

## SANTANDER'S MONTHLY ACTIVITY INDICATOR ENTERED RESTRICTIVE TERRITORY IN OCTOBER

Lucas Maynard\*  
 economiabrasil@santander.com.br  
 +5511 3553 7495

- Evaluating the short- and medium-term impacts on domestic activity sparked by the recent strong tightening of financial conditions is a first-order task. Furthermore, tracking the restrictive effects on cyclical and non-cyclical activities is essential to better understand the growth dynamics of the Brazilian economy at YE2022 and throughout 2023.
- In order to contribute to this domestic conjuncture analysis, we developed Santander's monthly activity index (SAI). The index's (always presented on a scaled basis) intended aim is to paint a timely picture of the Brazilian economy on a broad basis. We built our index from the bottom up, using several publicly available sectoral series. Our dataset comprises the period from January 2011 to October 2022 and allows us to better understand the main drivers and drags throughout previous cycles, including the great recession of 2014-16, the COVID 19 pandemic and the post-pandemic normalization period.
- The discouraging outlook for financial conditions poses challenges for domestic activity in the coming year, especially with respect to cyclical activities. The SAI's evolution should provide us with insights into whether the dynamics of non-cyclical activities will be enough to offset the expected slowdown in cyclical activities next year.
- At the margin, following 1H22's strong and widespread growth in the wake of economy's reopening consolidation process, our index points out that the first restrictive effects of shaky financial conditions already started to kick in 3Q22, mainly hitting goods sectors, while services activities showed some resilience (albeit with a clear deceleration pace). In October, the index reached -0.14 points, the first negative print since January (-0.07 points).

Figure 1 – Santander's Monthly Activity Index

Santander Activity Index							
	Weights	Headline			Change		
		Aug-22	Sep-22	Oct-22	Sep-22	Oct-22	
<b>SAI</b>	<b>100%</b>	<b>0.67</b>	<b>0.37</b>	<b>-0.14</b>	↓	<b>-0.31</b>	<b>-0.51</b>
Industry	20%	0.14	-0.04	-0.33	↓	-0.18	-0.29
Services	28%	0.30	0.37	0.23	↓	0.07	-0.14
Retail	14%	-0.02	-0.01	-0.04	↓	0.00	-0.02
Labor	25%	0.22	0.13	0.08	↓	-0.09	-0.05
Farm Output	13%	0.03	-0.08	-0.08	↓	-0.11	0.00

Sources: IBGE, FGV, Santander.

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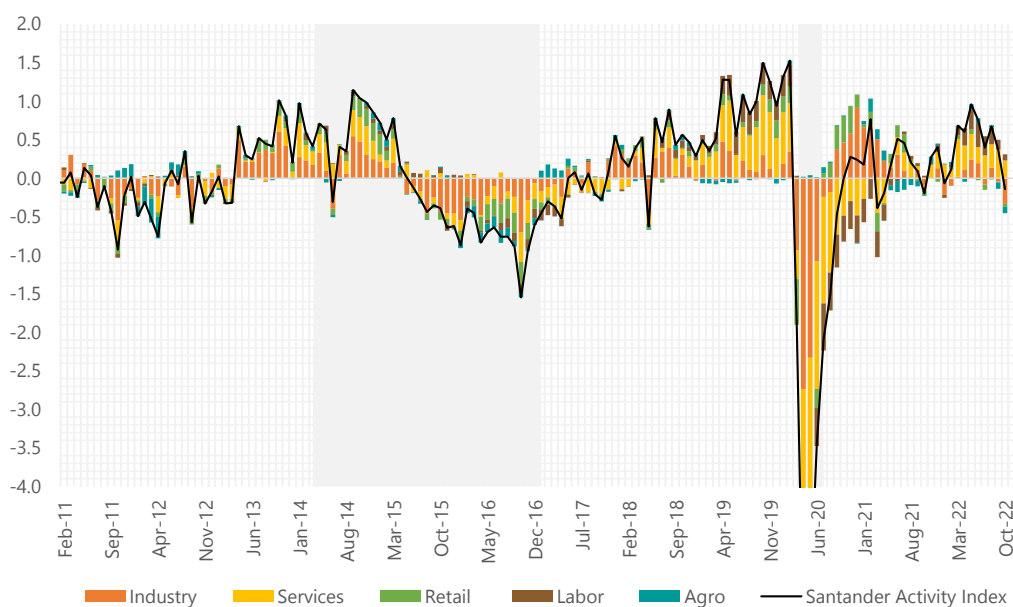


Despite the strong monetary policy tightening in Brazil from 2H21 onward, domestic financial conditions remained loose until mid-1H22,<sup>1</sup> owing mainly to external tailwinds (primarily rising from commodity prices and low interest rates). This easing stance corroborates the healthy steam of domestic activity in the first half of the year; however, since May we have seen domestic financial conditions entering contractionary territory, with these conditions now facing both domestic and external headwinds. At the margin, financial conditions in Brazil remain seriously restrictive, and the outlook remains discouraging from YE2022 and onward.

Given this environment, evaluating the short- and medium-term impacts on domestic activity spurred by strongly tightening financial conditions is a first-order task. Timely tracking the heterogeneous dynamics of cyclical activities (more sensitive to the economic cycle) and non-cyclical activities (less sensitive to the economic cycle and more benefited from positive supply shocks) is essential to better understand the growth dynamics of the Brazilian economy at YE 2022 and throughout 2023.

In order to contribute to this domestic conjuncture analysis, we developed Santander's monthly activity index (SAI), which aims to represent the Brazilian economy on a timely and broad basis and was built from the bottom up using several publicly available sector series. In total, we consider 51 economic series (monthly and deseasonalized) comprising the period from January 2011 to October 2022 and group these into five groups, specifically: (i) industry, (ii) retail, (iii) services, (iv) labor; and (v) agro (farm output). Zooming in on the details, in the industry group we considered mining output and 25 manufacturers from IBGE's monthly industrial survey along with employed population in the construction sector. In the tertiary sector, we considered 12 subsectors from IBGE's services monthly survey, along with 10 retail activities from IBGE's retail monthly survey. In the agro group, we included the monthly series provided by FGV in its monthly GDP proxy (*Monitor do PIB*). Lastly, we considered in the labor group the employed population from IBGE's labor monthly survey to capture non-cyclical services that are usually measured by their employment level (e.g., public administration, domestic services, etc.).

Figure 2 – Santander's Monthly Activity Index (from 2011 to 2022)



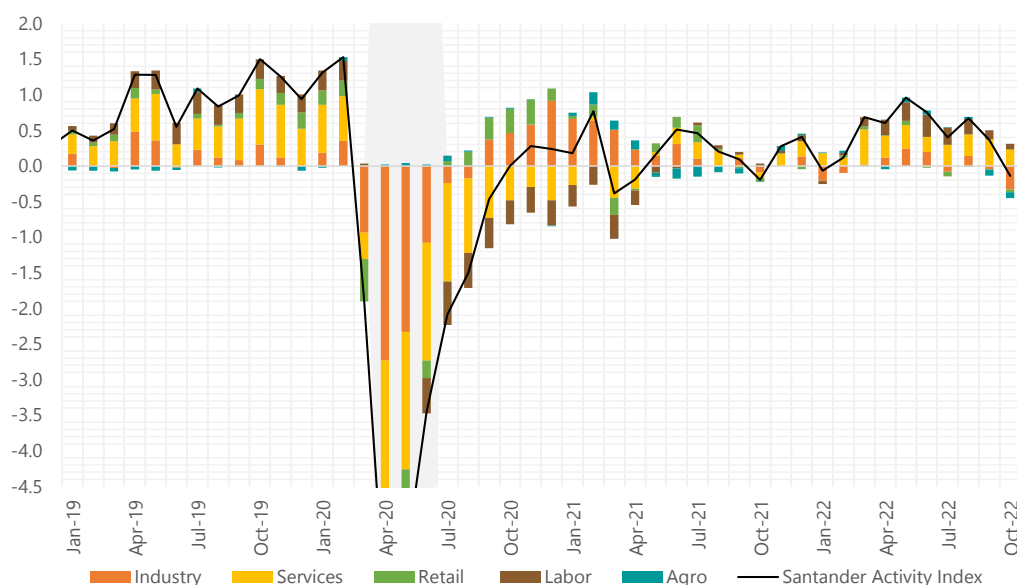
Sources: IBGE, FGV, Santander. \* Grey area means recessions period dated by CODACE/FGV.

<sup>1</sup> Santander Brazil Economic Activity: "Financial Conditions Remain Critically Restrictive" – November 30, 2022 – Available on: <https://bit.ly/Std-FCI-nov22>



In our methodology, all series were detrended through a Hodrick-Prescott (HP filter)<sup>2</sup>, scaled (zero-mean and unitary variance), and for each group the first principal component was extracted and multiplied by the group weight<sup>3</sup>: 20.1% for industry, 28.3% for services, 13.6% for retail, 25.4% for labor and 12.5% for agro. Ultimately, the index was built by aggregating each group's contribution and scaled to present zero mean and unitary variance<sup>4</sup>. In our view, the index allows us to better understand (on a monthly basis) the main drivers and drags throughout the last economic cycles, including the great recession of 2014-16, the COVID 19 pandemic and the post pandemic normalization.

**Figure 3 – Santander's Monthly Activity Index (from 2019 to 2022)**



Sources: IBGE, FGV, Santander.

The recent dynamic pointed out by SAI paints domestic activity with strong and widespread growth in 1H22, in the wake of economy's reopening consolidation process. Indeed, we saw sharp contributions from services and labor segments, capturing the impact of normalizing mobility to presential-related activities. Moreover, goods-related sectors (e.g., industry and retail) also contributed positively, on the heels of demand for goods growing in tandem with a recovery in labor income, the spending of household savings and government transfers. However, at the margin, our index pointed out that the first restrictive effects of shaky financial conditions already started to kick in 3Q, mainly hitting goods-related sectors, with services activities showing some resilience (albeit with a clear deceleration pace). In October, the index reached -0.14 points (the first negative print since January, when we saw Omicron variant outbreak), owing primarily to negative contributions from industry (-0.33 p.p.), retail (-0.04 p.p.) and farm output (-0.08 p.p.) that more than offset the positive contributions from services (+0.23 p.p.) and labor (+0.08 p.p.).

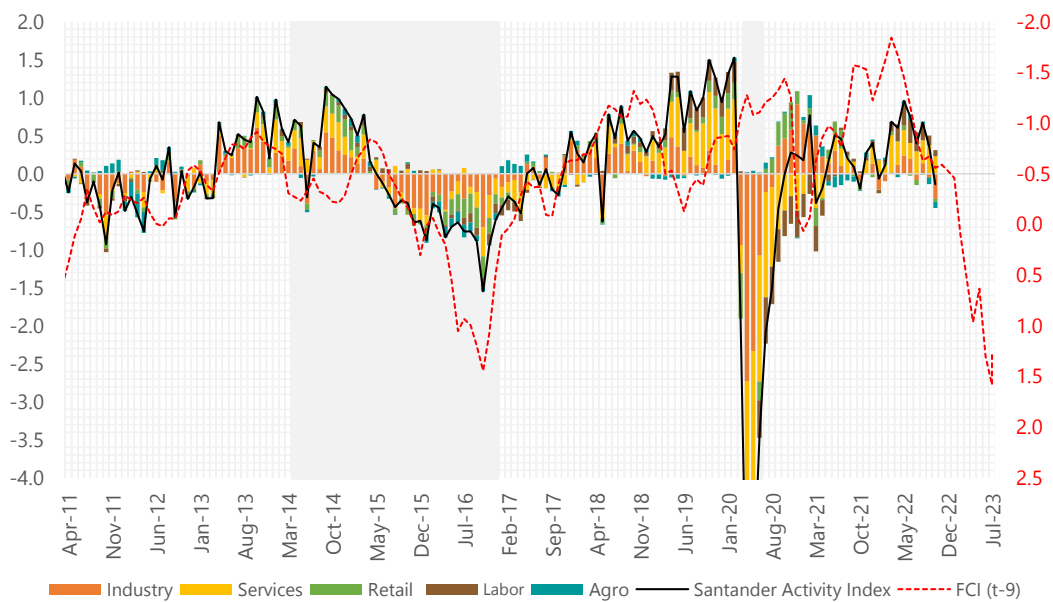
<sup>2</sup> We applied the HP filter considering each series forecasted six months ahead (through univariate ARIMA model automatic estimated in R software).

<sup>3</sup> The weights were calculated considering the participation in gross value added at basic prices for each activity (available in the annual national accounts release for 2020).

<sup>4</sup> In opposition to our Financial Conditions Indicator, in SAI positive values mean an economy in an expansionary field, while negative values mean an economy in a contractionary field.



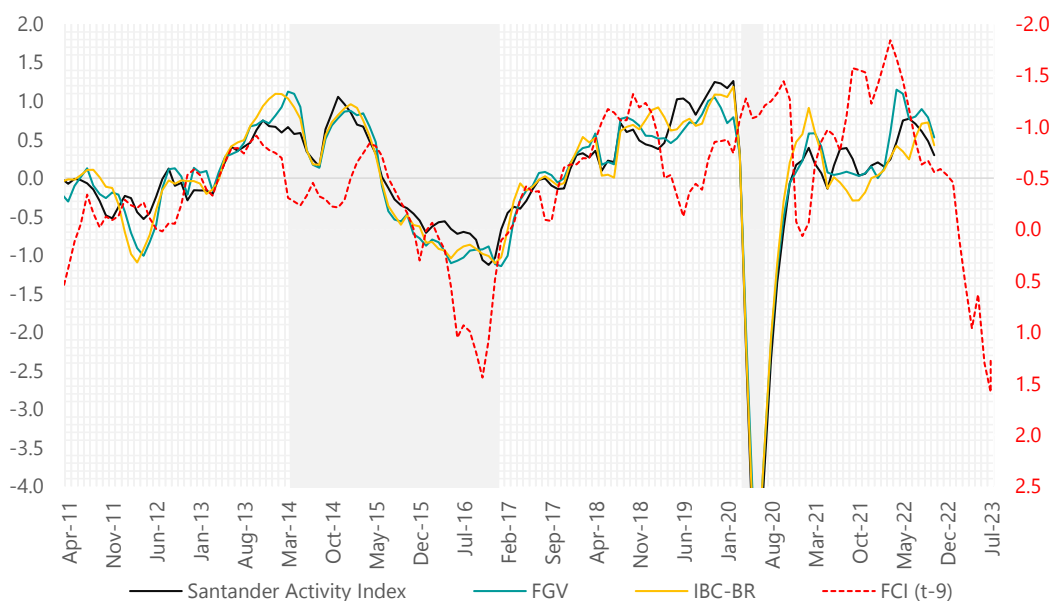
**Figure 4 – Santander’s Activity Index v.s. Financial Conditions (from 2011 to 2022)**



Sources: IBGE, FGV, Santander.

Looking ahead, the gloomy outlook for financial conditions poses challenges to domestic activity in the coming year, especially with respect to cyclical activities. In fact, the FCI indicator, lagged by 9 months, shows good correlation with the SAI in the sample (-0.63 until December 2019). The evolution of the SAI should provide us with insights into whether the dynamics of non-cyclical activities will be enough to offset the expected slowdown in cyclical activities next year. Currently, we forecast GDP growth of +3.0% in 2022 and +0.8% in 2023. We project a slowdown in domestic demand and in cyclical supply components, stemming mainly from the expected global recession and the effects of a tight Central Bank policy, but we also expect strong growth for non-cyclical farm output, reflecting an all-time high forecast for the grain harvest.

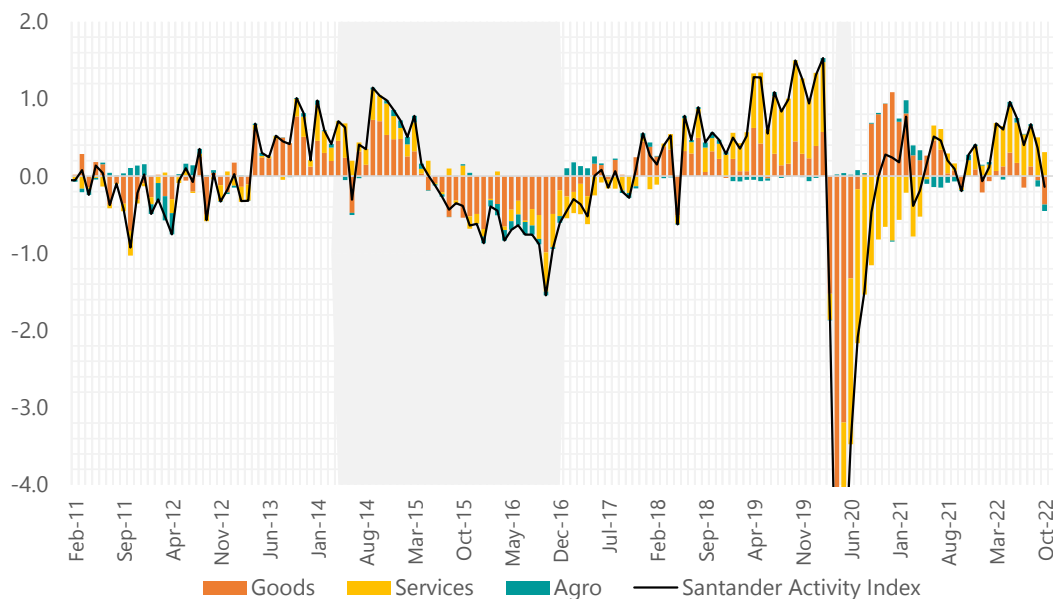
**Figure 5 – SAI v.s. monthly GDP proxies (from 2011 to 2022)**



Sources: IBGE, FGV, Santander. \* SAI and both FGV and BCB’s monthly GDP proxies are presented in three-month average.

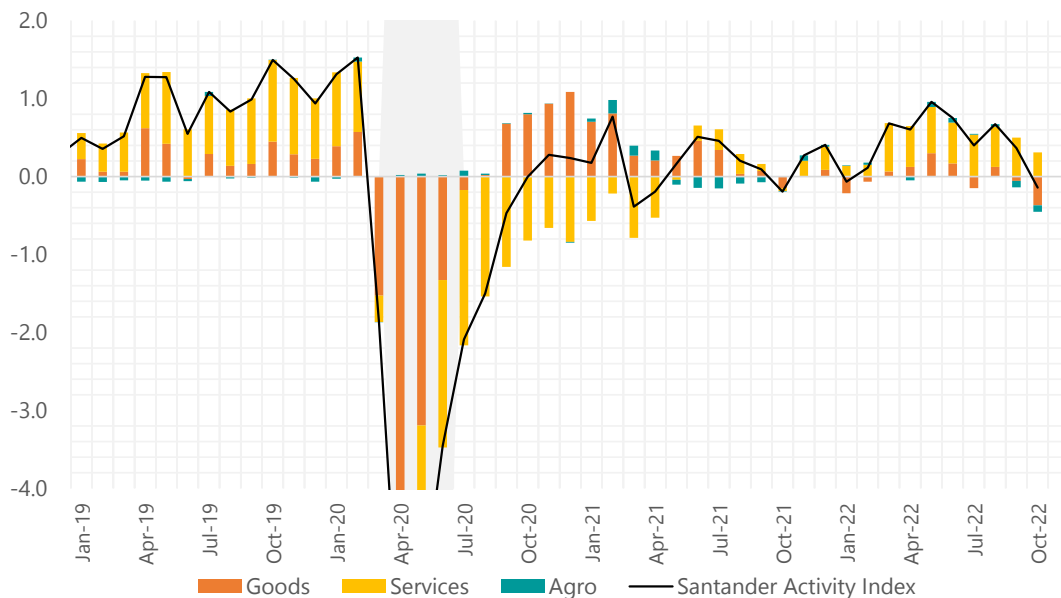


**Figure 6 – Santander’s Monthly Activity Index Breakdown (from 2011 to 2022)**



Sources: IBGE, FGV, Santander.

**Figure 7 – Santander’s Monthly Activity Index Breakdown (from 2019 to 2022)**



Sources: IBGE, FGV, Santander.



## CONTACTS / IMPORTANT DISCLOSURES

### Brazil Macro Research

Ana Paula Vescovi*	Chief Economist	anavescovi@santander.com.br	5511-3553-8567
Mauricio Oreng*	Head of Macro Research	mauricio.oreng@santander.com.br	5511-3553-5404
Jankiel Santos*	Economist – External Sector	jankiel.santos@santander.com.br	5511-3012-5726
Ítalo Franca*	Economist – Fiscal Policy	italo.franca@santander.com.br	5511-3553-5235
Daniel Karp Vasquez*	Economist – Inflation	daniel.karp@santander.com.br	5511-3553-9828
Tomas Urani*	Economist – Global Economics	tomas.urani@santander.com.br	5511-3553-9520
Lucas Maynard*	Economist – Economic Activity	lucas.maynard.da.silva@santander.com.br	5511-3553-7495
Felipe Kotinda*	Economist – Commodities	felipe.kotinda@santander.com.br	5511-3553-8071
Gabriel Couto*	Economist – Special Projects	gabriel.couto@santander.com.br	5511-3553-8487
Fabiana Moreira*	Economist – Credit	fabiana.de.oliveira@santander.com.br	5511-3553-6120
Gilmar Lima*	Economist – Modeling	gilmar.lima@santander.com.br	5511-3553-6327

### Global Macro Research

Maciej Reluga*	Head Macro, Rates & FX Strategy – CEE	maciej.reluga@santander.pl	48-22-534-1888
Rodrigo Park *	Economist – Argentina	rpark@santander.com.ar	54-11-4341-1272
Ana Paula Vescovi*	Economist – Brazil	anavescovi@santander.com.br	5511-3553-8567
Juan Pablo Cabrera*	Economist – Chile	jcabrera@santander.cl	562-2320-3778
Guillermo Aboumrad*	Economist – Mexico	gjaboumrad@santander.com.mx	5255-5257-8170
Piotr Bielski*	Economist – Poland	piotr.bielski@santander.pl	48-22-534-1888
Mike Moran	Head of Macro Research, US	mike.moran@santander.us	212-350-3500

### Fixed Income Research

Juan Arranz*	Chief Rates & FX Strategist – Argentina	jarranz@santanderrio.com.ar	5411-4341-1065
Mauricio Oreng*	Senior Economist/Strategist – Brazil	mauricio.oreng@santander.com.br	5511-3553-5404
Juan Pablo Cabrera*	Chief Rates & FX Strategist – Chile	jcabrera@santander.cl	562-2320-3778

### Equity Research

Miguel Machado*	Head Equity Research Americas	mmachado@santander.com.mx	5255 5269 2228
Alan Alanis*	Head, Mexico	aalanis@santander.com.mx	5552-5269-2103
Andres Soto	Head, Andean	asoto@santander.us	212-407-0976
Walter Chiarvesio*	Head, Argentina	wchiarvesio@santanderrio.com.ar	5411-4341-1564
Mariana Cahen Margulies*	Head, Brazil	mmargulies@santander.com.br	5511-3553-1684

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