Therefore, there appears to us to be a direct relationship between price moves in the Agro-PPI and inflation in the food-at-home group. That is, wholesale price increases tend to reach consumers in a short period of time. We highlight the role of foodstuff items' low price-elasticity, which makes this pass-through much stronger than for the general IPCA.

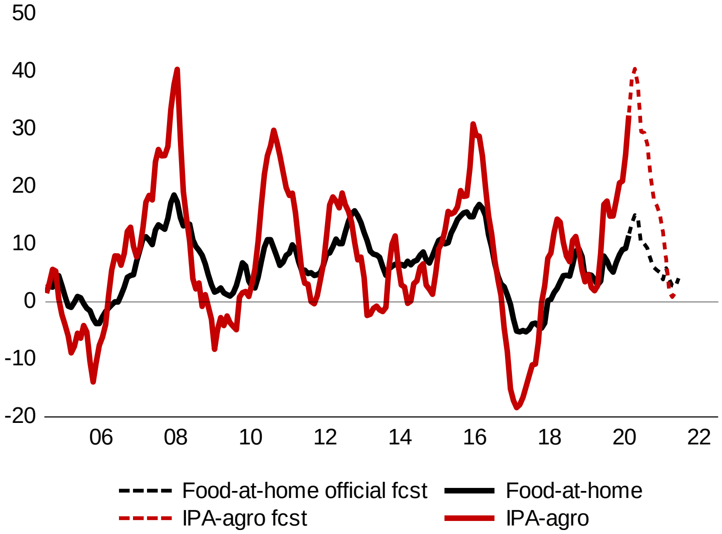
Figure 2b illustrates another interesting way to see that tight relationship: its shows that the trajectory of the relative price (prices for food-at-home in the IPCA divided by the price level of the Agro-PPI) is stationary[4]. In other words, the relationship between the two tends to hover around a mean and stay between one standard-deviation (sd) upward or downward. The chart in Figure 2b demonstrates that it recently breached the lower threshold, suggesting that **food items account for a major part of the distortion between the IPCA and IGP-M. More importantly, this indicates to us that the relationship should be corrected soon.**

Starting with the Agro-PPI, we believe it will accelerate further during the next readings, until it peaks around 40% YoY in October. Then, using future prices of Agro-PPI items (i.e., those that have futures markets), we forecast the index will register 29% YoY inflation in 2020, before eventually decelerating more steeply to 1% in 2021 (Figure 2a). Despite the sharp expected deceleration, we do not see much room for the Agro-PPI to record deflation in 2021, as Chinese demand for proteins and grains should remain strong.

This scenario for the Agro-PPI indicates that much of the adjustment in the relative price will have to come from increased prices in the food-at-home group. Indeed, this is already happening in the current IPCA inflation — food-at-home has accelerated from 5% YoY in March 2020 to 13% in September 2020. We forecast that inflation in the food-at-home group will remain pressured at least until year-end, closing 2020 at +16%. Then, as the Agro-PPI cools off, we anticipate room for inflation in the food-at-home group to decelerate to 4.5% in 2021 (previously 3.0%).

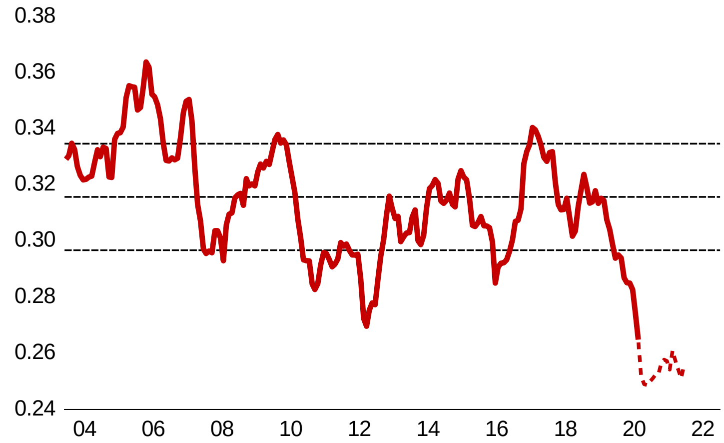
[4] The usual statistical tests confirm this.

Figure 3a. Food-at-Home IPCA and Agro-PPI % YoY



Sources: IBGE, FGV, Santander.

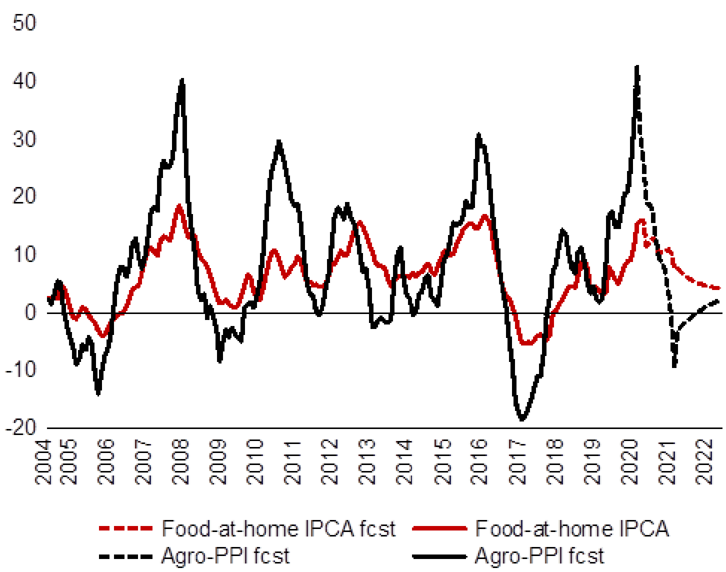
Figure 3b. Relative Price: Food-at-Home IPCA/Agro-PPI



Sources: IBGE, FGV, Santander.

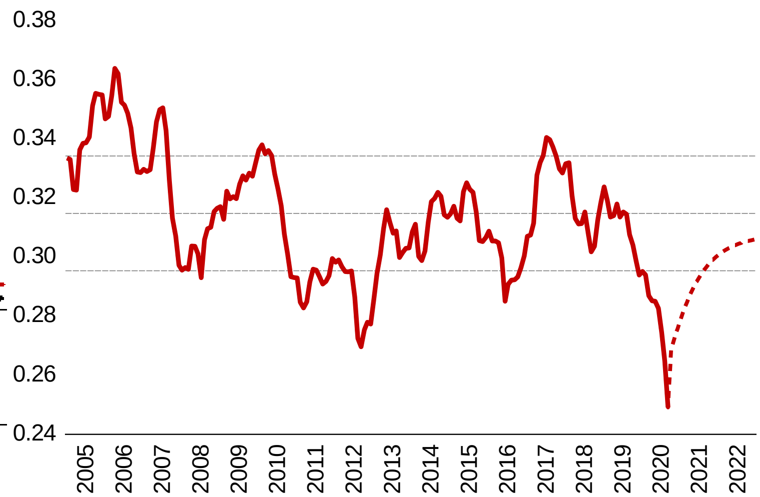
However, assuming that we are correct about the Agro-PPI's behavior — in other words, that its annual change is unlikely to move to the negative side in 2021 (at least not to a large extent) — the risk for inflation in food-at-home group continues to tilt to the upside. We come to that conclusion because, if we use our previous forecasts to project the relative price of the two indices (Figure 3b), it would continue to be quite distorted next year. Indeed, using a simple statistical error correction model to outline that prospect, the simulation forecasts that the Agro-PPI will reach as low as -2% in 2021. However, even with this projected deflation of the Agro-PPI index, inflation in the food-at-home group would need to post a +7% change in the next year for the relative price to be corrected by year-end 2021. **The La Niña phenomenon is also a risk to monitor** — until now it has delayed soybean planting, because of the dry weather, but in a worst-case scenario it could even cause losses to the 2021 harvest.

Figure 4a. Food-at-home IPCA and Agro-PPI % YoY – Error Correction Model Forecasts



Sources: FGV, IBGE, Santander

Figure 4b. Relative Price: Food-at-Home IPCA/Agro-PPI – Alternative Forecast with Error Correction Model



Sources: FGV, Santander.

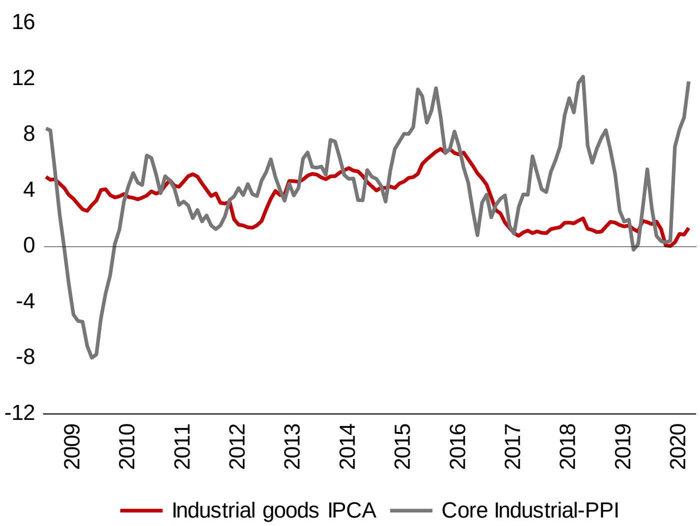
To sum up, food-related items are responsible for much of the distortion between the IGP-M and the IPCA, but this distortion has already begun to be corrected, with food-at-home in IPCA inflation increasing considerably during the last readings — this is the main reason for our IPCA 2020 and 2021 upward forecast revisions. The correction is happening because many items in the Agro-PPI are included in IPCA, and even those which are not (mainly soybeans and corn) have a high correlation with inflation in the food-at-home group in the IPCA. Moreover, the price-elasticity of foodstuff items is low, in our opinion, thus allowing the pass-through to be easier and more extensive throughout that supply chain, especially in an environment in which the consumer's basket has temporarily changed, causing increased demand for food. **As we anticipate a cooling-off of the Agro-PPI, we believe the correction can continue, with a downward trend for food-at-home in 2021 (although we believe there is upside risk for our forecast), which is why we continue to see a benign scenario for inflation in the medium term.**

Industrial-PPI and Industrial Goods in IPCA

The relationship between Industrial-PPI items and industrial goods in the IPCA is less direct, in our opinion. Industrial-PPI comprises a great number of items that are not accounted for in the IPCA, or for which the relation to industrial goods in the IPCA is indirect, such as mining[5]. Additionally, there are items in the Industrial-PPI (such as pharmaceutical drugs and fuels, for example) that are considered as administered prices in the IPCA breakdown rather than as industrial goods (we will assess them in the next section).

Even when we aggregate just the subset of items of Industrial-PPI (which we name here as Core Industrial-PPI) that are more related to industrial goods in the IPCA, the relationship seems to be weak. In particular, since 2017 the relationship seems have weakened further, in our view, as there were periods with Core Industrial-PPI accelerating from 1.0% YoY to 12% YoY, while industrial goods in IPCA remained almost flat between 1.0% YoY and 2.0%.

Figure 5a. Industrial Goods in IPCA and Industrial-PPI % YoY



Sources: IBGE, FGV, Santander.

Figure 5b. Relative Price: Industrial Goods in IPCA and Industrial-PPI

Sources: IBGE, FGV, Santander.

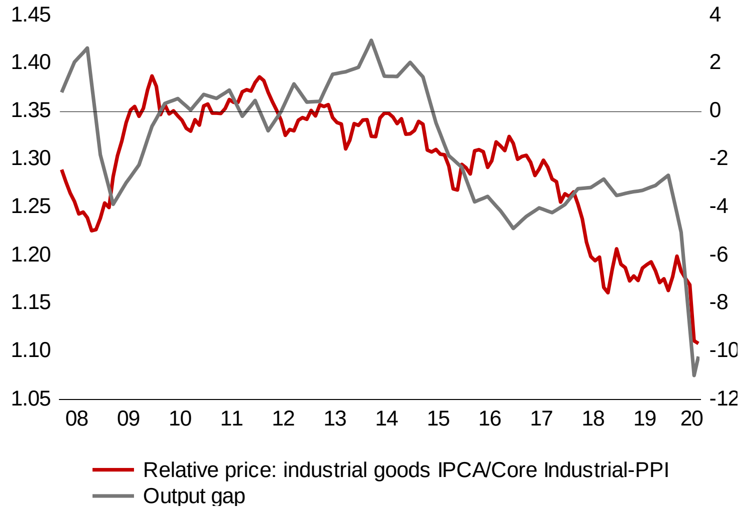
According to our observation, there seems to be a long-term downward trend in the relative price of Industrial Goods (the price of industrial goods in the IPCA vs. prices of Industrial-PPI). In other words, the relative price is not stationary. In our view, this simple conclusion can somewhat mitigate concerns about a strong inflation pass-through from Industrial-PPI to industrial goods in the IPCA. **That is, another large part of the distortion between IGP-M and IPCA comes from industrial goods, but, unlike the case for food, we do not believe this divergence will be reversed — at least not completely.**

Moreover, trying to understand what is behind that dynamic, one interpretation could be that this downward trend of the relative price could be read as a declining trajectory for retailers' profit margins. In our view, this is closely related to the widening of the negative output gap of the Brazilian economy. While the wholesale sector suffers any BRL-related impact first and more directly, the retailers have to smooth the pass-through. Figure 6 shows that relationship. The rationale is that, with weak demand, retailers are not able to pass on increases in wholesale prices to consumers (low pass-through) in a sector where price-elasticity is, in general, high (contrary to what we see in foodstuff items). **As we believe the output gap will continue to be negative at least until year-end 2020 (and beyond), pass-through for industrial goods should continue to be low in the medium-term. Moreover, we also see room for the BRL to appreciate once**

[5] There is also industrialized food on Industrial-PPI, but we covered that analysis in the discussion of food-at-home on IPCA in the first section of this report.

the agenda of fiscal adjustment and reforms is resumed. Therefore, those two arguments reinforce our benign view of inflation in 2021.

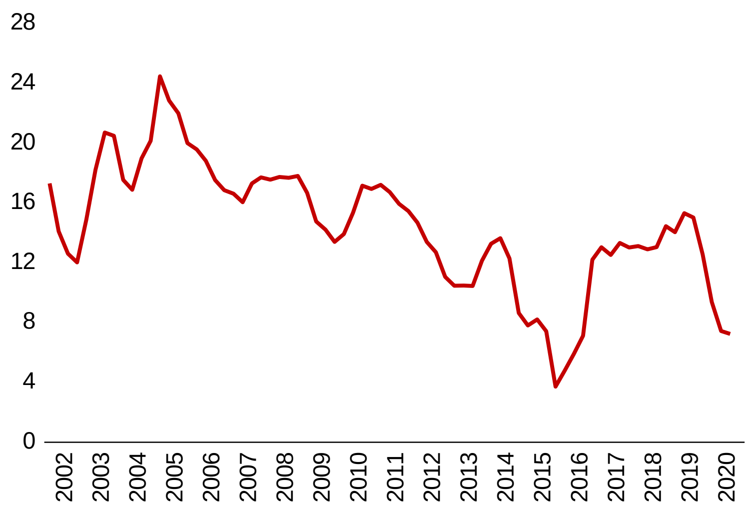
Figure 6. Relative Price: Industrial Goods IPCA and Industrial-PPI and Output Gap



Sources: IBGE, FGV, Santander models.

However, we believe there is upside risk in the short term, as the economy continues to reopen, the government's emergency programs are still supporting income, the BRL is weak, and profit margins are narrowing (Figure 7). That is, possible repressed demand for some goods could meet a (temporary, in our view) supply shortage in some specific industries that also faced cost increases (BRL depreciation). As profit margins seem already considerably compressed, there could be higher pass-through during the coming months, in our view.

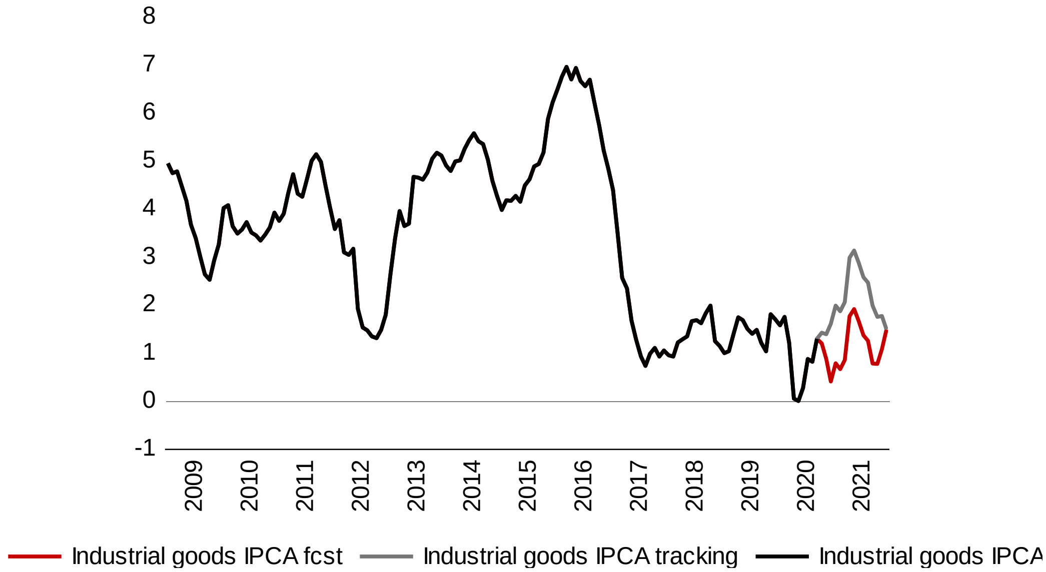
Figure 7. Operating Margins of IBX100 Companies



Source: Bloomberg.

Nevertheless, the main message we want to convey here is that with industrial goods inflation running low in the medium term, as the pandemic-related impact fades (eventual withdrawal of income support by the government, a fragile job market, an economy free of closing/opening effects, and BRL strengthening). We forecast industrial goods inflation of 2.5% in 2020 and 1.5% for 2021.

Figure 8. Industrial Goods IPCA % YoY



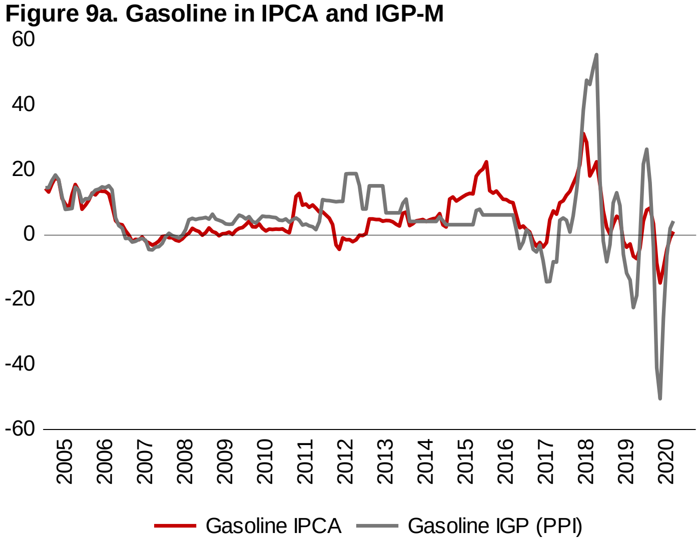
Sources: IBGE and Santander models.

Fuel-PPI and Fuel in the IPCA

The Industrial-PPI includes fuel prices, which are part of a different group in the IPCA breakdown (namely, administered prices). This is why we analyze this item separately. Moreover, we focus only on prices of gasoline, which is the fuel that weighs more in the IPCA basket (weight of 4.7%).

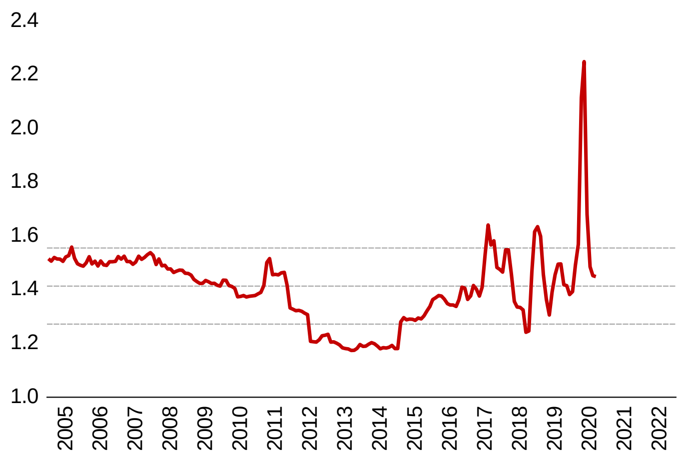
Figure 9a does not show a clear distortion. Indeed, the relative price in Figure 9b (the price of gasoline in the IPCA divided by the price of gasoline in the PPI) shows that there was a distortion three months ago, when wholesale prices fell considerably and consumer prices fell less than they might have from the perspective of an equilibrium of relative prices — a distortion in the opposite direction of what we are studying here. Nonetheless, the distortion was corrected, with wholesale prices rebounding while consumer prices moved up much less.

Figure 9a. Gasoline in IPCA and IGP-M



Sources: IBGE, FGV, Santander.

Figure 9b. Relative Price: Gasoline IPCA/Gasoline IGP

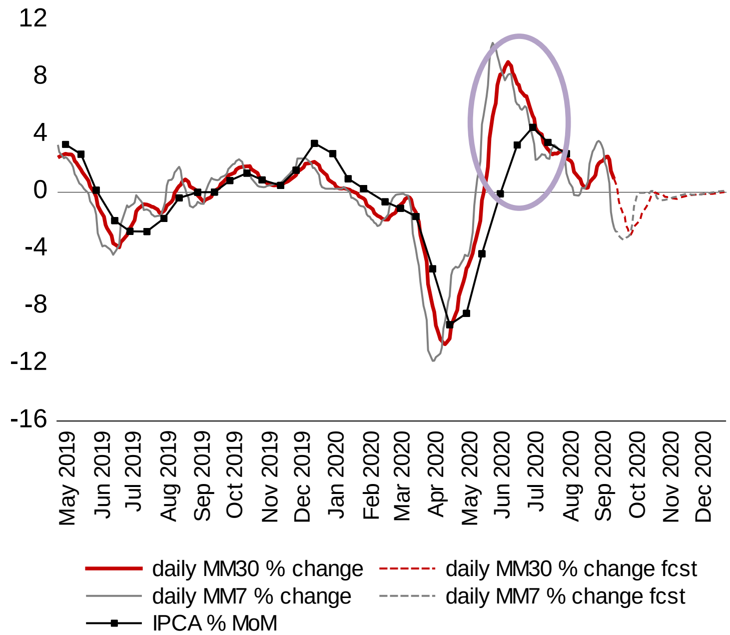


Sources: IBGE, FGV, Santander.

Therefore, the long-term relationship between wholesale gasoline prices and prices of gasoline sold to consumers is not distorted. This conclusion appears to diverge from the one the Central Bank presented in a recent study[6], which states that the greatest part of the distortion between the IGPs and the IPCA comes from fuels. We cannot be sure, but we believe that the horizon of the analysis may explain the divergence between our conclusion and that of the Central Bank.

Indeed, in the short run, we estimate that the latest increases in wholesale prices have reached consumers with a lower-than-usual pass-through (see the purple circle in Figure 10[7]). If that is the case, we agree with the Central Bank that there is short-term upside risk from the backlog of wholesale adjustments that have the potential to reach consumers. Indeed, we consider part of that risk in our baseline forecast, while the Central Bank seems to disregard it. Looking at the BCB's inflation forecast for administered prices in 2020 (0.0%), vs. our forecast pointing to a 0.2% change, we infer that a 1.5% change in gasoline prices may explain that difference, although we cannot be sure, as the BCB did not provide detailed information on that subject.

Figure 10. Gasoline IPCA Inflation and Proprietary High-Frequency Gasoline Price Survey



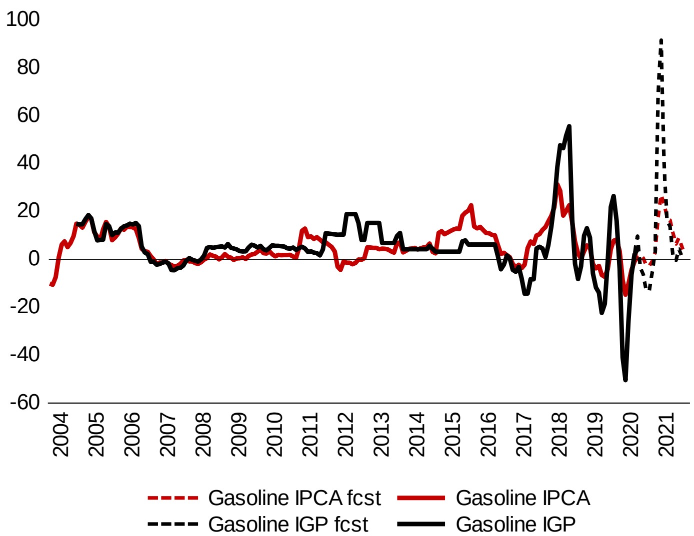
Sources: BBG, IBGE, Santander.

Looking ahead, we see international gasoline futures prices almost stable until year-end 2020 and implying an increase of only ~2% for 2021, while we also see the USDBRL pair strengthening to 5.3 and 4.60 in 2020 and 2021, respectively. Hence, despite the short-term upside risk, we believe fundamental drivers point to downside risks. As a result, we see the balance of risks for 2020 as symmetric, and we forecast gasoline experiencing deflation of 3.9% this year. For 2021, we forecast gasoline prices up 5%, but we see downside risks for this projection (which can be seen in Figure 11b), as the relative price would be a bit above the historical mean — that is, using only international gasoline futures prices and our BRL forecasts, gasoline prices could fall nearly 4% next year, which would trim 40 bps from our 2021 IPCA forecast.

[6] "Recent dynamics of IPA and its relation to IPCA", Quarterly Inflation Report, BCB.

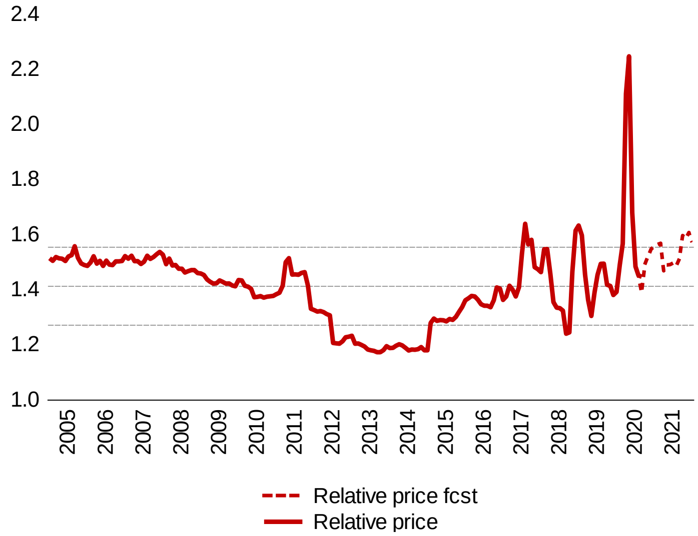
[7] This is our high-frequency (daily) price survey in which we use the adjustments made at the refineries and use an average pass-through to distributors and then to consumers to calculate the impact on IPCA.

Figure 11a. Gasoline IPCA and IGP % YoY



Sources: IBGE, FGV, Santander.

Figure 11b. Relative Price: Gasoline IPCA/Gasoline IGP

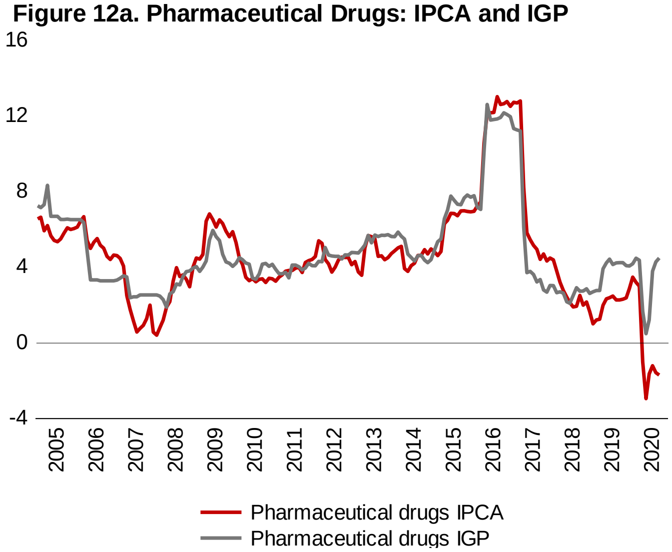


Sources: IBGE, FGV, Santander.

All in all, we do not see fuel prices at the wholesale and retail segments as being substantially misaligned. Looking at the usual drivers, we see a symmetric balance of risks for our -3.9% forecast for 2020 and tilted to the downside for our +5% forecast for 2021.

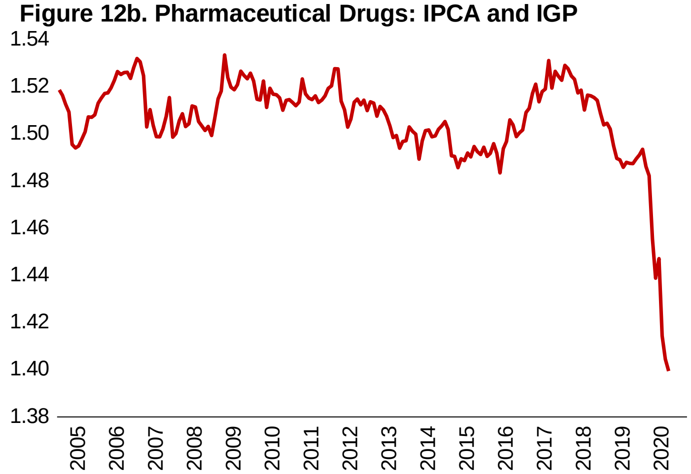
We would like to add a final note regarding analysis of administered prices, which refers to the prices of pharmaceutical drugs. The long-term relationship between wholesale and consumer prices is strong (the trend of their relative price is stationary), but it has been highly distorted recently. The annual adjustment for consumers that usually happens every April was postponed by the government this year, given the pandemic, but the government recently allowed a delayed adjustment in June, and consumer prices did not follow the rise in wholesale prices. In our view, this means there is a +20 bps risk for the IPCA, but one that will not materialize until 2021.

Figure 12a. Pharmaceutical Drugs: IPCA and IGP



Sources: IBGE, FGV, Santander.

Figure 12b. Pharmaceutical Drugs: IPCA and IGP



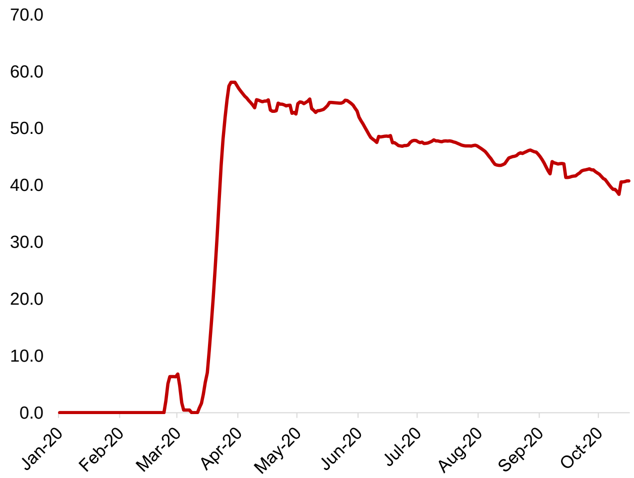
Sources: IBGE, FGV, Santander.

Services, a Major Group in the IPCA Not Considered in the IGPs

As the main focus of our study is to assess the relationship between IGP-M (PPI) and IPCA (CPI), the consumer inflation groups we have covered so far were food-at-home, industrial goods, and administered prices, because most of the items in those groups are present on both the wholesale and retail levels. However, a major group that is part of the CPI is not included in PPI (namely, services). Since these items account for nearly 40% of the IPCA, we cannot accurately forecast the IPCA's trajectory without analyzing the dynamics of this group.

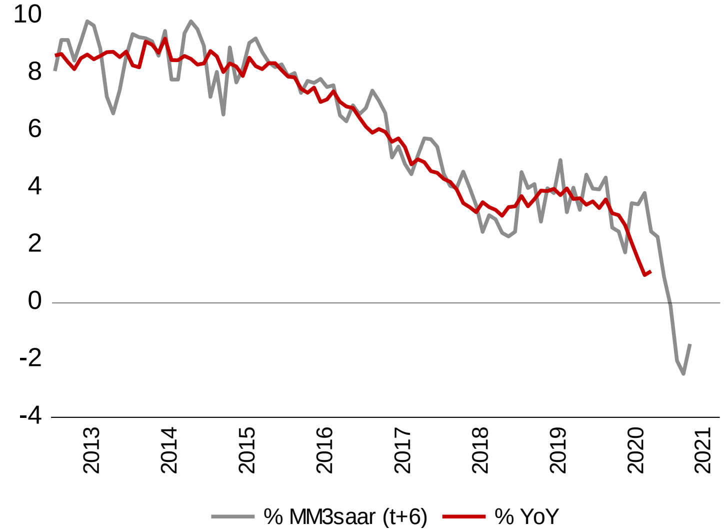
Services were particularly affected by the pandemic, as most of them cannot be consumed at home. Therefore, demand for services fell sharply, and, as a consequence, services inflation decelerated considerably.

Figure 13a. Lockdown Index (jan/20= 0)



Source: Goldman Sachs.

Figure 13b. Services Inflation IPCA

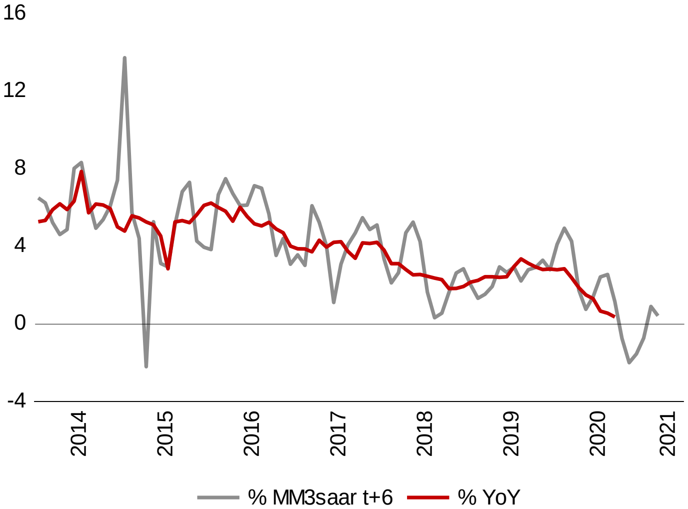


Sources: IBGE, Santander.

Looking ahead, the risks seem to us to be tilted slightly to the upside in the short term. During the last months of the year, we believe there is wider latitude for a rebound (with the economy having opened up more fully and income still supported) than for a further deepening of the disinflation process. As a first preliminary signal, the last IPCA release, referring to September 2020, showed the 3MMAsaar of services inflation registering its first upward tick since February. In particular, we observe that services more linked to economic activity and food-service and airline tickets (also more cyclical) seem to have begun to rebound. However, as repressed demand is less likely to occur given the nature of the services sector[8], we view this upside risk as less important.

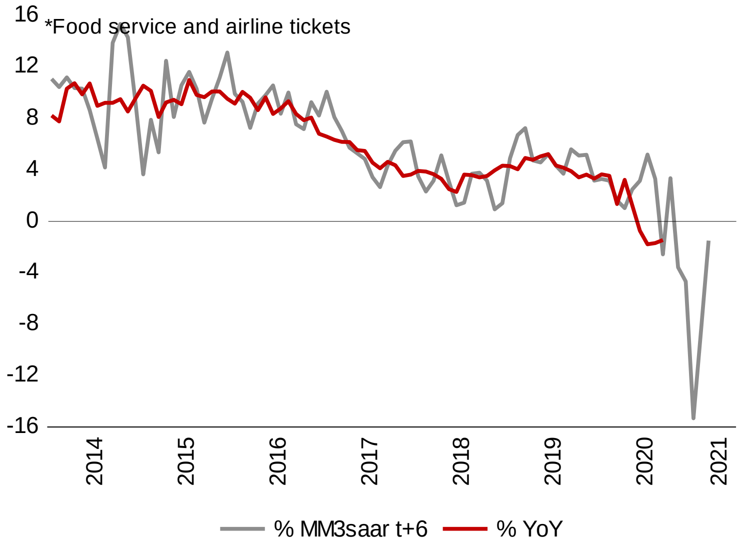
[8] A classic anecdotal example: Individuals do not have their hair cut three times more once the economy reopens simply because they did not have it cut during the whole lockdown period. That is, part of the lost demand for services is indeed lost, while for industrial goods, the demand may only have been postponed.

Figure 14a. Inflation of Services More Linked to Economic Activity



Sources: IBGE, Santander.

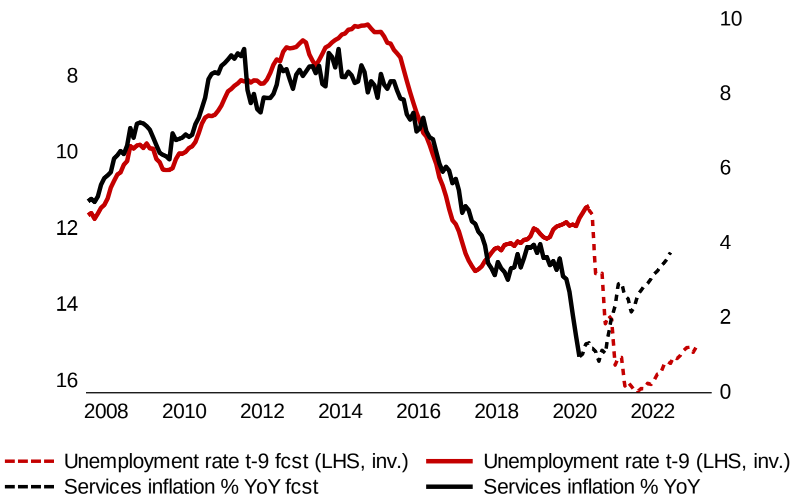
Figure 14b. Inflation of Other* Services



Sources: IBGE, Santander.

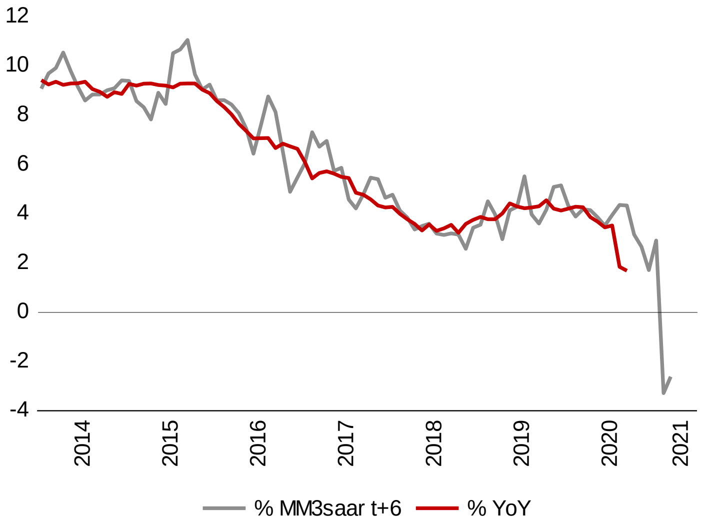
For the medium term, we see a benign scenario for services. The sector is highly dependent on job-market dynamics, and we see the unemployment rate declining very gradually. As a result, once the government ends the emergency aid program, we expect to see services inflation pretty well contained. In particular, inflation in services more linked to the minimum wage and those that are more inertial (such as residential rents or education costs, which tend to have a backward-looking price formation) should tend to continue to be low, in our view.

Figure 15a. Services Inflation and Unemployment Rate



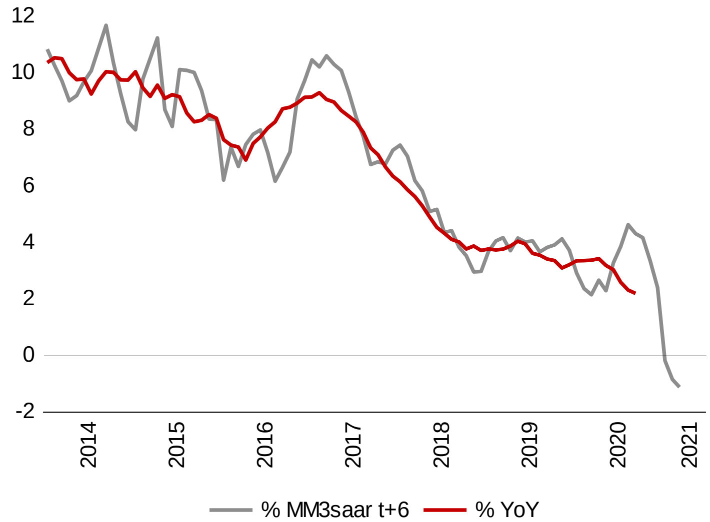
Sources: IBGE, Santander.

Figure 15b. Inflation of Inertial Services



Sources: IBGE, Santander.

Figure 15c. Inflation of Services Linked to Salaries



Sources: IBGE, Santander.

All in all, this major part of the IPCA (almost 40% of the index) — which is not included in the IGP — is also responsible for much of the distortion between IGP-M and IPCA. Looking ahead, we expect services to continue to be an important driver for the low-inflation scenario we anticipate — so this part of the divergence between the IGP and the IPCA is not likely to experience a substantial correction, at least not through IPCA rising. We forecast services inflation at 1.5% for 2020 and 2.1% for 2021. To give an idea of our benign view for the group, if we run a simple model with the unemployment rate determining services inflation, the simulation shows that the average unemployment rate we forecast for 2021 (16.1%) would be compatible with services inflation running at 1.0% YoY.

Conclusion

Part of the distortion between the IGPs and the IPCA comes from food-related items, but that distortion is already being corrected, with food-at-home in IPCA rising — this is the main reason for our IPCA 2020 and 2021 upward revisions (concentrated in 1Q21). Nevertheless, we believe this pressure should be concentrated in 2020, as in 2021 we expect some cooling-off in both wholesale and consumer prices.

Another large part of the distortion between the IGPs and the IPCA comes from industrial goods. In that case, the divergence between the two indices is typical and poses less risk of an acceleration in the IPCA, although we believe a partial correction should occur, so there is a small upside risk for 2020 from industrial goods. However, for 2021 we expect the high economic slack to keep pass-through low, and the BRL itself should also appreciate, so we see a benign path for industrial goods in the IPCA.

For fuels, we do not see a distortion; however, in **another administered price, pharmaceutical drugs, there is a significant divergence** between wholesale and retail prices. As consumer prices are lagging the increases on the wholesale level, we see upside risk for the IPCA from pharmaceuticals, but the timing is uncertain (probably it will adjust only in 2021, in our view).

Finally, the other major sector responsible for the distortion between the IGPs and the IPCA is the services sector. The IGPs do not capture those prices, which are responsible for 40% of the IPCA and are decelerating considerably. As we also see services as likely to be pretty well behaved during the next few months and year, that part of the distortion could continue, in our view — or at least, it will not be corrected substantially via a rise in the IPCA.

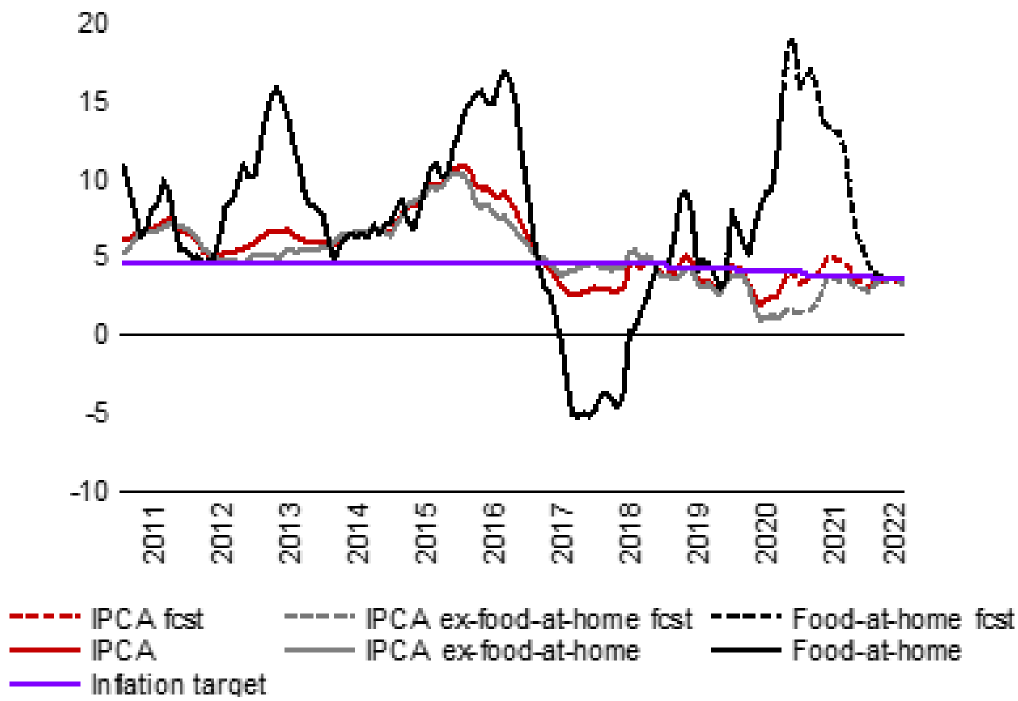
To sum up, the increase in IGPs prices is partially reaching the IPCA, causing us to revise our 2020 and 2021 IPCA forecast (albeit to still low levels). However, we see this pressure as temporary and restricted to specific sectors, so we anticipate a benign scenario for 2021 IPCA. **We forecast the headline IPCA annual inflation rate to run at very low levels: 3.30% in 2020 (CB target 4.00%), 2.90% in 2021 (CB target 3.75%), and 3.20% in 2022 (CB target 3.50%).**

It is worth noting that this scenario implies a favorable composition for inflation, with prices more linked to core measures (services and industrial goods) remaining well behaved, while short-term upward pressures come more from volatile items that are not usually related to core measures (e.g., food-at-home).

In the wake of that benign scenario for inflation, we believe the Central Bank should be able to keep interest rates unchanged at 2.00% until the end of 2021 and then carry out a gradual normalization process to 4.00% that will be concluded by 2022 year-end.

We believe the main risk for inflation dynamics continues to be the fiscal scenario; if the agenda of fiscal adjustments and general reforms is not resumed in the short term, inflation expectations could eventually become unanchored, and the exchange rate may depreciate further, a mix that could lead to much higher current inflation, in our view. (For more on that subject, please refer to our recent report *Inflation: How Low and for How Long?* (June 17, 2020).

Figure 16. IPCA and Food-at-Home Inflation % YoY



Sources: IBGE, Santander.

Figure 17. IPCA Forecasts and Breakdown

	2017	2018	2019	2020e	2021e	2022e
IPCA	**3.0**	**3.8**	**4.3**	**3.3**	**2.9**	**3.2**
Free prices	**1.3**	**2.9**	**3.9**	**4.3**	**2.4**	**2.8**
Food-at-home	-4.9	4.5	7.8	15.6	4.5	2.0
Industrial goods	1.1	1.1	1.7	2.5	1.5	2.7
Tradables	1.0	1.0	1.7	2.5	1.5	2.7
Non-Tradables	1.5	1.9	1.8	2.0	1.4	2.6
Services	4.5	3.4	3.5	1.6	2.1	3.3
Food-service	3.8	3.2	3.8	4.9	3.0	4.0
Airline tickets	3.1	16.9	2.3	-20.8	15.0	12.0
Economic activity	4.2	1.7	2.9	0.3	0.7	2.5
Education	7.6	5.5	5.0	1.2	5.0	6.0
Inertial	2.6	2.8	3.4	2.7	2.0	2.0
Salaries	6.3	3.7	3.2	2.0	1.8	2.5
Administered prices	**8.0**	**6.2**	**5.5**	**0.2**	**4.8**	**4.0**
Gasoline	10.3	7.3	4.0	-3.9	5.0	4.0
Energy	10.4	8.7	5.0	0.2	5.0	4.0
Health insurance	13.5	11.2	8.2	2.5	9.5	4.0
Bus fares	4.0	6.3	6.6	1.8	6.0	4.0
Average of core inflation measures	3.6	3.3	3.5	2.8	2.9	3.2

Sources: IBGE and Santander estimates.

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