



Brazil Macro | July 2021

INFLATION

DANIEL KARP
daniel.karp@santander.com.br
+55 11 3553-9828

INDEX

- 1. Forecasting accountability**
- 2. Inflationary pressures are spreading**
- 3. Usual determinants still point to an upwardly pressured inflation outlook**
- 4. IPCA's groups analysis**
- 5. Risks**

Forecasting
Accountability

01

Forecast accountability: shocks are piling up and starting to spread

- More industrial goods and regulated prices inflation for IPCA 2021, but also a bit of spreading to services
- For 2022, more industrial goods inflation, also with spillover to services

	old	2021 new	Δ bps
IPCA headline	5.9	6.7	87
Free prices	5.0	5.1	10
Food-at-home	8.5	6.5	-31
Industrial goods	5.1	6.7	37
Tradables	5.1	6.7	32
Non-Tradables	5.1	6.7	5
Services	3.4	3.5	3
Food-service	7.5	8.7	7
Airline tickets	18.3	10.3	-2
Economic activity	1.9	1.9	0
Education	3.0	3.0	0
Inertial	2.9	2.9	0
Salaries	2.3	2.3	0
Regulated	8.3	11.1	76
Gasoline	25.2	29.7	27
Energy	0.3	10.7	46
Health insurance	5.0	3.9	-4
Bus fares	1.5	1.5	0
Cores	4.2	4.9	70

Sources: Santander

	old	2022 new	Δ bps
IPCA headline	3.9	4.0	7
Free prices	3.6	4.1	34
Food-at-home	3.5	3.5	0
Industrial goods	3.8	4.7	21
Tradables	3.8	4.7	18
Non-Tradables	3.8	4.7	3
Services	3.5	3.9	14
Food-service	5.0	6.0	6
Airline tickets	12.0	16.0	1
Economic activity	2.5	2.7	2
Education	5.0	5.5	2
Inertial	3.1	3.3	2
Salaries	2.5	2.7	1
Regulated	5.0	3.8	-33
Gasoline	4.5	4.5	0
Energy	4.0	-3.0	-31
Health insurance	9.0	9.0	0
Bus fares	6.0	6.0	0
Cores	3.7	3.9	20

Sources: Santander

High-frequency tracking: even higher inflation for 2021

- Since the publishing of our scenario-review in July 1st, new data was released and we updated our high frequency tracking further up for 2021
- And the higher inflation for 2021 adds upside risks for IPCA 2022, coming from the higher inertia

	old	2021 new	Δ bps
IPCA headline	6.7	7.0	31
Free prices	5.1	5.5	23
Food-at-home	6.5	7.5	14
Industrial goods	6.7	7.0	6
Tradables	6.7	7.0	5
Non-Tradables	6.7	7.0	1
Services	3.5	3.6	3
Food-service	8.7	8.1	-4
Airline tickets	10.3	25.5	5
Economic activity	1.9	1.9	0
Education	3.0	3.0	0
Inertial	2.9	3.3	3
Salaries	2.3	2.1	-1
Regulated	11.1	11.4	8
Gasoline	29.7	29.7	0
Energy	10.7	14.5	17
Health insurance	3.9	2.6	-5
Bus fares	1.5	1.5	0
Cores	4.9	5.0	10

Sources: Santander

	old	2022 new	Δ bps
IPCA headline	4.0	4.0	-3
Free prices	4.1	4.1	-3
Food-at-home	3.5	3.5	-1
Industrial goods	4.7	4.7	0
Tradables	4.7	4.7	0
Non-Tradables	4.7	4.7	0
Services	3.9	3.9	0
Food-service	6.0	6.0	0
Airline tickets	16.0	16.0	0
Economic activity	2.7	2.7	-1
Education	5.5	5.5	0
Inertial	3.3	3.3	0
Salaries	2.7	2.7	0
Regulated	3.8	3.8	-1
Gasoline	4.5	4.5	0
Energy	-3.0	-3.0	0
Health insurance	9.0	9.0	0
Bus fares	6.0	6.0	0
Cores	3.9	3.9	0

Sources: Santander

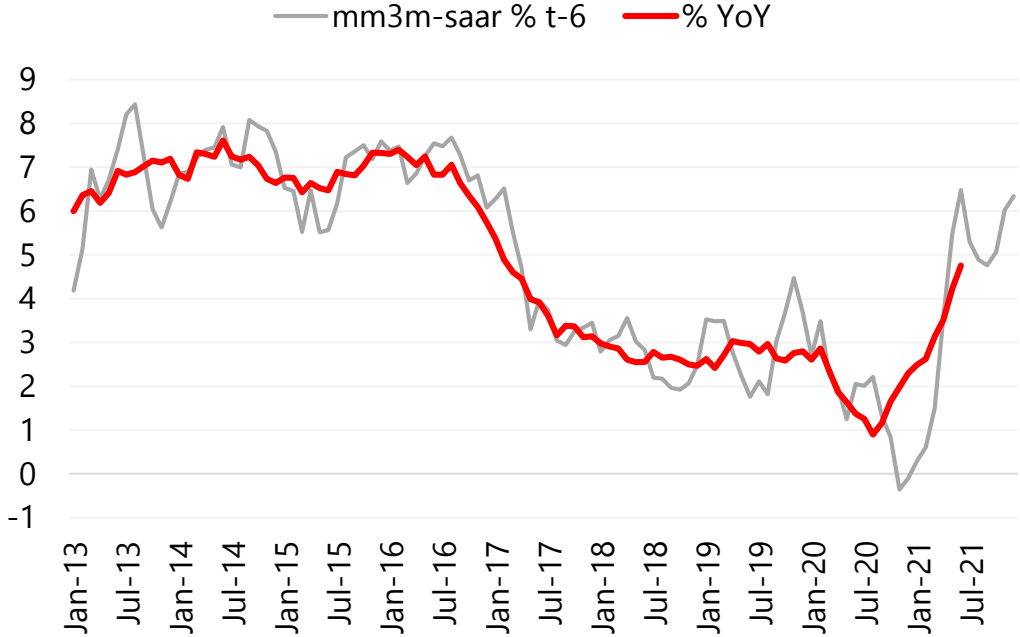
Inflationary pressures are spreading

02

Core gauges are at high levels

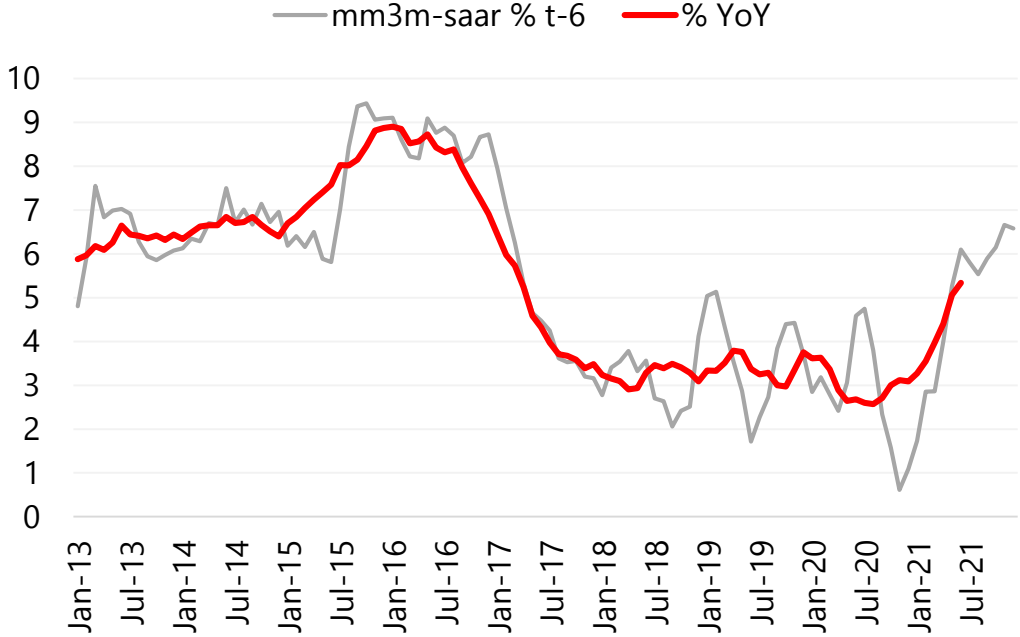
- All of the main five core measures closely followed by the BCB are hovering above 5.0% in 3mma-saar terms, with most of them still on a rising trend

EX0 IPCA Core - annual



Sources: IBGE, BCB, Santander

Double Weighted IPCA Core - annual

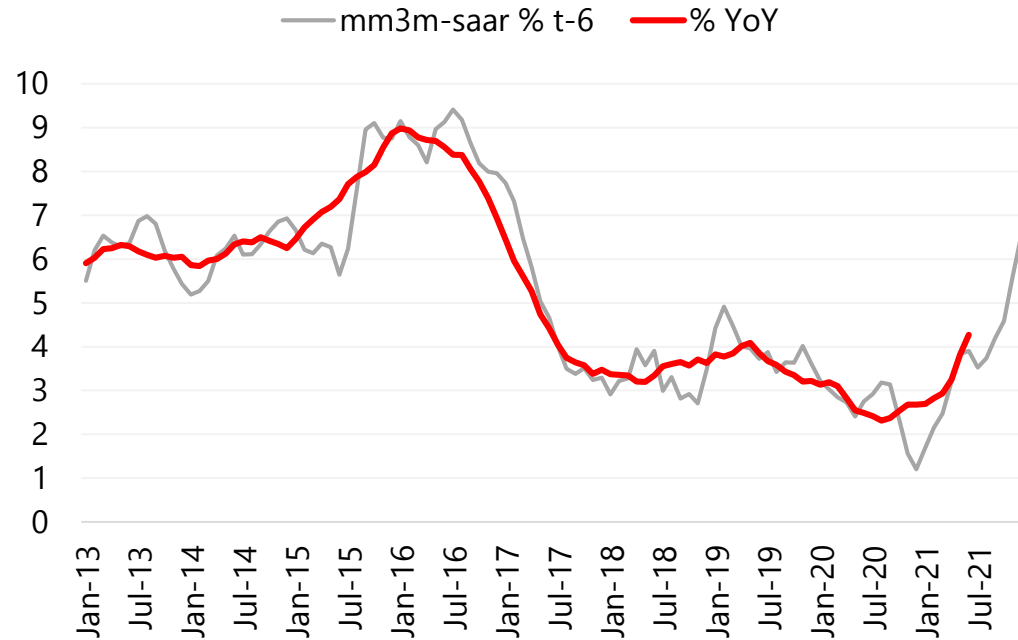


Sources: IBGE, BCB, Santander

Cores gauges are a way to measure the spreading of primary shocks to general prices

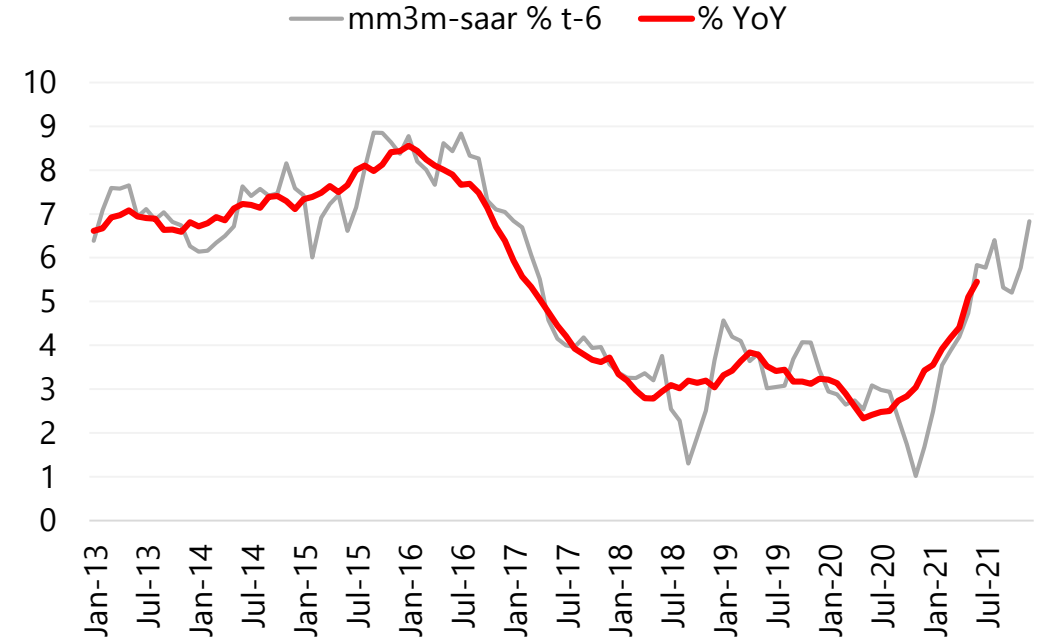
- They sign that shocks on specific items/groups are spreading to prices non-directly related to those items

Smoothed trimmed mean IPCA Core - annual



Sources: IBGE, BCB, Santander

P55 IPCA Core - annual

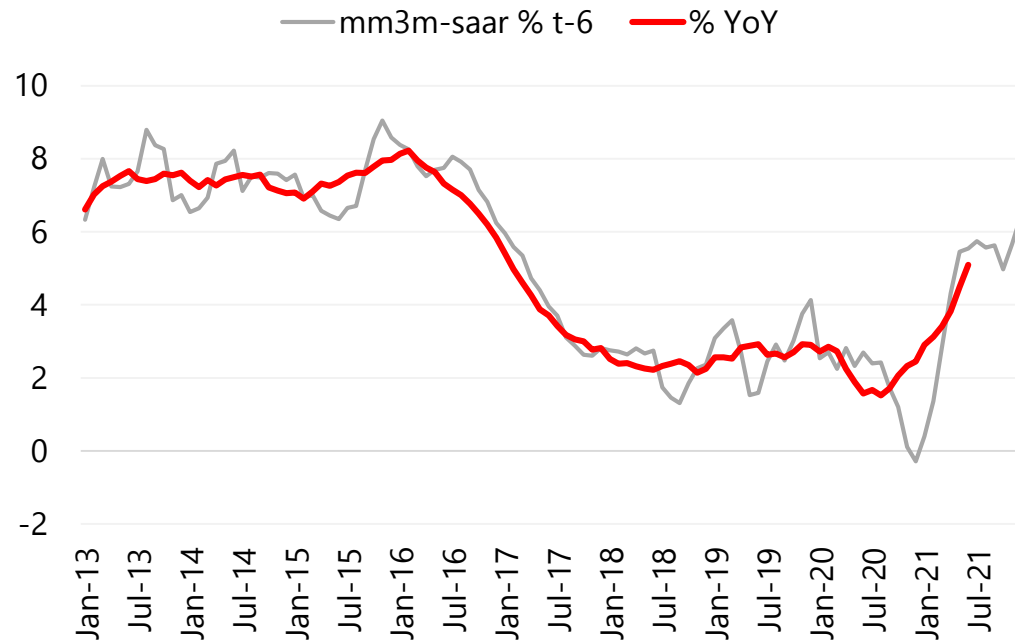


Sources: IBGE, BCB, Santander

The average of the main core gauges is at 5.8% 3mma-saar and rising

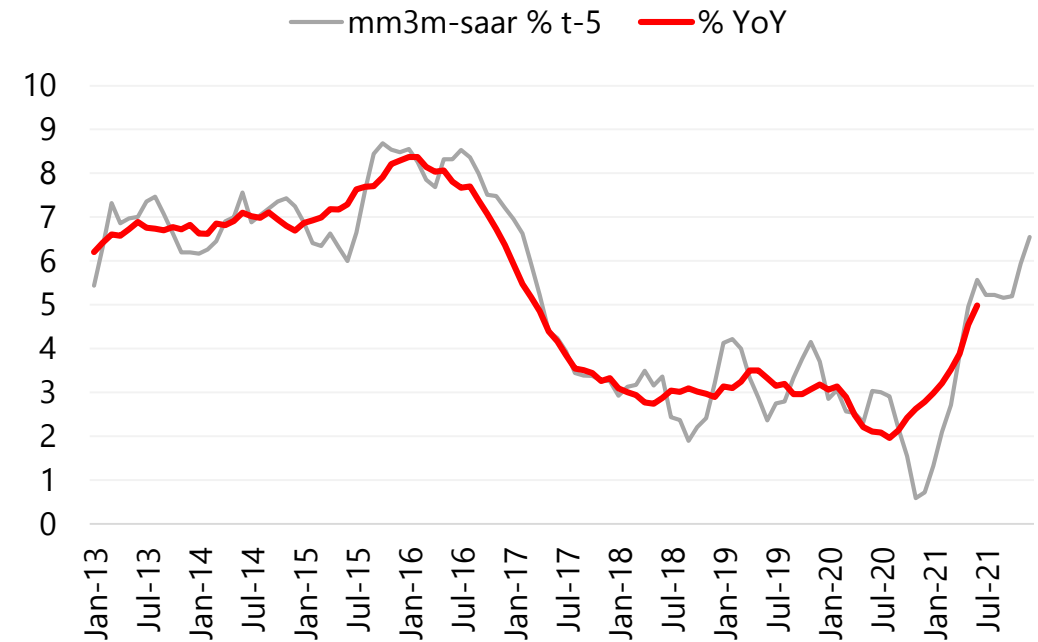
- Core gauges are a measure of trend inflation (as they, in theory, remove the effect of shocks) so the rising trend shows a difficult outlook for inflation

EX3 IPCA Core - annual



Sources: IBGE, BCB, Santander

Average of Core IPCA measures - annual

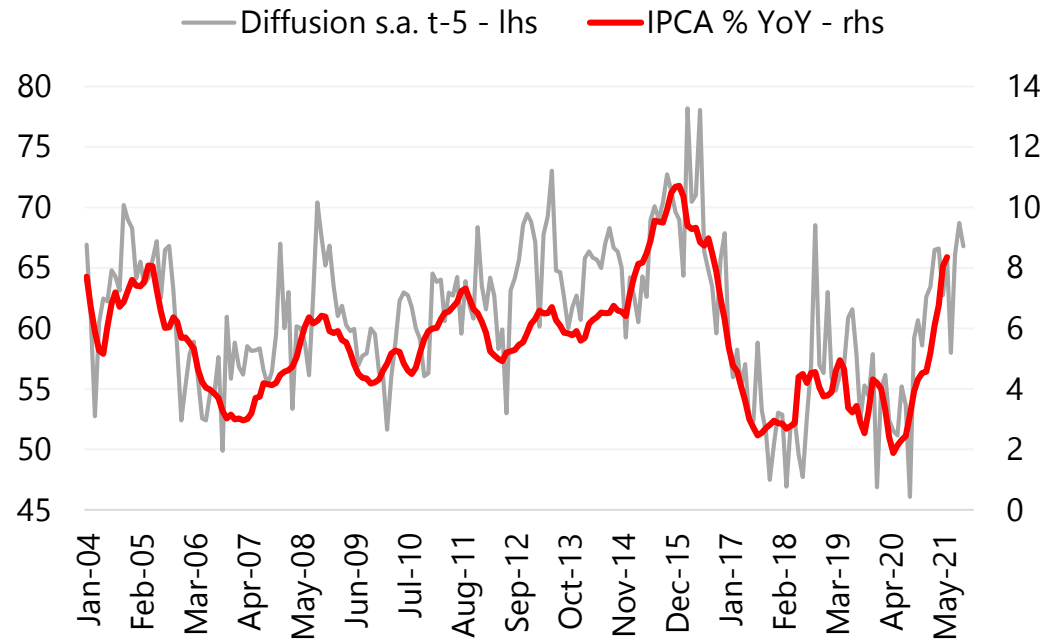


Sources: IBGE, BCB, Santander

The diffusion index is another way to measure the spreading of shocks to general prices

- Also the diffusion tends to anticipate annual inflation by around five months and current levels suggest that IPCA should continue to rise around 9% YoY for the coming months

Diffusion index and IPCA YoY



Sources: IBGE, Santander

Usual inflation determinants do not point to a cool down at the short-term

03

Usual inflation determinants do not point to a cool down at the short-term

- High inertia, high expectations, a closing output gap and a still pressured imported inflation

Phillips Curve for IPCA inflation

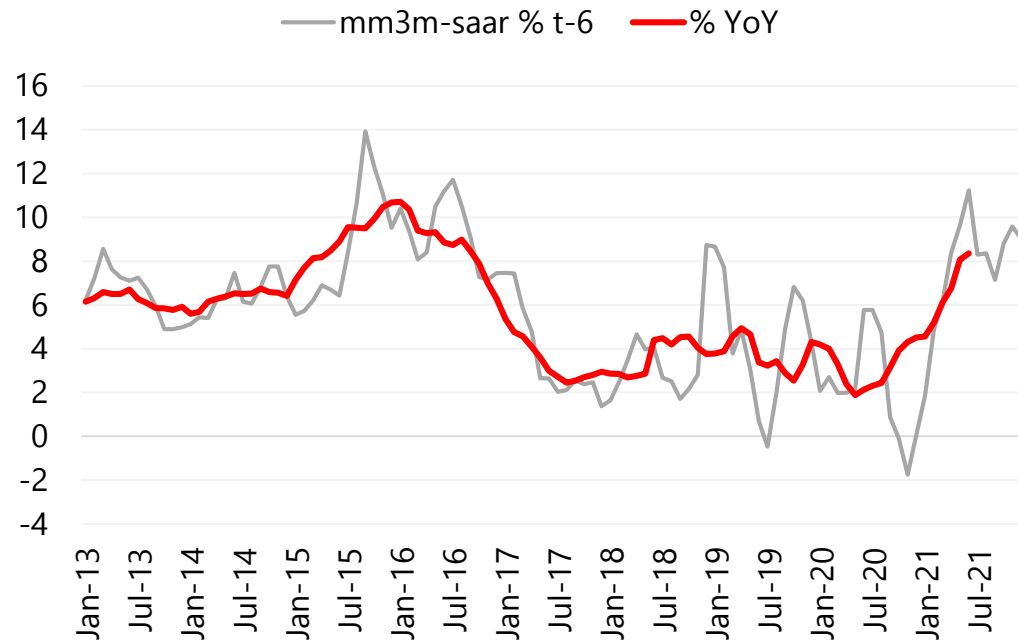
$$\pi_t = c + \alpha_1 \pi_{t-1} + \alpha_2 E_t(\pi_{t+1}) + \alpha_3 h_{t-1} + \alpha_4 \Delta(p_t + e_t) + \varepsilon_t^F$$

- Where π_t is IPCA inflation,
- π_{t-1} is past inflation (and α_1 the inertia coefficient)
- $E_t(\pi_{t+1})$ is the inflation expectations (and α_2 the expectations coefficient)
- h_{t-1} is the output gap and
- p_t is a measure of international prices (commodities) and e_t is the exchange rate (and α_4 the pass-through coefficient)
- ε_t^F the error

Inertia and expectations are pressuring inflation upwards at the margin

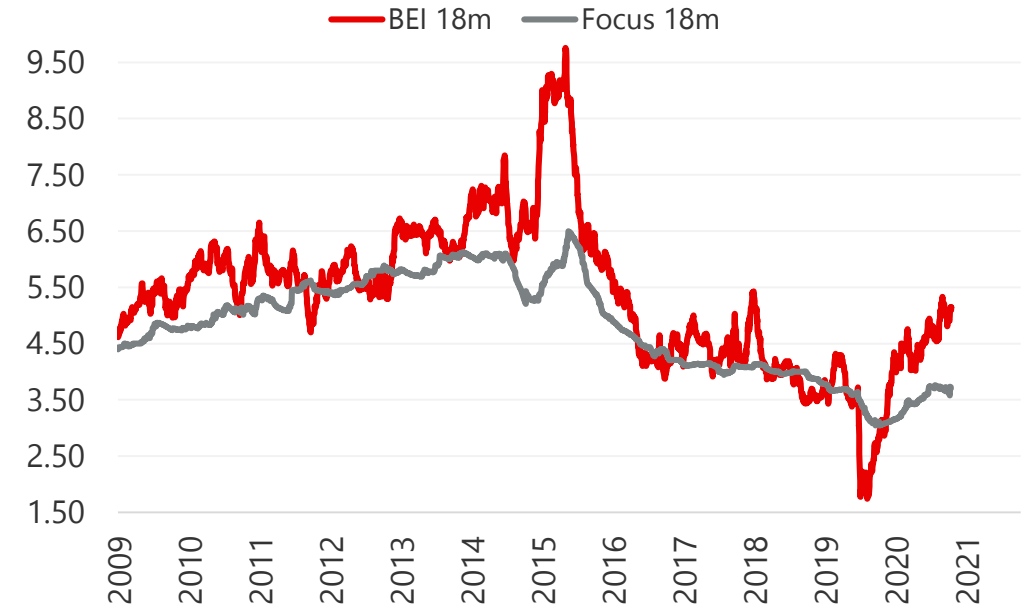
- IPCA inflation was 4.5% in 2020 and will be around 7.0% for 2021 (per our projection), adding an inertial pressure – this is particularly important in Brazil where many prices are still indexed by past inflation
- Expectations rose sharply, particularly market-based ones, which have a better forecasting performance than survey-based ones

IPCA - annual



Sources: IBGE, Santander

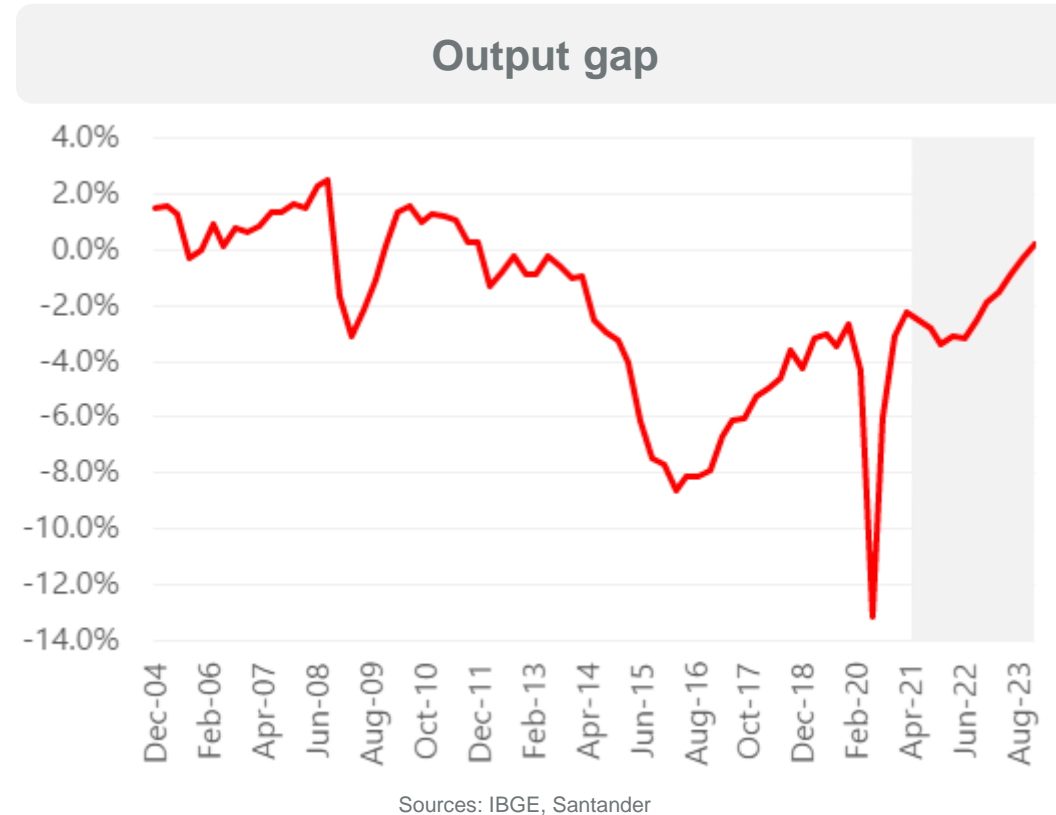
IPCA expectations: market-based x survey-based



Sources: BCB, Anbima/MCM

Economic activity is picking up and the output gap should continue its closing trend

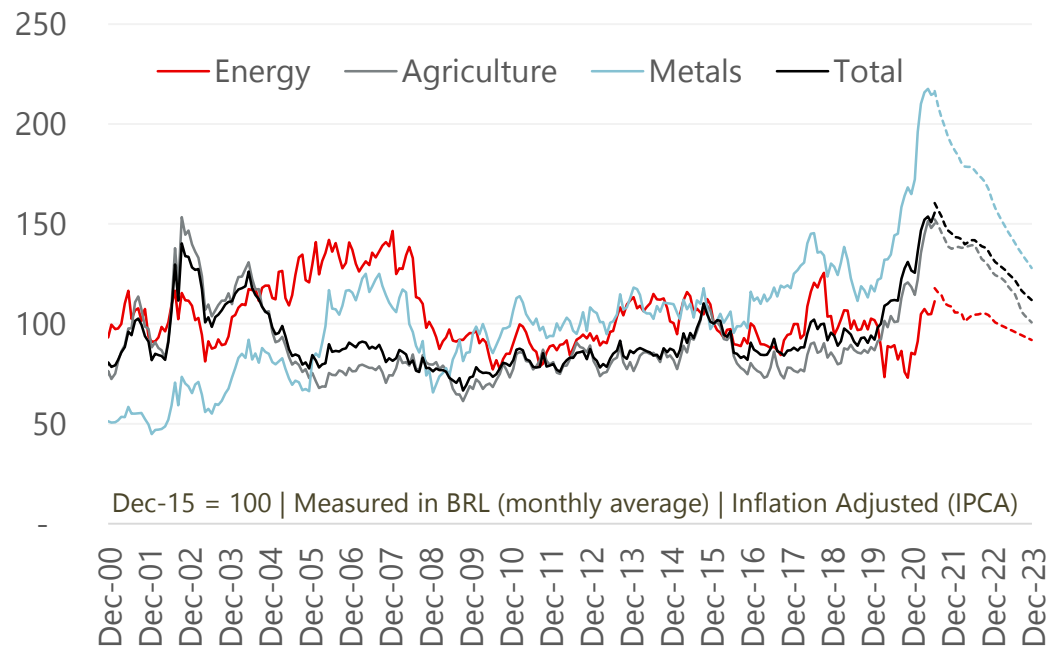
- Although there is still heterogeneity between sectors (manufacturing vs. services), as the pandemic starts to fade, the economy should recover



Commodities' prices should cool down a bit, but BRL should not help much

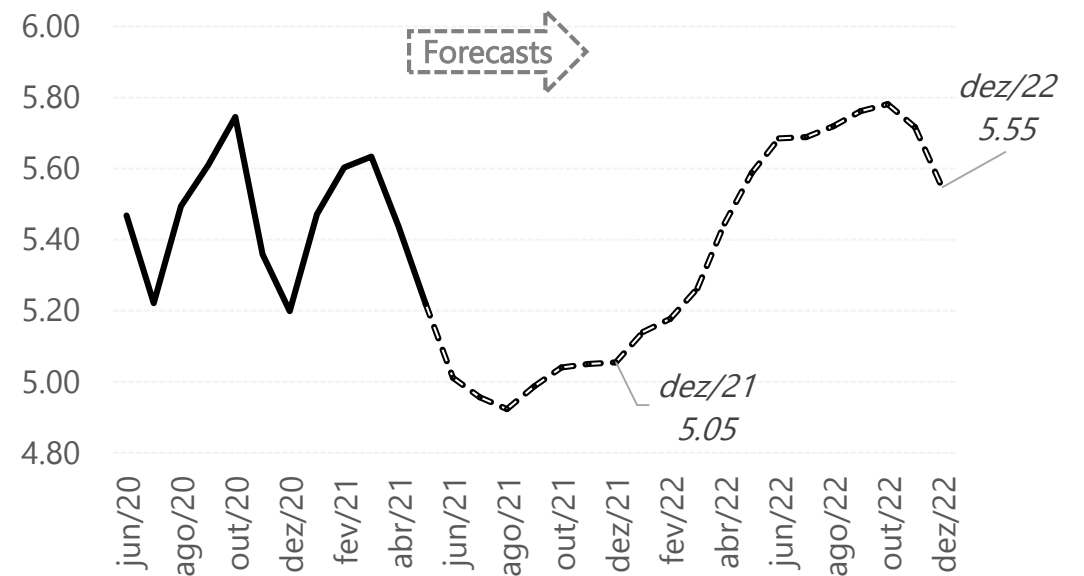
- Although we see commodity prices cooling down, it should not be a major relief
- Moreover, in the medium-term the BRL should continue depreciated, given the fiscal/political risks

Commodities forecast



Sources: Bloomberg, Santander

BRL forecast

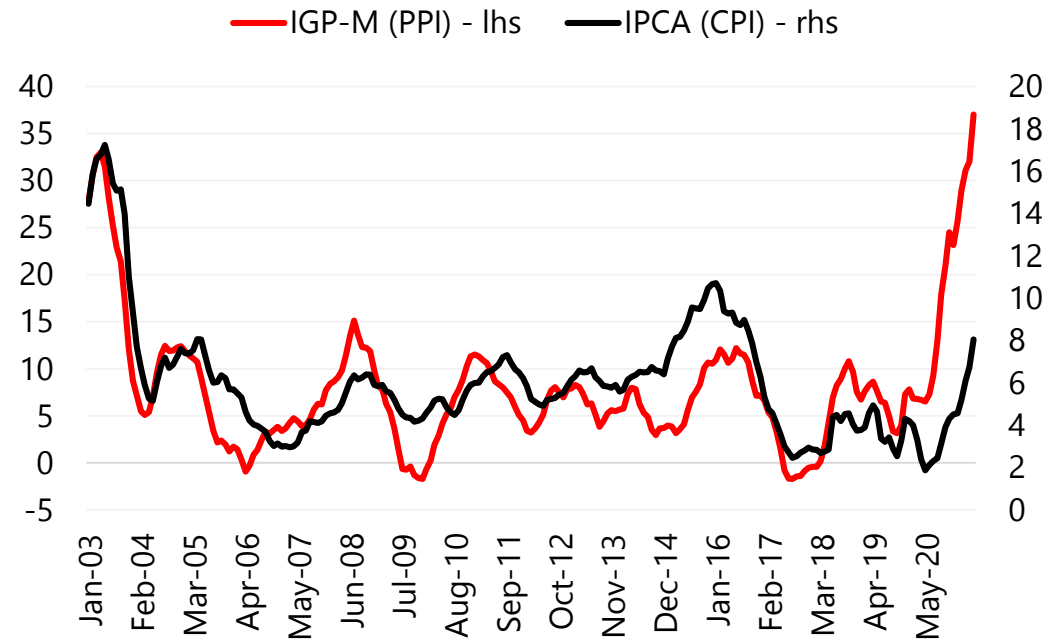


Sources: BCB, Santander

Large distortion of relative price between the wholesale and consumer levels

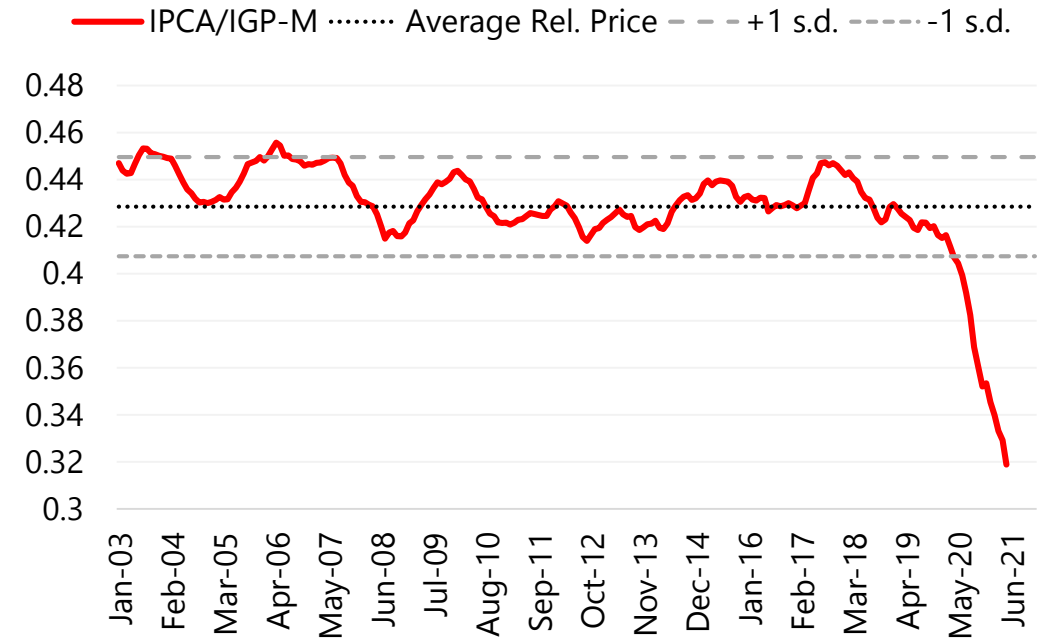
- On top of the usual drivers, we also highlight that there is a backlog of rises at the wholesale level that are still to reach the consumers

IPCA and IGP-M % YoY



Sources: IBGE, FGV

Relative price level: IPCA (CPI) / IGP-M (PPI)

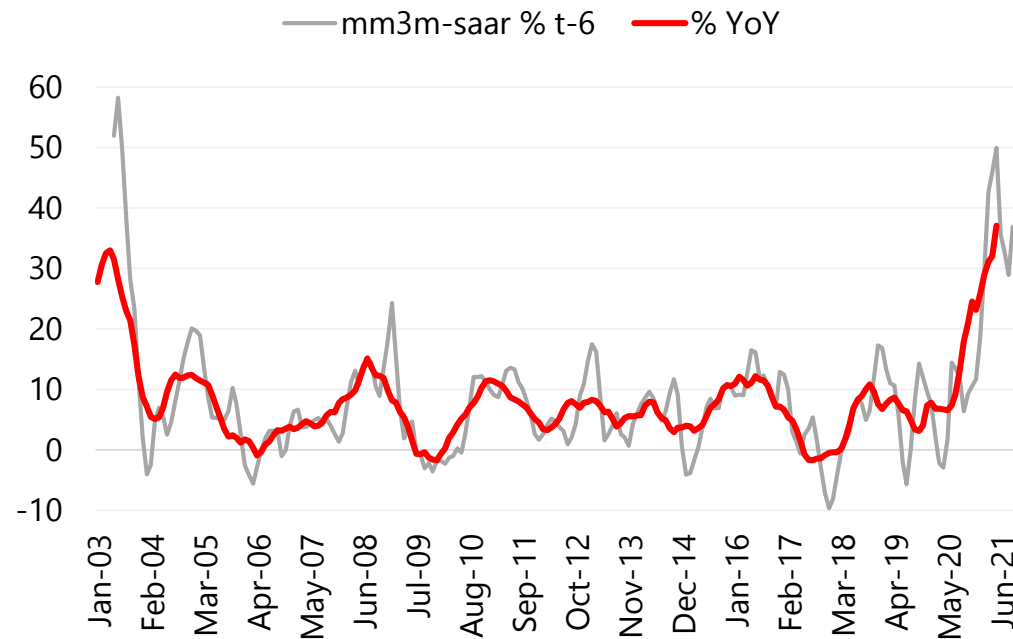


Sources: IBGE, FGV, Santander

And there is no relief in sight for the wholesale level yet

- Before expecting a more clear and robust relief for the consumer, we first need to see a cooling down of prices at the wholesale level and we are not seeing it yet
- IGP-M YoY is at the highest level at least since 2003
- Hence, besides the backlog of raises to come to consumers, more upward pressures keep piling up to that backlog

IGP-M inflation: 3mma-saar still pointing to upward pressures at the margin



Sources: FGV, Santander

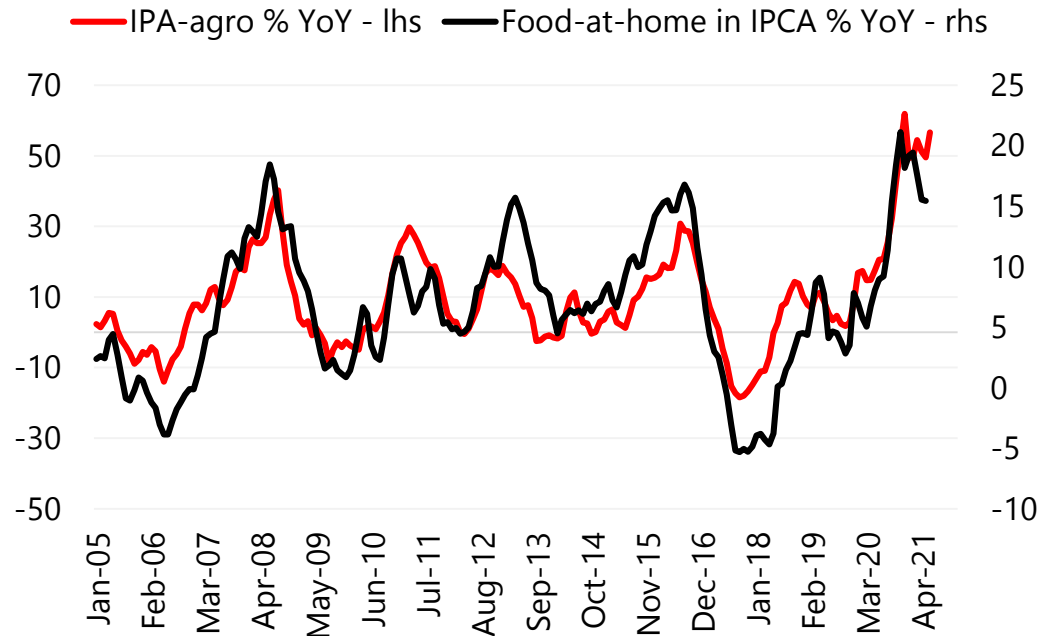
IPCA's groups analysis

04

Part of the distortion comes from food prices

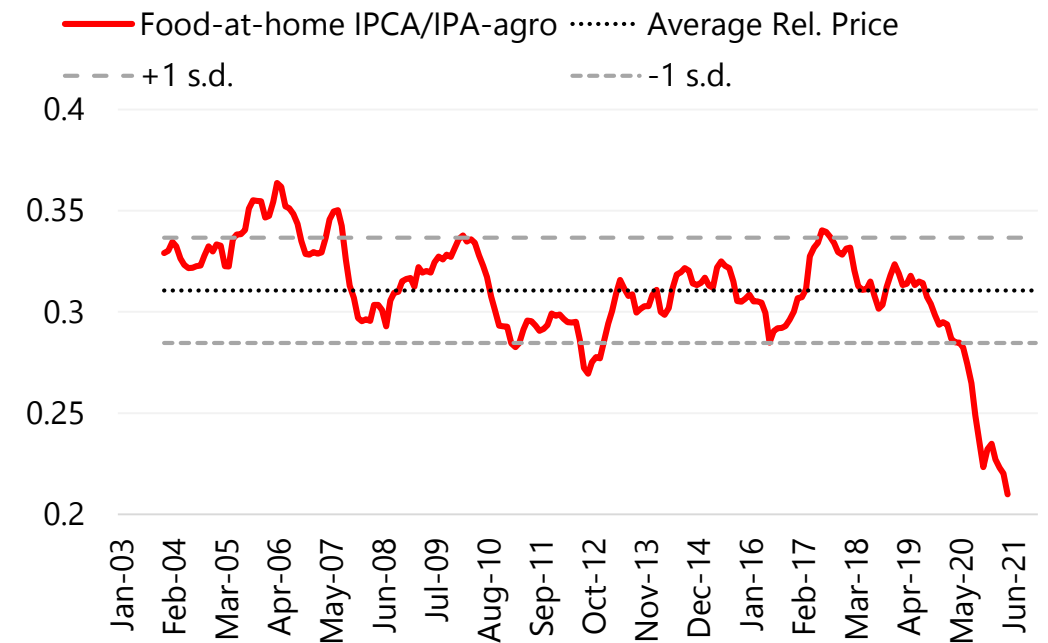
- Agricultural prices at the wholesale level (IPA-agro) tend to cointegrate with food-at-home prices, that is, the relative price tend to hover around a mean, but the recent sharp rise of IPA-agro distorted that relation considerably
- Even with food-at-home already rising in IPCA, it is still too far from normalizing the relation

Wholesale agricultural inflation (IPA-Agro) and Food-at-home inflation in IPCA



Sources: FGV, IBGE, Santander

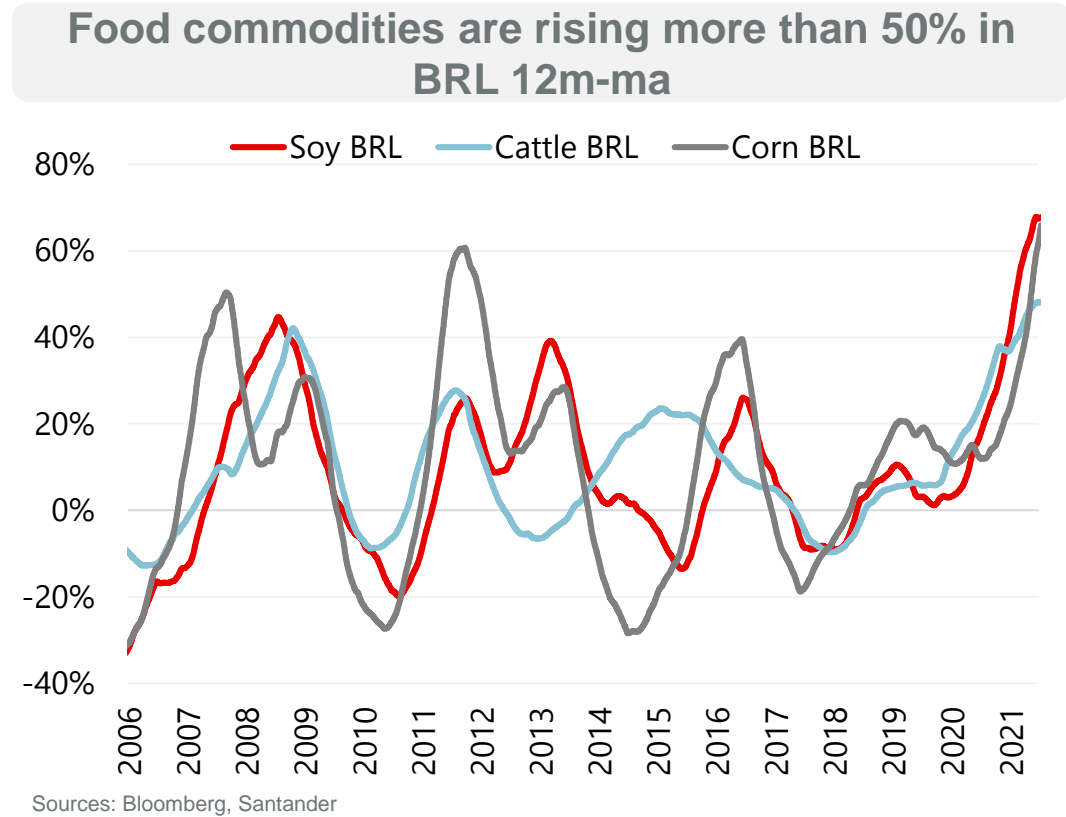
Relative price level: food-at-home IPCA/Wholesale agricultural IPA-agro



Sources: FGV, IBGE, Santander

Grains and proteins are rising more than 50% at the wholesale level

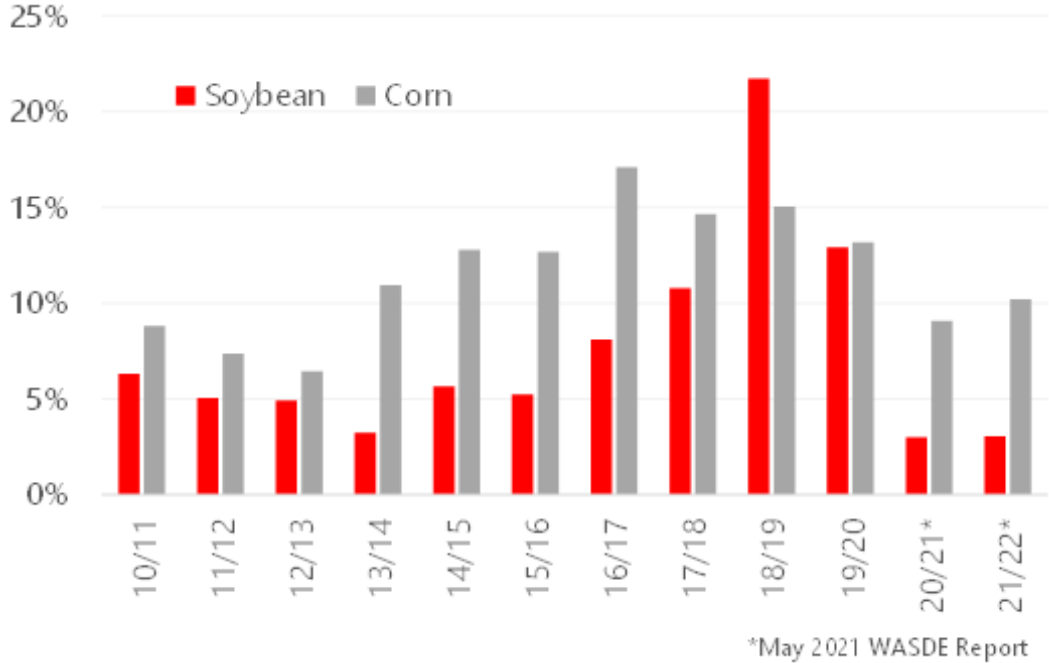
- Strong domestic and external demand, low inventories, weather shocks



A fragile scenario for agricultural commodities

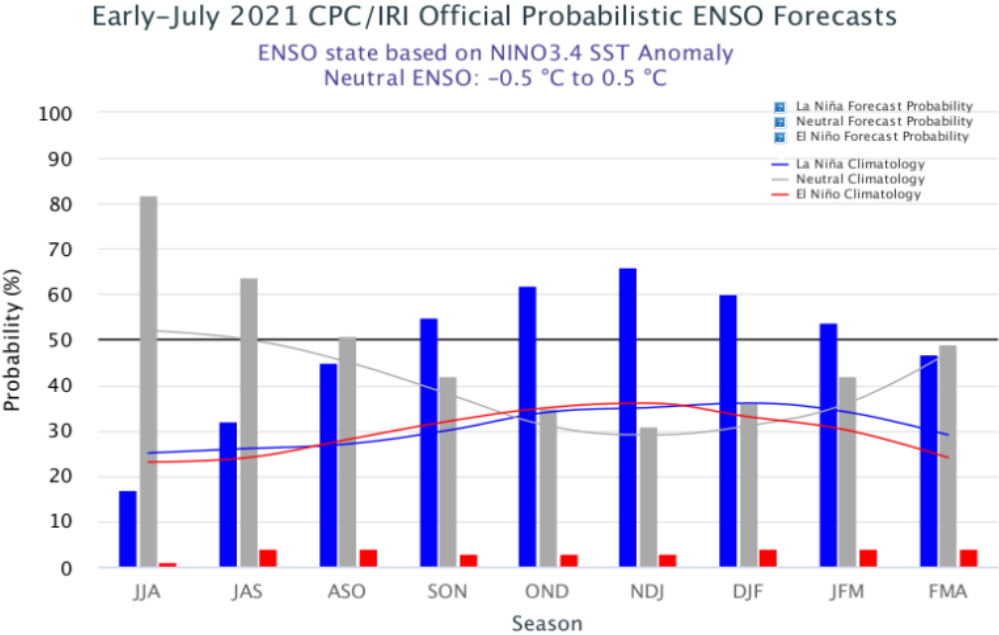
- Very high demand (particularly US and China) and low stock-to-use
- Any weather shock can have major impact on prices on the next years

Very low stock-to-use grains levels in the US



Sources: Wasde

Probability of La Niña during 4Q21 is increasing

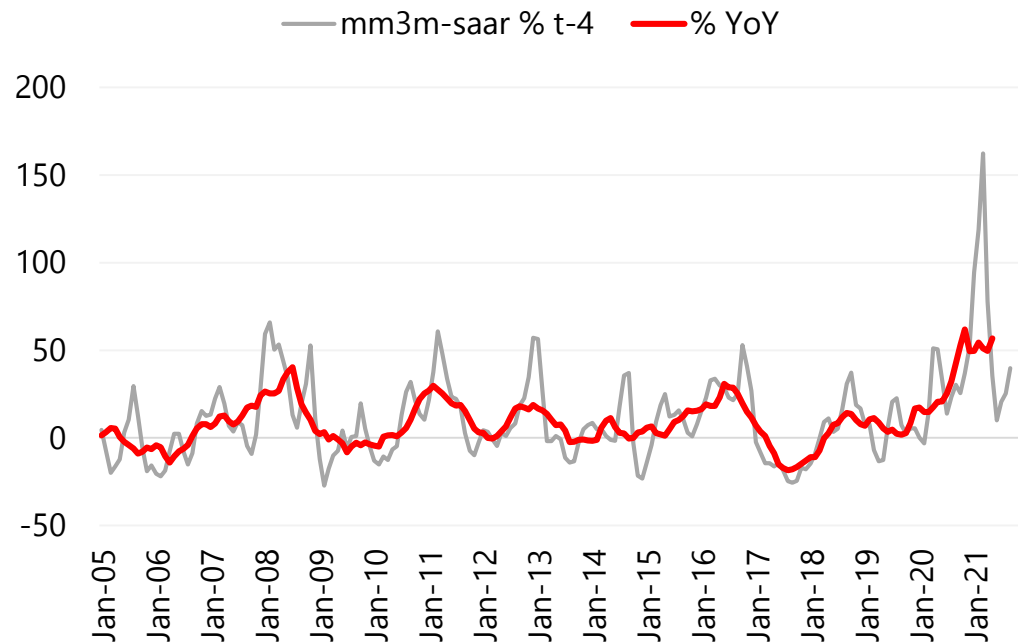


Sources: CPC/IRI

And there is no clear sign of relief for food yet

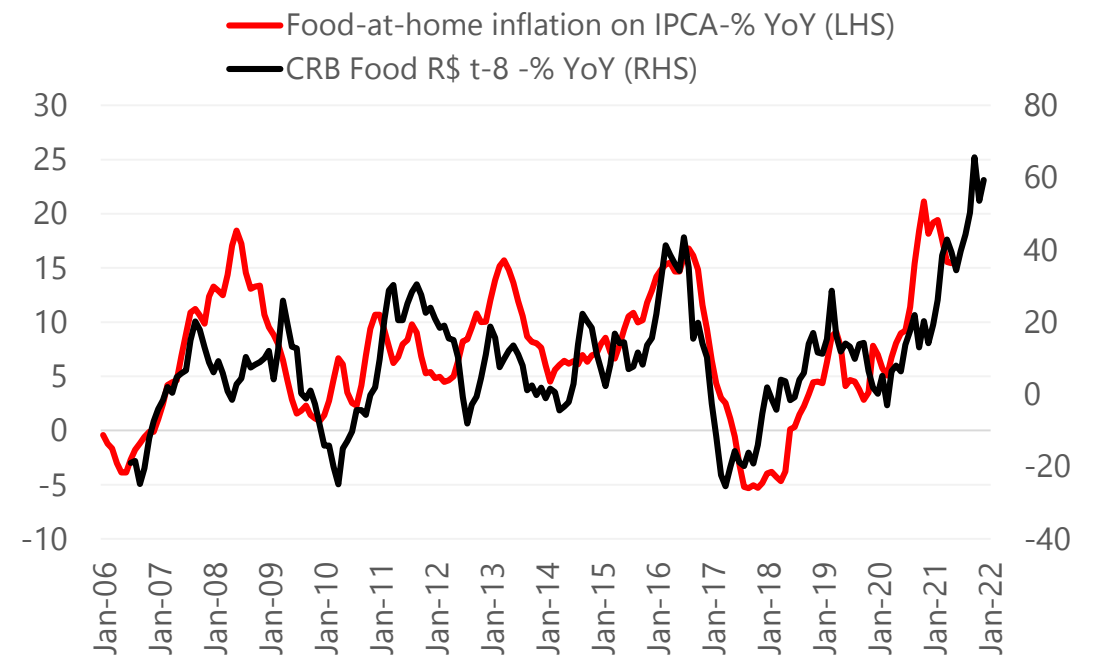
- Despite a recent fall in some agricultural commodities, the recent IPA-agro releases still pointed to a pressured 3mma-saar
- CRB Food in BRL is a good leading indicator for food-at-home in IPCA and it is still showing an upwardly pressured scenario until year-end

IPA-agro: after a short-lived relief, the 3mma-saar rebounded a bit and is around 40% again



Sources: FGV, Santander

CRB Food is rising 60% YoY and it anticipates IPCA's food-inflation

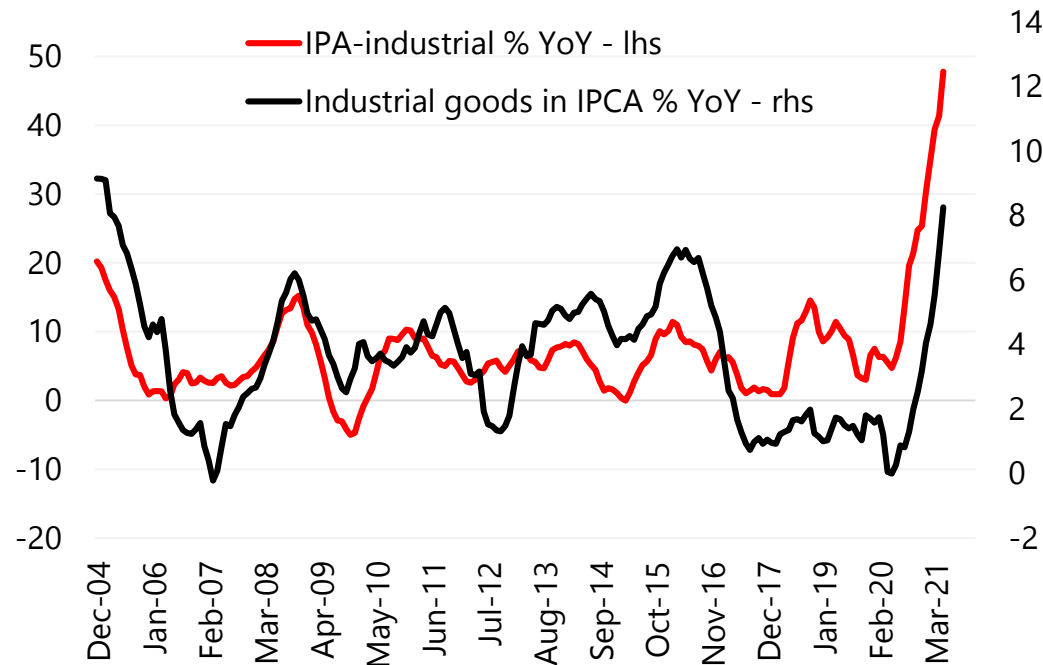


Sources: Bloomberg, IBGE, Santander

Other part of the distortion comes on industrial goods

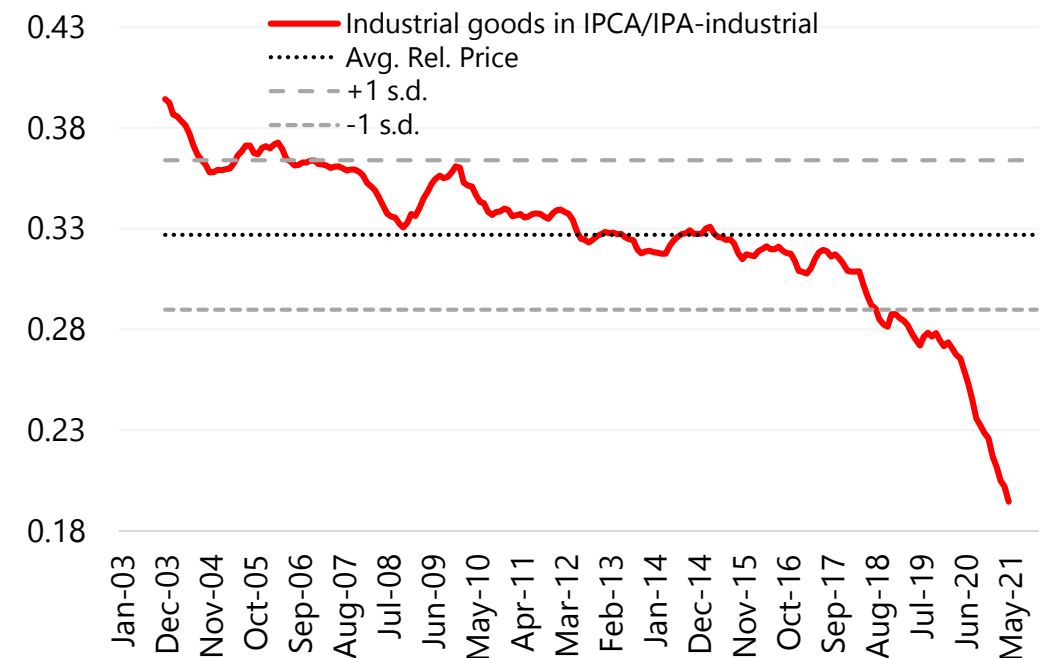
- Although not directly comparable (some items in IPA-industrial do not appear in IPCA), there is a long term relationship between industrial goods on IPCA and on IGP-M (IPA-industrial) and it also got majorly distorted recently
- IPA-industrial had a sharp acceleration and, although industrial goods on IPCA also rose, it is still lagging considerably

Industrial goods in IPCA and wholesale industrial goods (IPA-industrial)



Sources: FGV, IBGE

Relative price level: industrial goods IPCA/wholesale industrial IPA-industrial



Sources: FGV, IBGE

Industrial goods: supply chain disruption

- Part of the explanation for the rise in industrial goods is the pandemic-related supply chain disruption: first there were problems because of a limitation of operations in the manufacturing sector due to social isolation measures, but now the disruption seems to be also impacted by a shortage of inputs given the sharp global V-shaped recovery

Shortage of essential inputs for the manufacturing sector

Global shortage of computer chips could last two years, says IBM boss

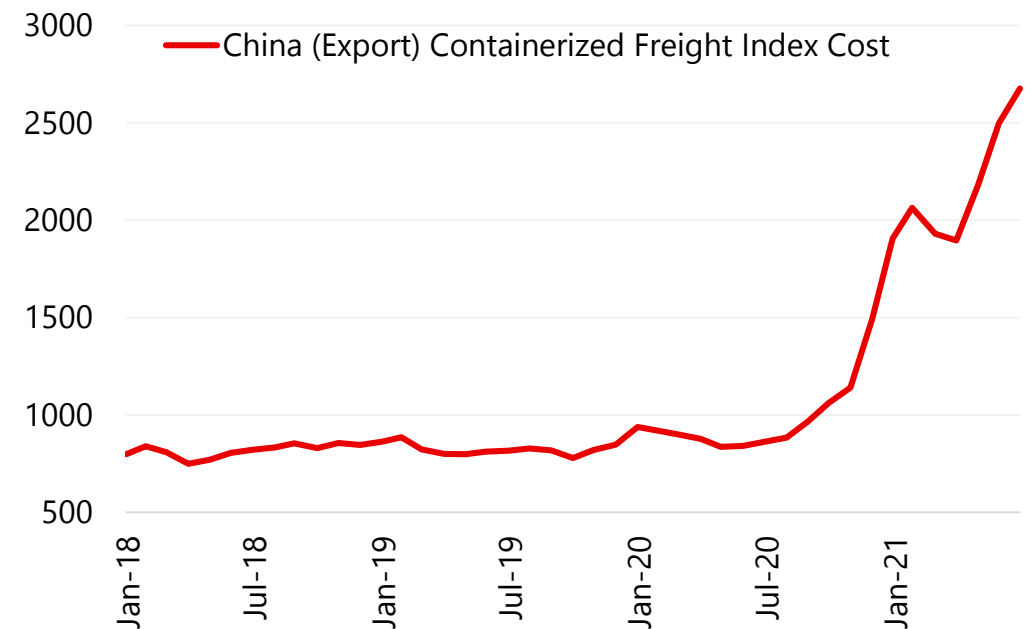
Tech industry struggles to keep up with demand brought on by the reopening of the world economy

Brasil tem 29 fábricas de veículos paradas: 'Crise sem precedentes'

Thais Carrança
Da BBC News Brasil em São Paulo

4 abril 2021
Atualizado 5 abril 2021

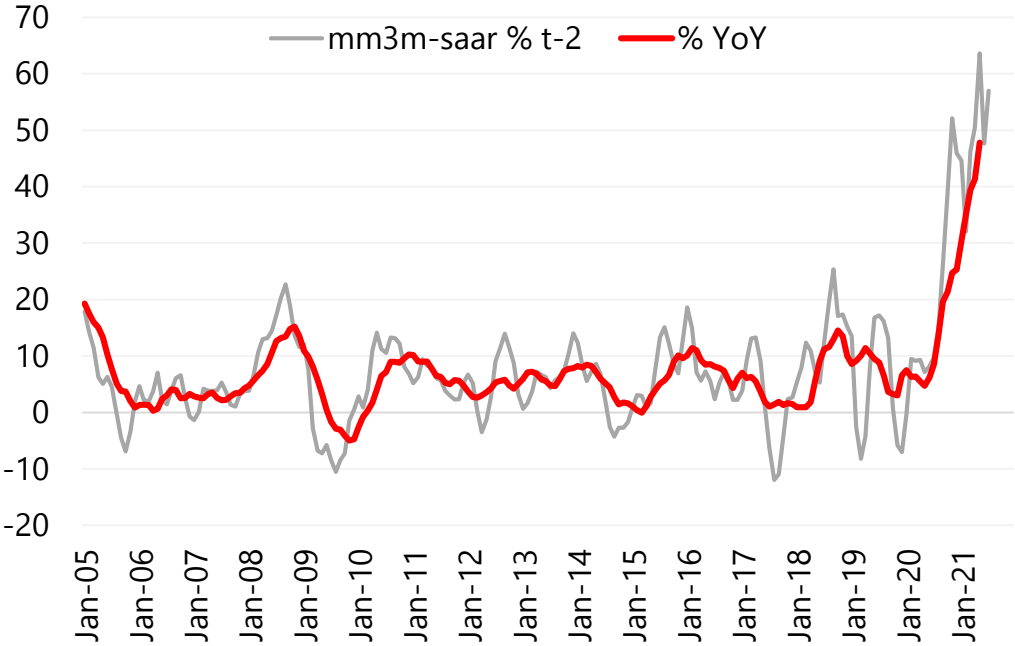
Freight costs skyrocketing: +200% since the beginning of the pandemic



Sources: Bloomberg

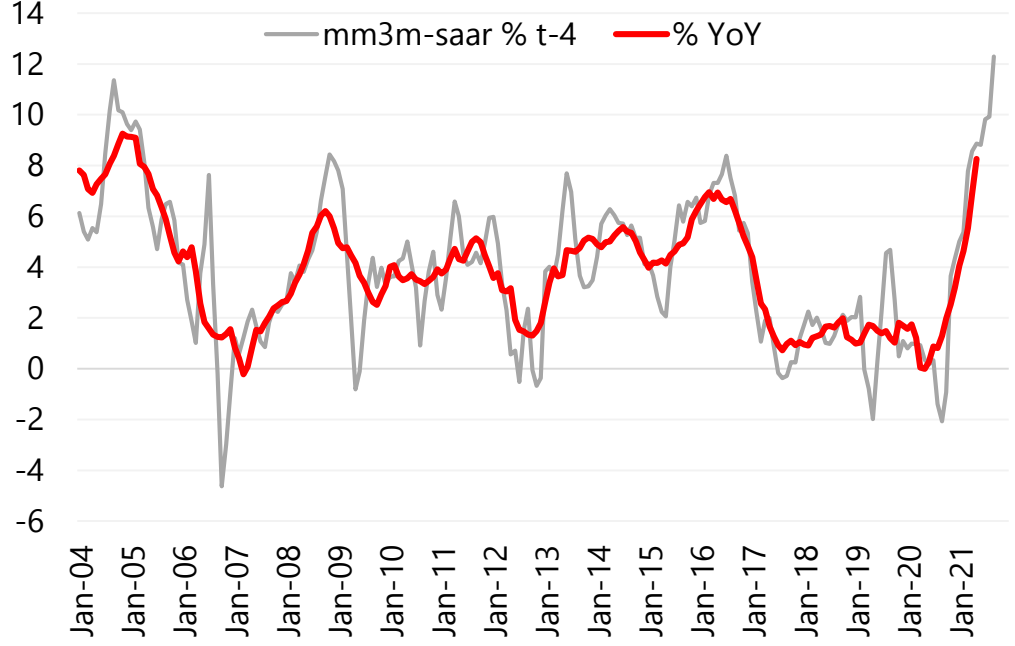
And there is no clear sign of relief for industrial goods yet

IPA-industrial: the 3mma-saar remain sustained at an incredibly high level



Sources: FGV, Santander

Industrial goods IPCA: 3mma-saar still accelerating and is at 12%

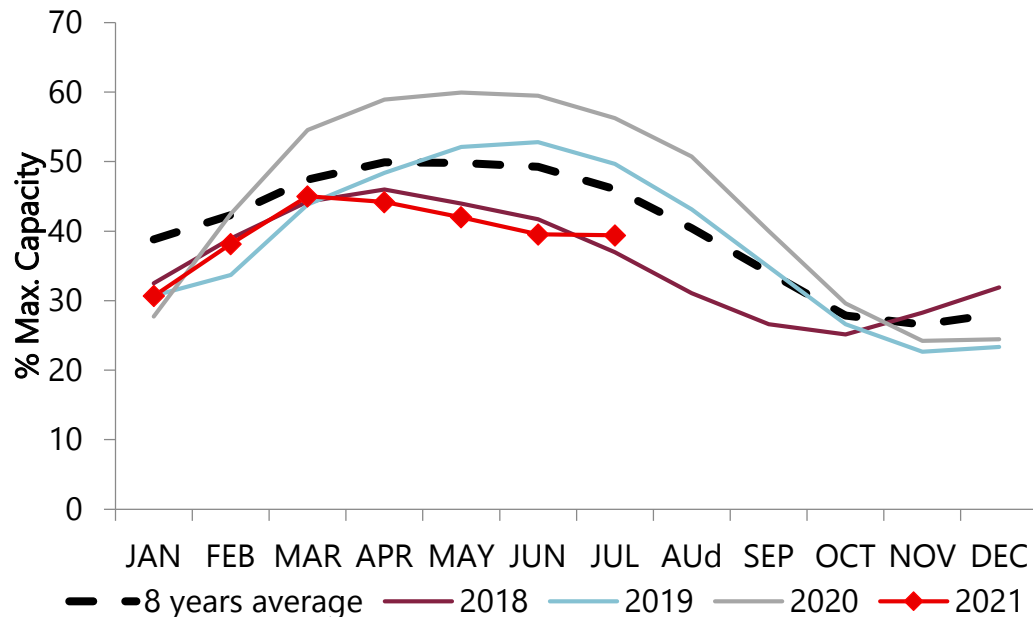


Sources: IBGE, Santander

Electricity: a weather shock is generating a rise in tariffs

- Besides defining the highest level of tariff flag (Red 2), Aneel (the sector regulator) rose the cost of KWh of this flag, putting additional pressure in electricity costs
- Assuming no change to Dec-22 tariff flag forecast, IPCA 2022 should payback the increase of IPCA 2021, but we assume that the tariff adjustments will also pressure in 2022, compensating part of that effect

Reservoir Levels are way below the average



Sources: Santander, ONS, MCM

Water Crisis Is Compounding an Inflation Time Bomb in Brazil

- Electricity prices jumping as costlier thermo plants deployed

By Martha Beck

(Bloomberg) -- Brazil's worst water crisis in nearly a century is fueling inflation that's reverberating through the economy, posing an additional challenge for the central bank

Sources: Bloomberg

Health insurance: lower tariff for 2021, higher for 2022

- The tariff adjustment for 2021 came in just a bit below our forecast (-8.2% vs. -6.5%), but for 2022 we forecast a sharp rebound of +17%, with risks of being even higher (see table below)

Figure 4. ANS Price Cap 2019-2022E

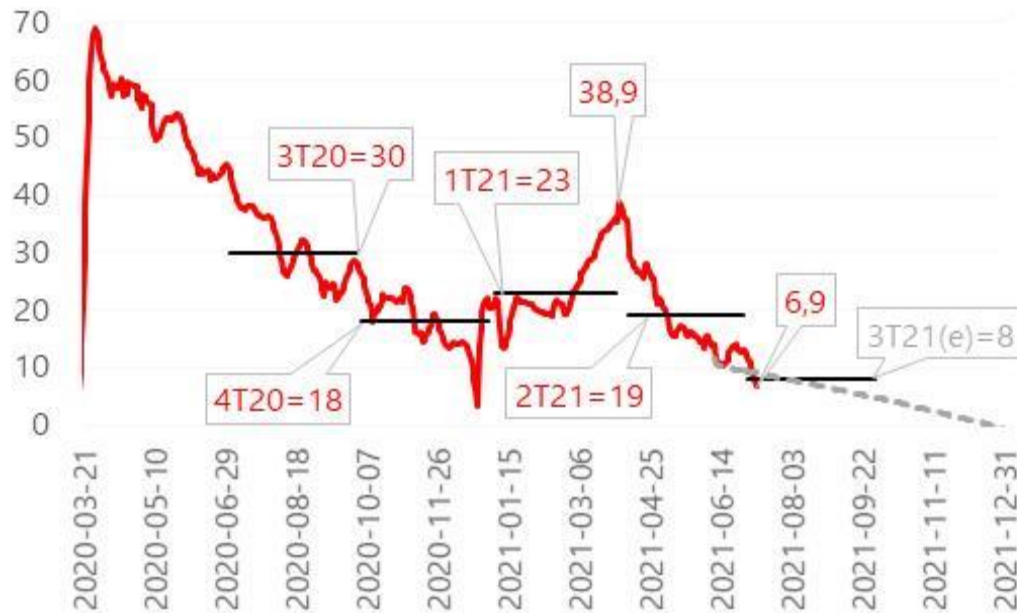
Component	Formula	2019	2020	2021	2022E
VDA (Variation of Medical Expenses)	a	11.1%	11.9%	-9.2%	36.9%
FGE (Efficiency Gain Factor)	b	8.9%	8.9%	8.9%	8.9%
Efficiency Adjustment	$c = a * b $	1.0%	1.1%	0.8%	3.3%
VFE (Revenue Variation by Age Group)	d	1.6%	1.6%	1.6%	1.6%
IVDA (Medical Expenses Value Index)	$e = (1 + a - c) / (1 + d) - 1$	8.4%	9.2%	-11.4%	31.6%
Adjusted IPCA (ex. medical plans)	f	3.4%	4.1%	4.6%	6.9%
Price increase	$g = e * 80\% + f * 20\%$	7.4%	8.1%	-8.2%	26.7%

Sources: ANS and Santander.

Services inflation: the brightside, but for how long?

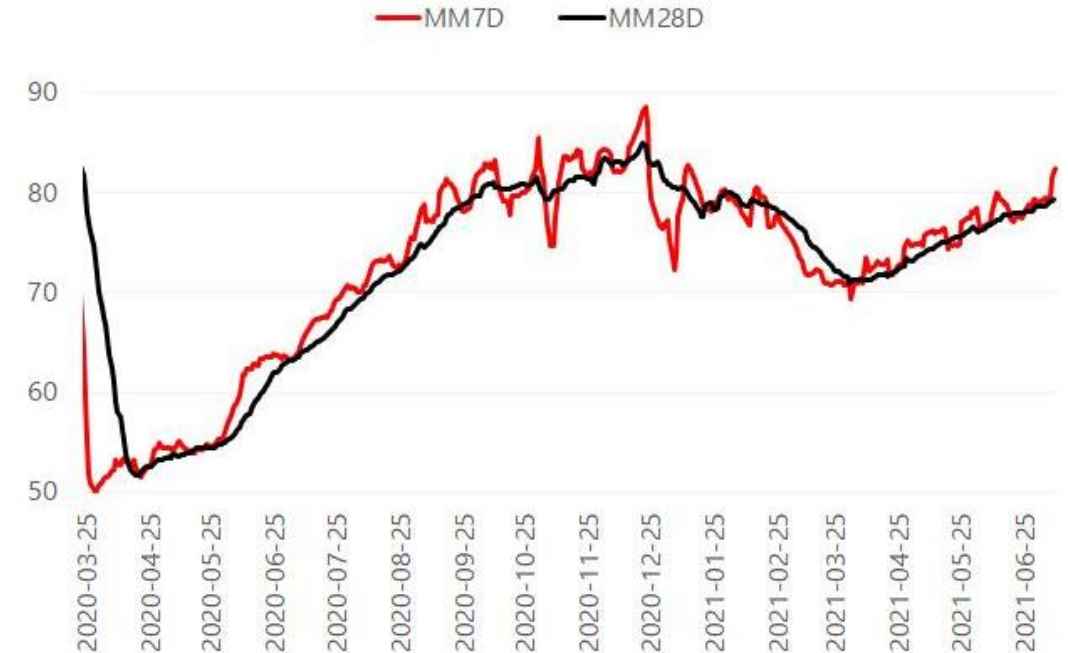
- The economy is reopening and it should put pressures on some services prices that are indirectly suffering the impact of primary shocks

Mobility is recovery rapidly



Sources: Google, Santander

The high-frequency economic activity index is also recovering at the margin

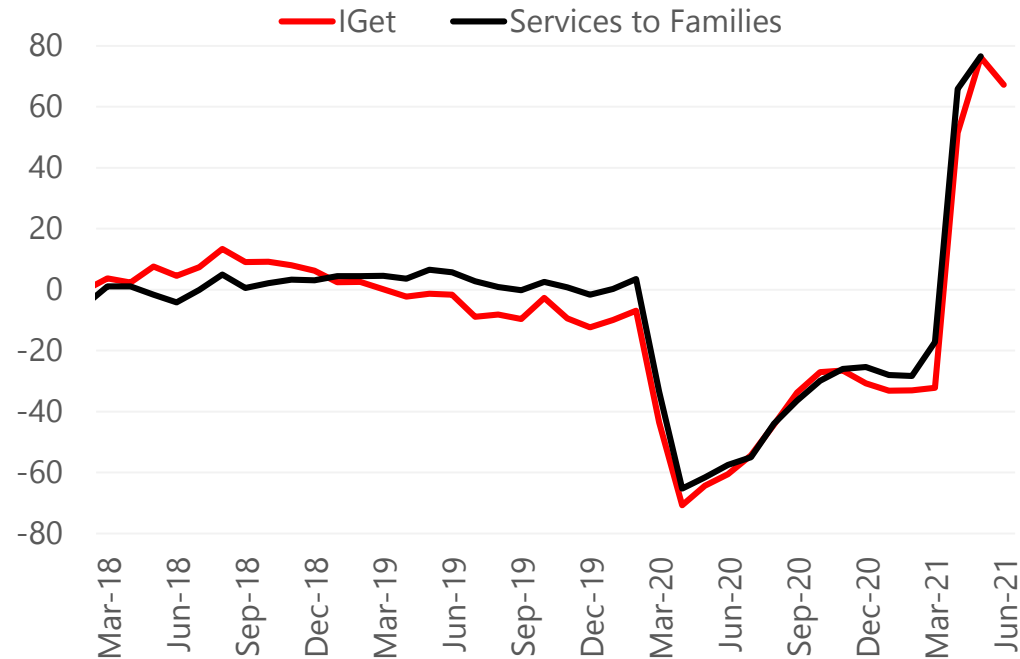


Sources: Santander, Google

Core services inflation is already back to pre-pandemic levels

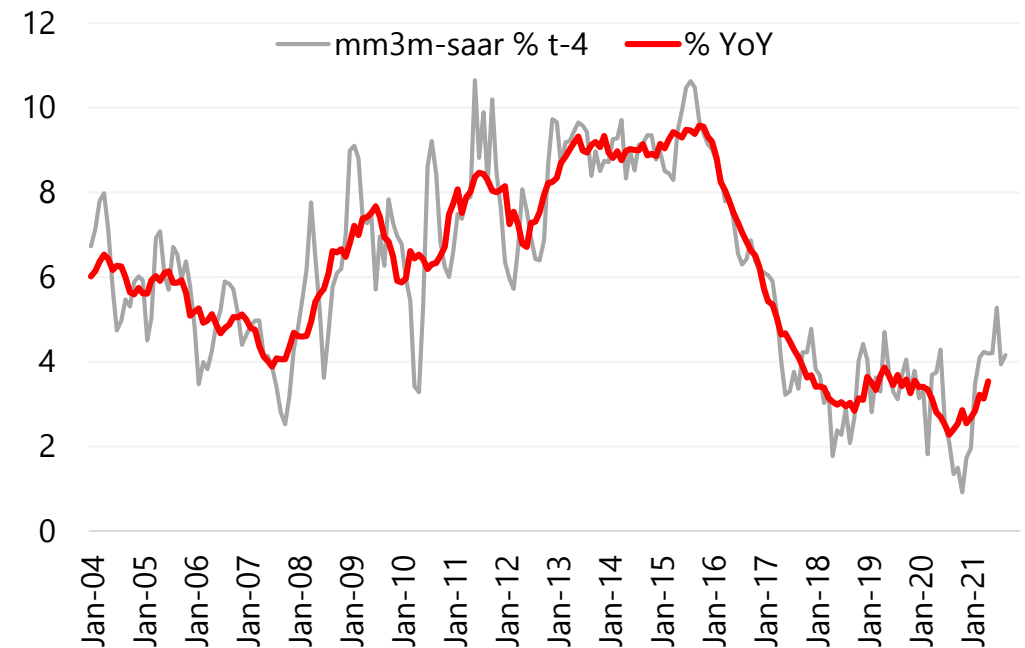
- And proprietary high frequency data shows services to households are accelerating

Our proprietary index for services to households show sharp rise at the margin



Sources: Santander

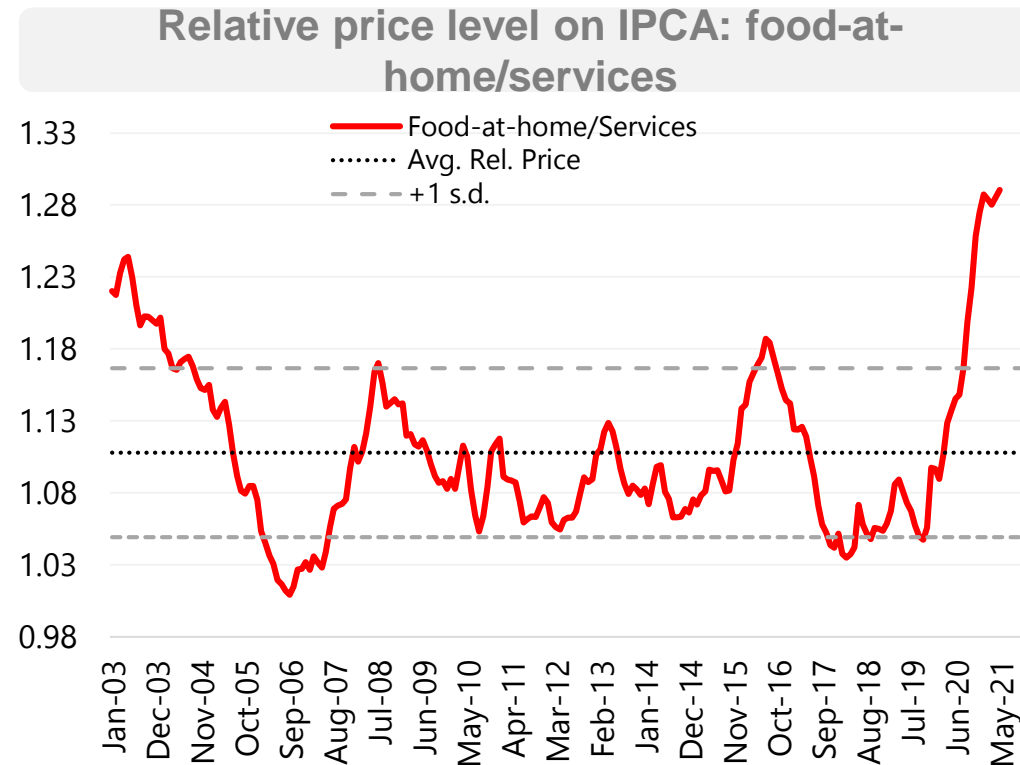
Core services inflation is already hovering above 4% for seven months now



Sources: IBGE, Santander

The relative price between food-at-home and services is distorted

- This intra-IPCA relative price also tends to be stable around a mean but food-at-home rose sharply, while services are at a very low level
- As we do not believe food-at-home will deflate soon, then services should accelerate to correct the relative price

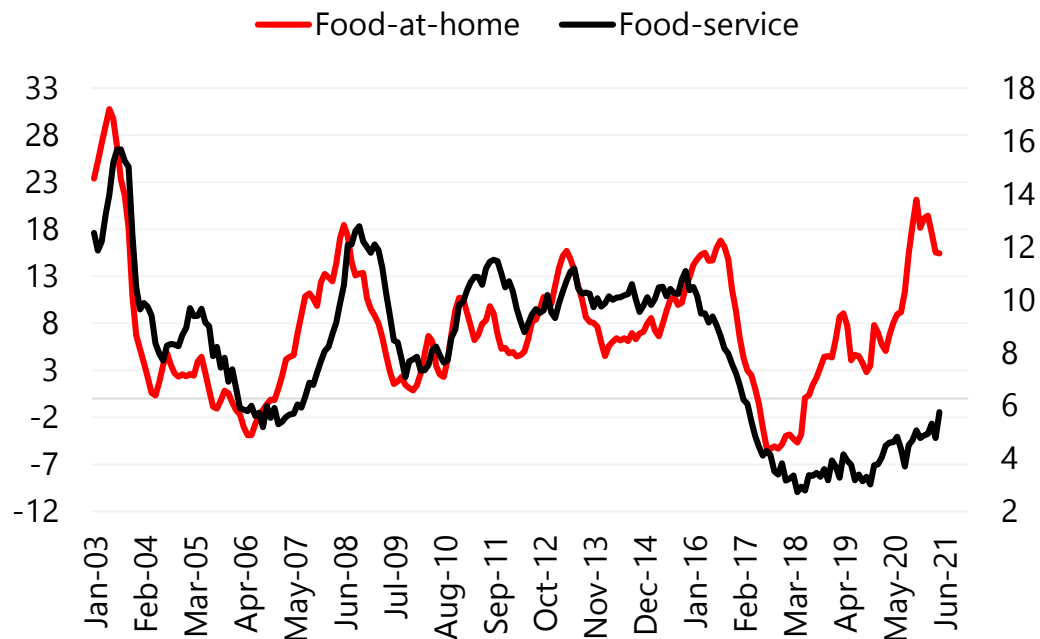


Sources: IBGE, Santander

We are particularly concerned with food-service

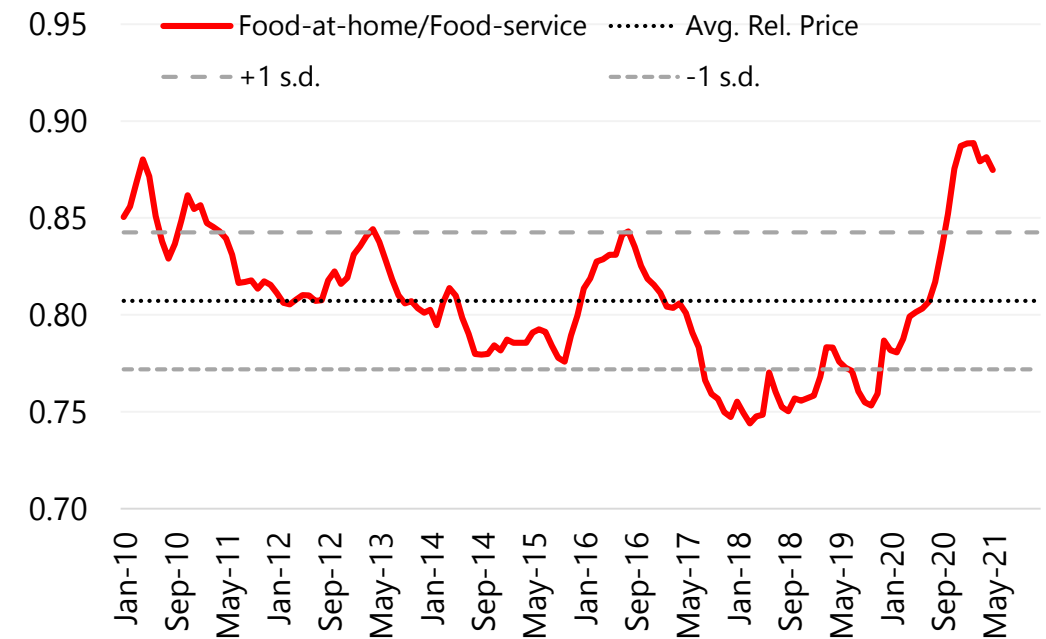
- This sector is the one more directly linked to the food shock and the relative price between food-at-home and food-service is also distorted
- As we do not expect food-at-home to deflate soon, then food-service should accelerate

Food-at-home and food-service % YoY



Sources: IBGE, Santander

Relative price level on IPCA: food-at-home/food-service



Sources: IBGE, Santander

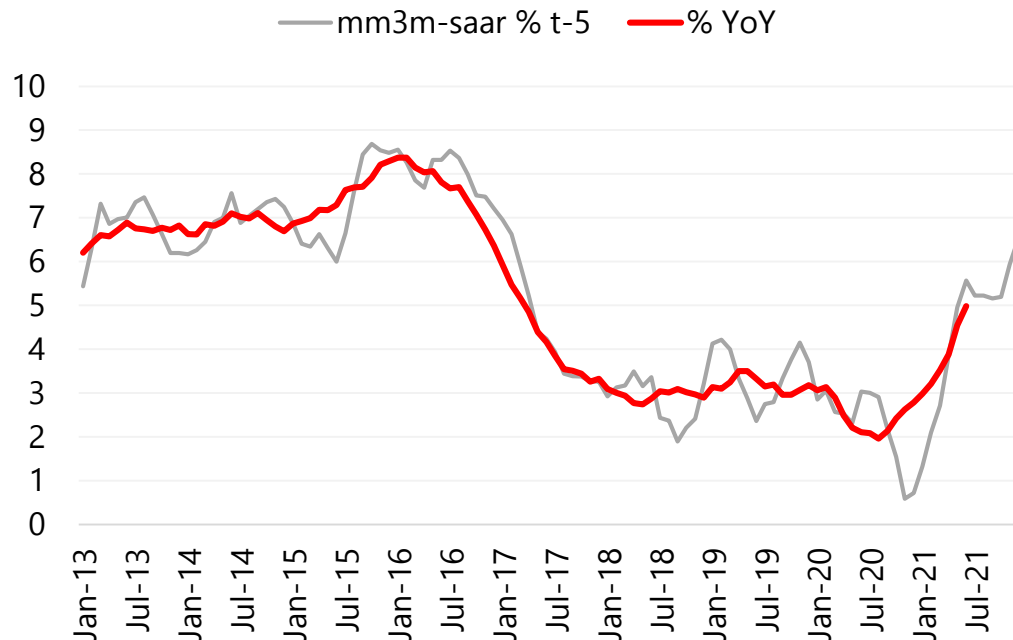
Risks

05

Risks are tilted to the upside: signs of spreading of primary shocks to general prices

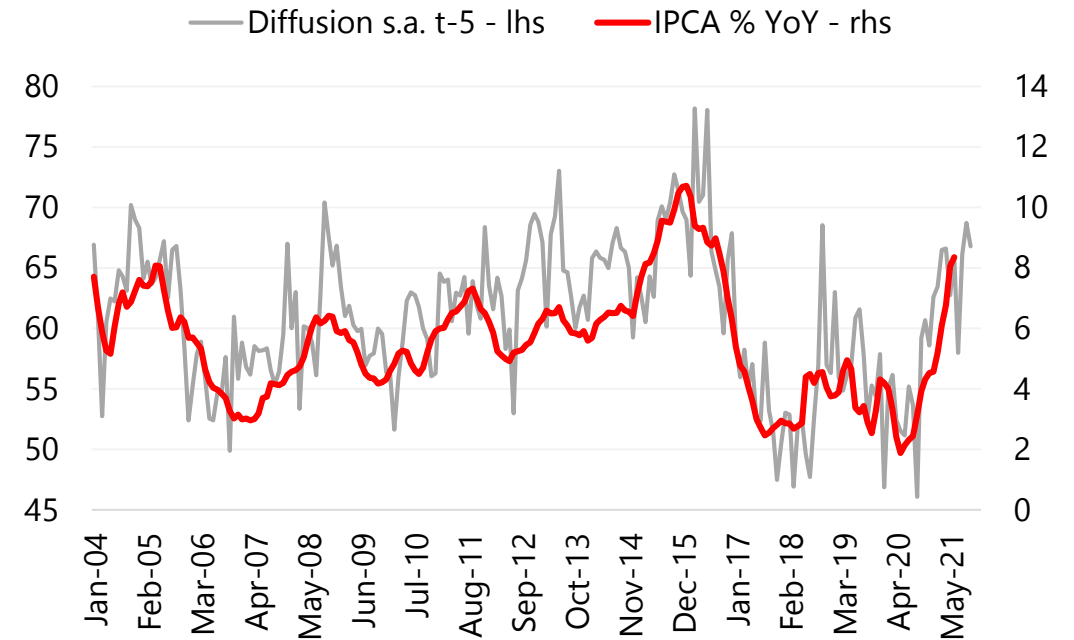
- We are more biased towards 4.5% than to 3.5% for IPCA 2022
- Core measures are running at persistently high levels and the diffusion is rising further, both showing signs of a spreading of shocks
- The recovery of the economy could worsen that scenario, with services and industrial goods rising further

Average of cores is hovering above 5% for eight months



Sources: IBGE, Santander

Diffusion is rising, pointing to higher inflation further ahead

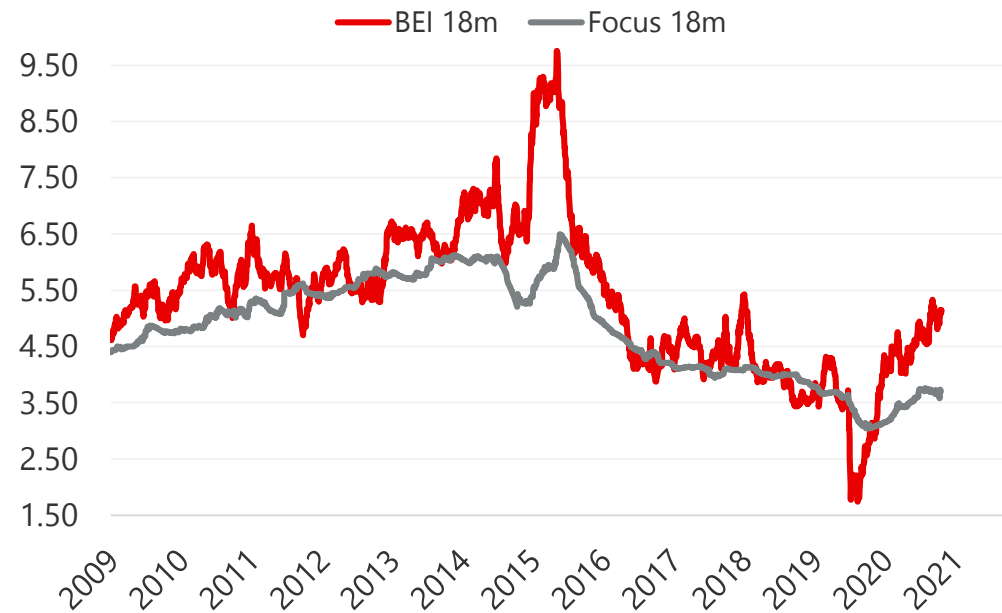


Sources: IBGE, Santander

Market-based expectations are much above the BCB's target already

- Survey-based expectations (Focus) are also rising a bit
- The risk of a de-anchoring of expectations has risen

Markets are pricing a high risk of a de-anchoring of expectations

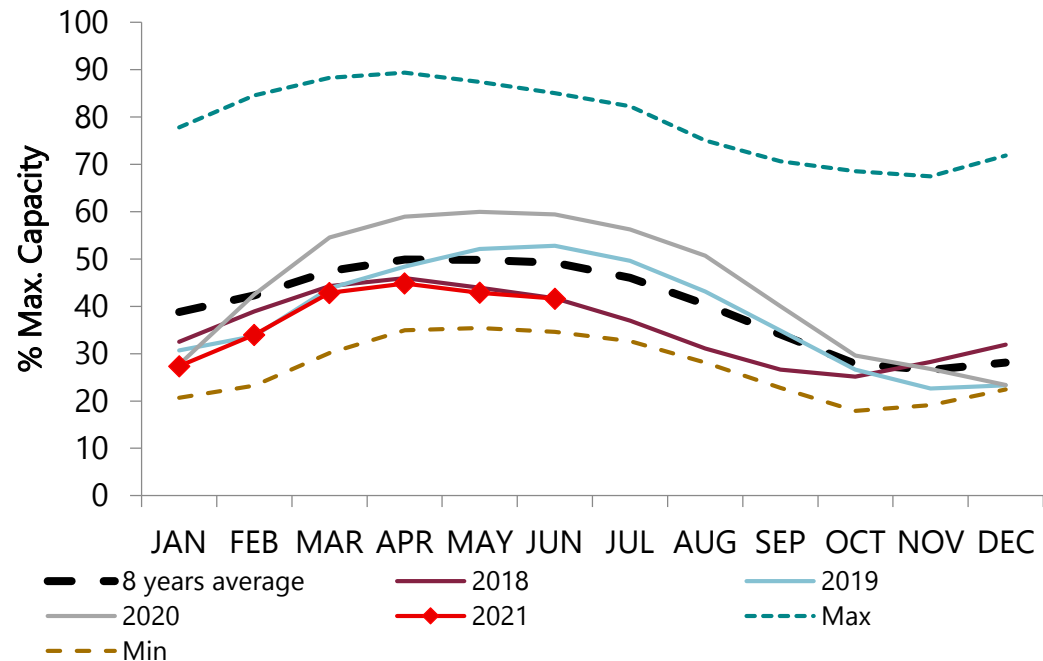


Sources: Anbima, BCB, Santander

Electricity: downside risk for 2021 and upside risk for 2022

- We are already assuming the highest level of tariff flag for Dec-21, as a result the asymmetry tends to a lower flag
- However, if that happens, then the pressure to IPCA 2022 would increase

Reservoir Levels are way below the average



Sources: ONS, Santander

Tariff flag's change impacts on IPCA

Flag	Additional cost (R\$/KWh)	Change in bill	Impact on IPCA (bps)
Green	0.00	-	-
Yellow	1.87	3.31%	14
Red 1	3.97	3.58%	15
Red 2	9.49	9.10%	39
Possbl. New Red2*	11.50	3.03%	13

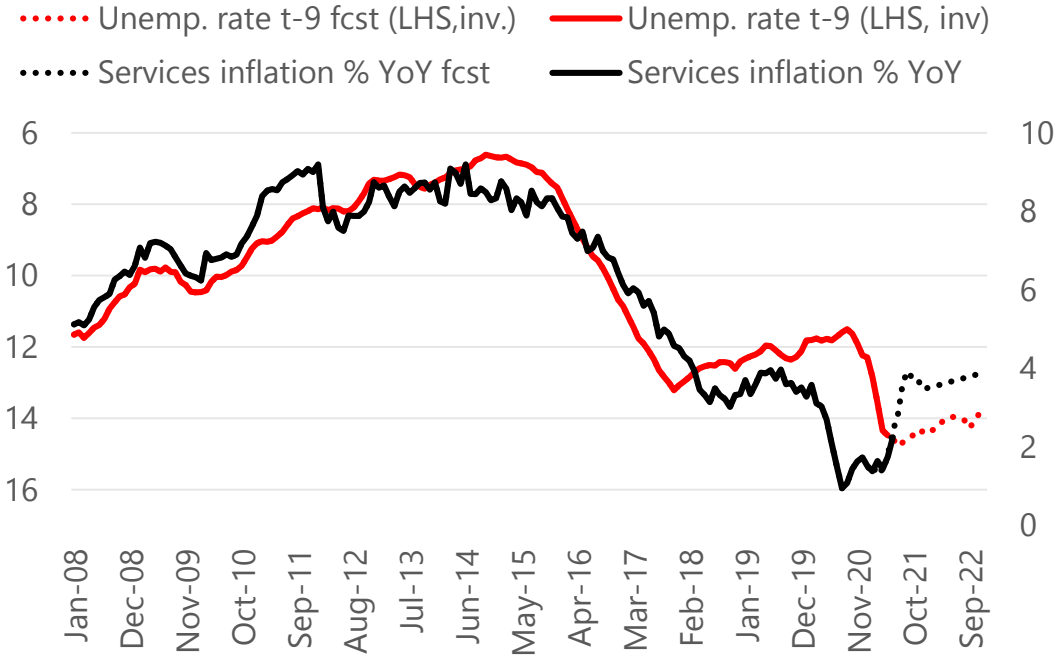
Sources: Aneel, Santander

*We are already assuming this new value, that will be discussed by Aneel during July

Services: although we firmly believe that the trend from now on is upwards, the pace of the job market recovery suggests services inflation can accelerate a bit slower

- This is one of the very few downside risks we can see for inflation (despite the, by definition, unforecastable ones, such as shocks)
- In any case, we see this as a less probable and less quantitatively important risk, so the full **balance of risks for IPCA is definitely tilted to the upside**

Services inflation vs. Unemployment rate



Sources: IBGE, Santander

Brazil Macroeconomic Research Team

Thank you.

Our purpose is to help people and businesses prosper.

Our culture is based on believing that everything we do should be:

Simple Personal Fair



Raissa Freitas
Business Manager
raifreitas@santander.com.br
+55 (11) 3553-7424

Ana Paula Vescovi

Chief Economist
anavescovi@santander.com.br
+55 (11) 3553-8567

Jankiel Santos

Economist – External Sector
jankiel.santos@santander.com.br
+55 (11) 3012-5726

Tomas Urani

Economist – Global Economics
tomas.urani@santander.com.br
+55 (11) 3553-9520

Lucas Maynard

Economist – Economic Activity
lucas.maynard.da.silva@santander.com.br
+55 (11) 3553-7495

Gilmar Lima

Economist – Modeling
gilmar.lima@santander.com.br
+55 (11) 3553-6327

Mauricio Oreg

Head of Research & Strategy
mauricio.oreg@santander.com.br
+55 (11) 3553-5404

Ítalo Franca

Economist – Fiscal Policy
italo.franca@santander.com.br
+55 (11) 3553-5235

Daniel Karp

Economist - Inflation
daniel.karp@santander.com.br
+55 (11) 3553-9828

Felipe Kotinda

Economist - Credit
felipe.kotinda@santander.com.br
+55 (11) 3553-8071

Gabriel Couto

Economist – Special Projects
gabriel.couto@santander.com.br
+55 (11) 3553-8487

IMPORTANT DISCLOSURES

This report has been prepared by Santander Investment Securities Inc. ("SIS"; SIS is a subsidiary of Santander Holdings USA, Inc. which is wholly owned by Banco Santander, S.A. "Santander"), on behalf of itself and its affiliates (collectively, Grupo Santander) and is provided for information purposes only. This document must not be considered as an offer to sell or a solicitation of an offer to buy any relevant securities (i.e., securities mentioned herein or of the same issuer and/or options, warrants, or rights with respect to or interests in any such securities). Any decision by the recipient to buy or to sell should be based on publicly available information on the related security and, where appropriate, should take into account the content of the related prospectus filed with and available from the entity governing the related market and the company issuing the security. This report is issued in Spain by Santander Investment Bolsa, Sociedad de Valores, S.A. ("Santander Investment Bolsa"), and in the United Kingdom by Banco Santander, S.A., London Branch. Santander London is authorized by the Bank of Spain. This report is not being issued to private customers. SIS, Santander London and Santander Investment Bolsa are members of Grupo Santander.

ANALYST CERTIFICATION: The following analysts hereby certify that their views about the companies and their securities discussed in this report are accurately expressed, that their recommendations reflect solely and exclusively their personal opinions, and that such opinions were prepared in an independent and autonomous manner, including as regards the institution to which they are linked, and that they have not received and will not receive direct or indirect compensation in exchange for expressing specific recommendations or views in this report, since their compensation and the compensation system applying to Grupo Santander and any of its affiliates is not pegged to the pricing of any of the securities issued by the companies evaluated in the report, or to the income arising from the businesses and financial transactions carried out by Grupo Santander and any of its affiliates: **Daniel Karp***.

*Employed by a non-US affiliate of Santander Investment Securities Inc. and not registered/qualified as a research analyst under FINRA rules, and is not an associated person of the member firm, and, therefore, may not be subject to the FINRA Rule 2242 and Incorporated NYSE Rule 472 restrictions on communications with a subject company, public appearances, and trading securities held by a research analyst account.

The information contained herein has been compiled from sources believed to be reliable, but, although all reasonable care has been taken to ensure that the information contained herein is not untrue or misleading, we make no representation that it is accurate or complete and it should not be relied upon as such. All opinions and estimates included herein constitute our judgment as at the date of this report and are subject to change without notice.

Any U.S. recipient of this report (other than a registered broker-dealer or a bank acting in a broker-dealer capacity) that would like to effect any transaction in any security discussed herein should contact and place orders in the United States with SIS, which, without in any way limiting the foregoing, accepts responsibility (solely for purposes of and within the meaning of Rule 15a-6 under the U.S. Securities Exchange Act of 1934) for this report and its dissemination in the United States.

© 2021 by Santander Investment Securities Inc. All Rights Reserved.

COMUNICADO IMPORTANTE

O presente material foi preparado pelo Banco Santander (Brasil) S.A. e não se configura um relatório de análise para os fins da Resolução CVM nº 20, de 25 de fevereiro de 2021. Ele tem como objetivo único de fornecer informações macroeconômicas e não constitui e não deve ser interpretado como uma oferta ou solicitação de oferta para aquisição de valores mobiliários. Ele pode conter informações sobre eventos futuros e estas projeções/estimativas estão sujeitas a riscos e incertezas relacionados a fatores fora de nossa capacidade de controlar ou estimar precisamente, tais como condições de mercado, ambiente competitivo, flutuações de moeda e da inflação, mudanças em órgãos reguladores e governamentais e outros fatores que poderão diferir materialmente daqueles projetados. As informações contidas neste relatório foram obtidas de fontes públicas consideradas seguras, muito embora tenham sido tomadas todas as medidas razoáveis para assegurar que as informações aqui contidas não são incertas ou equívocas no momento de sua publicação, não é garantida a sua integridade, confiabilidade, completude ou exatidão dessas informações.

Todas as opiniões, estimativas e projeções que constam no presente relatório material refletem única e exclusivamente nossa opinião na data de sua emissão e podem ser modificadas sem prévio aviso, considerando nossas premissas relevantes e metodologias adotadas à época de sua emissão, conforme estabelecidas no presente documento. O Santander não será responsável por perdas diretas ou lucros cessantes que sejam decorrentes do uso do presente relatório.

Este material não leva em consideração os objetivos, situação financeira ou necessidades específicas de qualquer investidor em particular. Os potenciais investidores devem buscar aconselhamento financeiro profissional sobre a adequação do investimento em valores mobiliários, outros investimentos ou estratégias de investimentos aqui discutidos, e devem entender que declarações sobre perspectivas futuras podem não se concretizar. Ao acessar este material, você declara e confirma que compreende os riscos relativos aos mercados abordados neste documento e às leis em sua jurisdição referentes a provisão e venda de produtos de serviço financeiro. Você reconhece que este material contém informações proprietárias e concorda em manter esta informação somente para seu uso exclusivo.

Reservamo-nos o direito de, a qualquer momento, comprar ou vender valores mobiliários mencionados. Estas projeções e estimativas não devem ser interpretadas como garantia de performance futura. O Banco Santander (Brasil) S.A. não se obriga em publicar qualquer revisão ou atualizar essas projeções e estimativas frente a eventos ou circunstâncias que venham a ocorrer após a data deste documento. Este material é para uso exclusivo de seus receptores e seu conteúdo não pode ser reproduzido, redistribuído, publicado ou copiado de qualquer forma, integral ou parcialmente, qualquer que seja o propósito, sem o prévio consentimento e expressa autorização do Banco Santander (Brasil) S.A..

©2021 Banco Santander (Brasil) S.A.. Direitos reservados.