Brazil Primer

Brasilopedia: The growth awakens

Primer

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Investment Strategy
Brazil

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Revenue-boosting measures are the focus of current adm

We present the 11th edition of our Brazil investor guide. We think the country is on a path to improving growth but this requires a strong investment and productivity cycle, alongside structural reforms. The oil production boom could be a driver for growth. Simplifying the tax system could unlock higher productivity, but this is a longer-term story. This year, the government is still focused on boosting revenues to meet its zero-deficit target – the credibility of its new fiscal framework is at stake. Municipal elections pose a challenge, with risks of higher spending.

All eyes on the tax reform

All eyes are on the tax reform, as simplifying Brazil's system could improve productivity. The main proposed change from today is the consolidation of five taxes into a non-cumulative dual VAT. In 2024, Congress will focus on secondary legislation setting out the details of the new tax system, including VAT rates. Discussions about income tax reform will also begin, as the government seeks new ways to make the current system more progressive.

Municipal elections bring risks of higher spending

Local elections will take place this year to determine the mayors and local representatives of 5,570 municipalities. Elections are key for the federal government to obtain support and increase its popularity. Currently, most city halls are controlled by opposition parties.

Consumer credit to rise again as Selic comes down?

Brazil's population remains highly leveraged. The post-pandemic recovery in 2021-22 was supported by high levels of outstanding credit as a % of GDP. Credit growth then decelerated throughout 2023, following a drop in new originations. Now, both households' indebtedness and debt service ratios are trending down thanks to lower rates. But further Selic cuts in 2024 could bring down delinquency rates and drive banks to accelerate loan growth again.

Capital markets activity could reignite under lower rates

Investors rotated out of equity funds when rates surged, but they could return as we go through the easing cycle. Equity trading volumes on B3, the sole exchange in Brazil, are directly correlated to interest rates. The country has a sound financial system and credit penetration increased from 30% of GDP in 2007 to 53% in 2022. The local fund industry has R$8.3tn of AUM, of which equity funds represent 7% and hedge funds 20%.

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The Brazil primer

We present our 11th edition of our Brasilopedia as the current administration mobilizes to increase revenues to meet the zero-deficit target for 2024, as proposed in the Budget Bill. It will be an interesting year as we watch the next steps on tax reform and municipal elections. We also explore how this backdrop influences all sectors of the economy in a collaboration with our fundamental analysts.

Revenue-boosting measures were a big win for the govt in 2023

We expect the government's focus in 2024 to remain on revenue-boosting initiatives. Important advances were made on the fiscal side in 2023, with all initiatives presented by the Ministry of Finance being approved. The objective of these measures was to meet the zero-deficit target for 2024,

The government has been making a concerted effort because non-compliance would undermine credibility in the first year of the new fiscal framework. Not meeting the target would trigger a reduction in spending growth next year and in 2026 – a presidential election year.

Mounting fiscal risks might pressure the govt to increase the tax burden. Brazil has one of the most complex tax systems in the world and taxes are high relative to peers.

What's new? 2024 municipal elections explained, oil boost positive for growth

We have updated all sections of the report and added information about the municipal elections in 2024. The ballot will be crucial for the federal government to obtain support and increase popularity. The Workers' Party (PT) used to oversee many city halls, but this situation has gradually reversed.

We also describe how the oil boom is positive for growth, trade and fiscal. The oil trade balance reached a record surplus of 1.3% of GDP last year. We expect it to peak at 2.3% of GDP in 2029.

Economy: in need of a strong investment and productivity cycle

In the first section on the economy, we look at the main economic policy drivers, starting with a brief introduction to Brazil. We will keep a close eye on any changes to the board of the Brazilian Central Bank (BCB), which finally became independent by law in 2021.

Brazil will need a strong investment and productivity cycle to improve potential GDP. This virtuous cycle started with the approval of labor, social security, administrative and tax reforms. The positive impacts, however, will take a few years to be felt. The tax reform, for instance, will begin to be implemented in 2026.

Markets: rotation back into equities as easing continues?

In the second section we discuss Brazilian markets, which are structurally solid, with developed local and external debt and equity markets. We expect individuals to start adding to equities eventually as we move forward with the easing cycle.

Challenges: deep dive into tax reform

The third section examines the key challenges facing Brazil, with a focus on municipal elections, the reform agenda, and a deep dive into tax reform.

Sectors: themes to watch for the next few years

In the final section, together with our equity research team, we analyze all sectors of the economy, looking at strengths, weaknesses, opportunities, and risks. We also identify the main sector themes for the upcoming years.

We hope you enjoy our report.

1. Economy

1.1 Brazil 101. Brazil is the fifth largest country in the world in terms of area, the sixth in terms of population, the 9th largest economy in GDP terms.

1.2 Brazil in 2035. We estimate Brazil will be a US$3.7tn economy by 2035, versus US$2.1tn in 2023.

1.3 BCB, monetary policy and inflation. In 2023, BCB started the latest easing cycle, coming from a double-digit rate in 2022. However, still de-anchored long-term inflation expectations worries board members.

1.4 Demographic boom fading. Brazil is still gaining form the demographic bonus, but such dynamics is about to change. Average real monthly income peaked in 2020 and has since declined by 13%, amid a highly inflationary context.

1.5 Labor market. The labor market was surprisingly resilient during 2023. Unemployment rate fell and real wages moved up, though workforce component did not return to pre-pandemics levels.

1.6 Consumer credit. Non-performing loans reached 2.12% in December 2020, a historical low. It has then peaked at 3.6% in July 2023. After that, NPLs are decelerating and this should continue as interest rates decline.

Source: Getty Images

1.1 Brazil 101

- Brazil is the fifth largest country in the world in terms of area, the seventh in terms of population and the ninth largest economy in GDP terms.
- Brazil has a diverse population that is demanding better public services, particularly health and education. School penetration is improving, but there is still much to be done in terms of quality.
- Agriculture accounts for only 7.1% of the economy, but Brazil is the fifth largest agricultural producer of 34 agricultural commodities in the world, according to United States Department of Agriculture (USDA).
- Improvement in income distribution stagnated in the 2010s, after gains in the previous decade. Social inequality remains a predominant issue in the country.

Brazil is the fifth largest country in the world in terms of area and the seventh in terms of population. Brazil is the world's ninth largest economy, with a GDP of US$2,127 in 2023 (Exhibit 1). Brazil has five regions (North, Northeast, Central-West, Southeast and South) divided into 26 states, which are divided into 5,570 municipalities. Brasilia is the capital.

Brazil has one of the world's most extensive river complexes, and the Amazon River is the largest in terms of volume of water. There are six major climatic conditions in Brazil: desert, semi-arid, tropical, tropical rainforest, subtropical, and oceanic. Brazil has 12% of the available water in the world, versus the Americas with 39%, Asia 32%, Europe 15%, Africa 10%, and Oceania 4%. This is the main reason why over 60% of the nation's electricity generation is hydro.

Portugal colonized Brazil, making it the only country in Latin America whose population are Portuguese speakers. Independence from Portugal happened on 7 September 1822, with Brazil remaining a constitutional monarchy ruled by Portugal's royal Bragança family until 15 November 1889 when republic was proclaimed. The latest Federal Constitution dates from 1988. The national legal system is based on the civil law.

Exhibit 1: Brazil is a continent sized country
Area, population and GDP global rankings

Largest countries (1000 square km)			Biggest populations (millions)			Largest economies (GDP in US$bn)		
1	Russia	17,098	1	India	1,417	1	US	26,950
2	Canada	15,634	2	China	1,412	2	China	17,701
3	US	9,832	3	US	333	3	Germany	4,430
4	China	9,563	4	Indonesia	276	4	Japan	4,231
5	Brazil	8,516	5	Pakistan	236	5	India	3,732
6	Australia	7,741	6	Nigeria	219	6	UK	3,332
7	India	3,287	7	Brazil	203	7	France	3,049
8	Argentina	2,780	8	Bangladesh	171	8	Italy	2,186
9	Kazakhstan	2,725	9	Russia	144	9	Brazil	2,127
10	Algeria	2,382	10	Mexico	128	10	Canada	2,118
11	Congo	2,345	11	Japan	125	11	Russia	1,862
12	Saudi Arabia	2,150	12	Ethiopia	123	12	Mexico	1,811

Source: World Bank

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Exhibit 2: Brazil has a diverse population
Population by ethnic group, urbanization, and sex (2022 estimates)

Total (thousands)	203,081	100%
White	88,257	43.46%
Mixed Ethnicity	92,088	45.35%
African	20,658	10.17%
Asian	850	0.42%
Indigenous	1,228	0.60%
Urban	172,009	84.70%
Rural	31,071	15.30%
Women	104,548	51.48%
Men	98,532	48.52%

Source: IBGE

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A diverse population, with infrastructure to be improved

According to IBGE, in 2020, 43.5% of Brazil's population was white, 45.4% mixed ethnicity, 10.2% African, 0.4% Asian and 0.6% Indigenous (Exhibit 2). Regarding religion, 50% of the population declared to be Catholic (vs 83% in 1991), 31% was Protestant (vs 9% in 1991) and 10% claimed no religion (according to Datafolha).

The illiteracy rate was 5.6% in 2022 for those aged 15 and older (vs 8.6% in 2010 and 6.1% in 2019), a high number compared to Chile's 3.60% in 2017 and Argentina's 1.00% in 2018. Brazil also has a high dropout rate, which just got deepened during the pandemic, with only around 61% of those aged 25 and older having finished their primary education studies and 49% of those aged 25 and older having finished high school.

School penetration has increased, however, with the average individual being in school for 9.4 years as of 2020, versus 4.0 years in the 1980s and 8.9 years in 2016. However, quality remains an issue. According to the Program for International Student Assessment (PISA) exam conducted by the Organization for Economic Cooperation and Development (OECD), Brazil has one of the worst education systems in the world and lags its peers. Brazil ranked 65 out of 81 countries in math, 62 in science and 52 in reading, in 2022.

Notably, Brazil had relatively high public expenditure on education, at 5.8% of GDP in 2020, above the OECD average of 5.0% in 2021 (Exhibit 3). However, that did not translate directly in better quality of education.

Health conditions have improved. Disregarding the pandemics effects on the calculations, life expectancy at birth increased to 73 years in 2021, from 70 in 2001 and 66 in 1991. Such improvement reflects the advancements in infrastructure and greater access to goods and services of basic need (Exhibit 4).

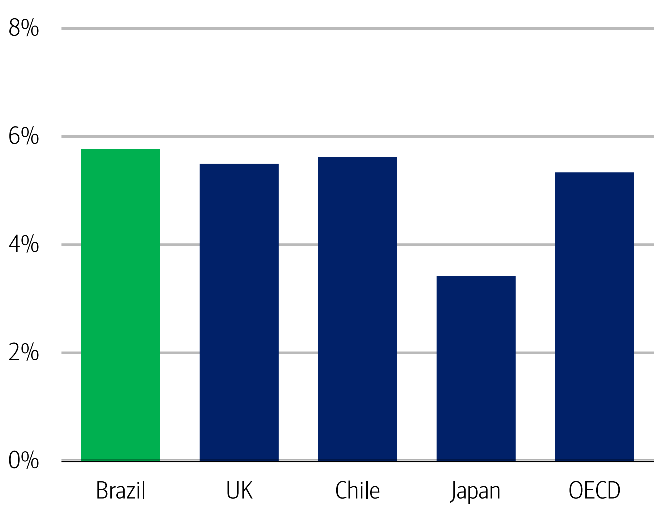
Population with access to electricity reached 99.5% of the total in 2021, versus 96% in 2001. Access to basic sanitation facilities increased to 90.9% in 2022 (from 74.0% in 2001) and access to basic water sources rose to 99.6% in 2022 (from 93.8% in 2001). Undernourishment fell to 4.7% of the population in 2021 from 10.7% in 2001.

Exchange rate regime and instruments

Brazil's exchange rate regime is best characterized as a dirty float. In January 1999, the government moved away from the fixed exchange rate regime and allowed the currency to float. Since then, the BCB has been intervening in the currency to smooth FX volatility, cushion FX movements, build up FX reserves and correct level distortions. The BCB is very transparent with the intervention mechanism, using spot, dollar liquidity lines and swap auctions. When it decides on spot intervention, it conducts an auction through dealers and with discretion on the amounts.

Exhibit 3: Expenditure with education is above richer countries' levels

Expenditure on education as percentage pf GDP (2020)



Source: World Bank

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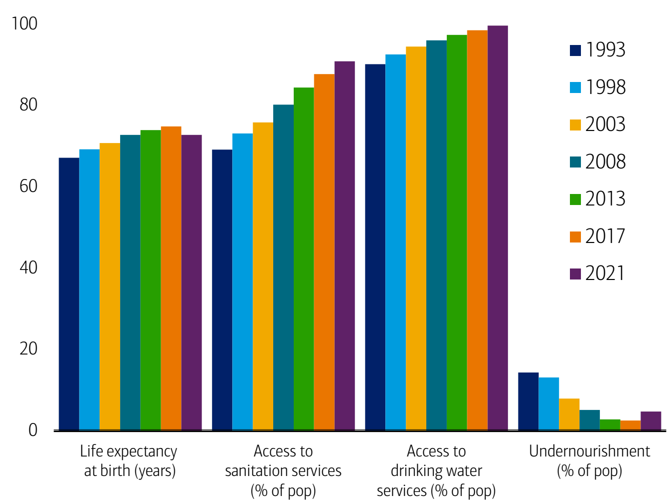
Exhibit 4: Life expectancy has improved

Life expectancy calculation



Source: World Bank

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Regarding the swaps, the bank auctions FX swaps (sells dollars on a future date) or reverse FX swaps (buys dollars on a future date). One leg of the swap is onshore dollar rates (cupom cambial) plus FX change. The other leg is the CDI (interbank deposit rate). Another instrument the government uses to manage currency is the financial transaction tax (IOF) on FX inflows and FX derivatives.

A diverse economy

On the supply side, agriculture is 6.7% of GDP (excluding taxes), the industrial sector 26.3% and services 67.0% (as of 2022). On the demand side, private consumption is 63.1%, government consumption 18.4% and investment 17.8%. By global standards, exports and imports are a small portion of GDP at 19.6% and 19.2%, respectively, which is why the country is deemed as a closed economy.

Brazil's main trading partners are China, European Union, United States, and Mercosur (mainly Argentina) (Exhibit 5). According to Secint, in 2023 China (Hong Kong and Macau) accounted for 31.1% of Brazilian exports, followed by the EU at 13.6% and US at 10.9%. For comparison, the US was the main destination of Brazilian exports in 2000, accounting for 23.9% of total, followed by Argentina at 11.3%. China was then the number 12 destination, accounting for just 2% of total exports.

This significant increase reflects the change in the Brazilian trade profile in recent years, with its shift from manufactured to basic goods, a move that seems to be reversing. This dynamic took advantage of the surge in commodity prices in the first decade of the twenty first century and the country's large natural resources and agricultural potential (Exhibit 6). According to United States Department of Agriculture (USDA), Brazil is the fifth largest producer of 34 agricultural commodities, and top-one agricultural net exporter.

Natural advantages such as abundant water availability, favorable climate conditions with stable temperatures and the agricultural land potential among the main commodity producers in the world (around 342mn ha of total agricultural land) position Brazil for agricultural success. Recent production has benefitted from a higher external demand and genetically modified (GMO) crops, with Brazil being the second largest producer of GMO, behind the US. Brazil's GMO planted area totaled 68mn ha in 2022, with 99% of total soybeans and cotton harvest using the biotechnology, and 95% of corn, according to the International Service for the Acquisition of Agri-biotech Applications (ISAAA).

Exhibit 5: China remains Brazil's main commercial partner
2023 trade flows breakdown

	Exports		Imports	
	US$bn	Percentage	US$bn	Percentage
Total	339,67166	100%	240,83	100%
Americas	99,85	29,40%	76,30	31,68%
Mercosur	23,57	6,94%	17,11	7,10%
US	36,87	10,85%	37,96	15,76%
Europe	57,61	16,96%	63,34	26,30%
EU	46,28	13,62%	45,42	18,86%
Asia (ex Middle East)	152,44	44,88%	83,32	34,60%
China, Hong Kong, and Macau	105,75	31,13%	53,92	22,39%
Middle East	15,00	4,41%	8,23	3,42%
Africa	13,21	3,89%	7,19	2,99%
Oceania	1,18	0,35%	2,09	0,87%

Source: Secint

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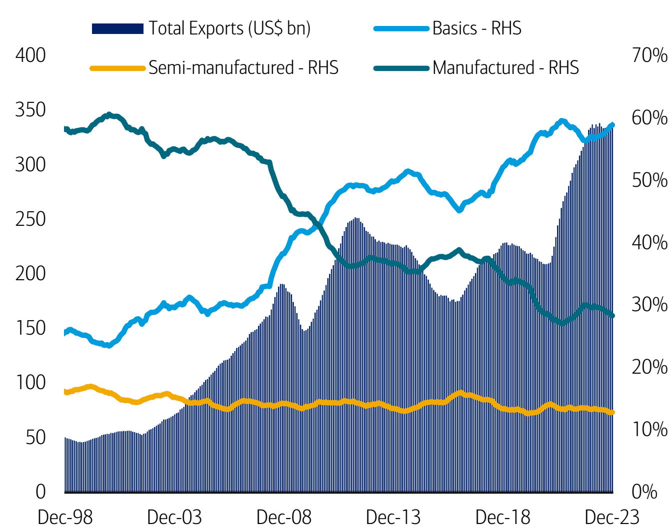
Exhibit 6: Basic goods continue to drive exports
% of total exports



Source: Secint

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On the hard commodities side, Brazil is the world's second largest iron ore producer, with about 16% of the total global supply (or 410mn tons), according to the U.S. Geological Survey. The country is only behind Australia with 34% (or 880mn tons). Problematic infrastructure and lack of environmental licenses, which increase Brazilian export costs and delay projects, prevented Brazil from having a higher share globally. Brazil and Australia had the exact same iron ore production in 2008 (350 million tons), for example.

The surge in Brazilian commodities production has one of its roots on China's growth and, specifically, its emergence as the world's leading steel supplier and China accounting for almost half of global steel output, when it comes to iron ore. Virtually all iron ore demand comes from the steel industry and China is increasingly reliant on imports (about 80% of its total consumption, according to China National Bureau of Statistics). Therefore, demand for Brazilian iron ore supply has increased significantly over the last decade, as Chinese domestic production is not enough to provide the strong demand. However, since China supply side reforms were implemented in 2016, this increased steel producer margins, which effectively allowed for a flight to quality in iron ore demand and prices that favored higher quality ore (65% Fe content) exclusively available in Brazil.

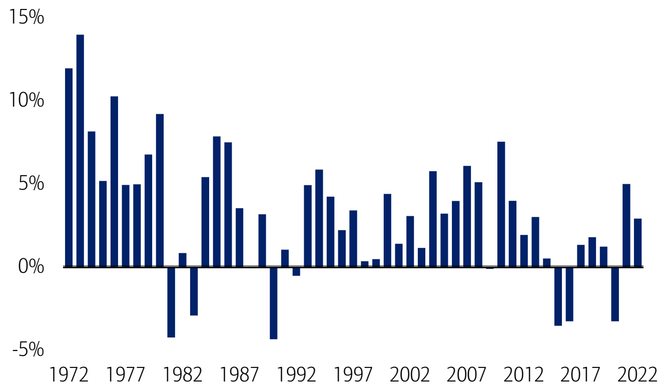
The relationship between China and Brazil has deepened in the last two decades, but recent changes have impacted trade dynamics. For more on the China-Brazil relationship, see: LatAm Thematic: Brazil and the art of dealing with China dependency.

Average GDP growth in Brazil was 1.4% in the 2010's decade, a substantial deceleration from the 3.4% average growth in the 2000's. In fact, it was the worst decade in Brazilian modern history in terms of growth, beating even the fragility of the 90's. After the 2008/09 financial crisis, Brazil lived a short period of moderated growth before the biggest recession in its history in 2015 and 2016, which culminated in President Dilma's impeachment. After that, the country could only maintain modest rates of around 1.0% until a year before the COVID shock in 2020 (see Exhibit 7). Domestic consumption was the key driver for Brazilian growth in the 2000's and the early 2010's, boosted by the strong increase in credit penetration and a significant increase in wages. From 2000 to 2022, credit to GDP rose to almost 53% of GDP, from 27%, and minimum wage rose close to 120%.

The strong growth allowed income distribution to improve and in the 2000's but this was relatively unchanged in the 2010's. Brazil's Gini Index, which measures the degree of income concentration decreased from 59.0 in 2000 to 53.0 in 2010, and to 52.9 in 2021. This is illustrated by the income distribution across income bands (Exhibit 8). From 2000 to 2010, population earning less than half a minimum wage decreased from 34% of total population to 25.2% and the middle class increased. But from 2010 to 2022, in a period with two big recessions, higher income bands shrunk, and the lower income class increased.

Exhibit 7: The 2010's has been a "lost decade" for Brazil

Average real annual GDP growth was a modest 1.4% in the last decade



Source: IBGE

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Exhibit 8: Income distribution took a break in the last decade

Population distribution across income bands

Millions of people	**2000**	**2005**	**2010**	**2015**	**2022**
Up to 50% of min wage	58.5	58.3	48.4	50.3	60.1
From 50% to 100% of min wage	48.7	48.6	51.5	60.9	61.8
From 1 to 2 min wages	33.5	38.0	49.3	49.6	49.4
From 2 to 3 min wages	11.0	13.5	16.5	14.1	15.1
From 3 to 5 min wages	8.9	9.5	10.9	9.2	9.7
More than 5 min wages	6.2	6.7	9.4	6.8	6.8
Percentage of total population	2000	2005	2010	2015	2022
Up to 50% of min wage	34.0%	32.4%	25.2%	25.0%	29.6%
From 50% to 100% of min wage	28.3%	27.0%	26.8%	30.3%	30.5%
From 1 to 2 min wages	19.5%	21.1%	25.7%	24.7%	24.3%
From 2 to 3 min wages	6.4%	7.5%	8.6%	7.0%	7.5%
From 3 to 5 min wages	5.2%	5.3%	5.7%	4.6%	4.8%
More than 5 min wages	3.6%	3.7%	4.9%	3.4%	3.4%

Source: PNAD (IBGE)

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1.2 Brazil in 2035

- We estimate Brazil will be a US$3.7tn economy by 2035, versus US$2.1tn in 2023.
- GDP per capita is expected grow at a faster pace from the second half of this decade onwards, as population growth should decelerate.
- Brazil's population is expected to near 230 million in 2035, versus 216 million, currently.

When we first published the Brasilopedia in 2014, we expected GDP to increase by US$1.4tn between 2014 and 2025, reaching U$3.8bn. Since then, Brazil has passed through one impeachment, two-consecutive years of economic contraction, four presidents, the 2020 pandemic, agricultural productivity gains and oil production improvement. We now expect GDP to reach U$3.7tn in 2035 (Exhibit 9).

Exhibit 9: Growth to resume faster pace in the years to come
GDP per capita should gain from slower population growth

	2010	2015	2020	2023F	2024F	2025F	2035F	2015-2024		2025-2035	
								Change	% Change	Change	% Change
Nominal GDP (US$ bn)	2,210	1,796	1,476	2,133	2,302	2,475	3,674	(152)	(6)	1,372	60
Nominal GDP (R$ bn)	3,886	5,996	7,610	10,826	11,377	12,090	19,807	5,598	97	8,430	74
GDP per capita (US$)	11,584	9,174	7,342	10,450	10,577	11,299	16,033	(2,027)	(16)	5,456	52
Population (millions)	195	203	212	216	218	219	229	16	8	11	5

Source: BofA Global Research estimates, IBGE

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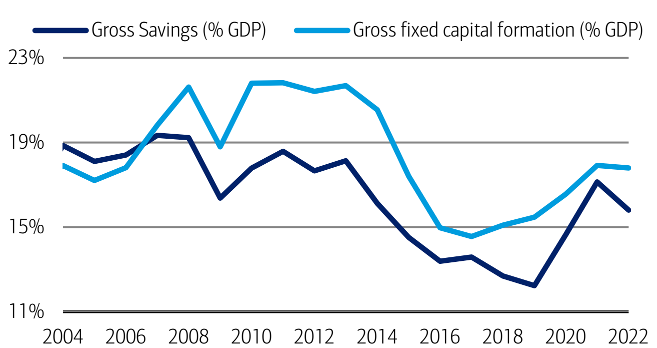
We forecast GDP per capita to grow about 50% between 2025 and 2035, versus a 16% decrease in GDP per capita between 2015 (US$9,174) and 2024F (US$10,577). This reflects the resumption of GDP growth in coming years. We forecast an average yearly real growth of 2.0% between 2025 and 2035, versus 0.7% between 2015 and 2024. We think inflation will resume mid-target level of 3.0% from 2026 onwards. We also assume the bilateral real exchange rate between Brazil and the US will remain stable (BRL depreciating by the inflation differential each year) after 2026. We expect GDP per capita will be about US$16,033 in 2035.

Exhibit 10: Investment fell from 2011 to 2017, but is turning around
Savings should follow as well



Source: IBGE

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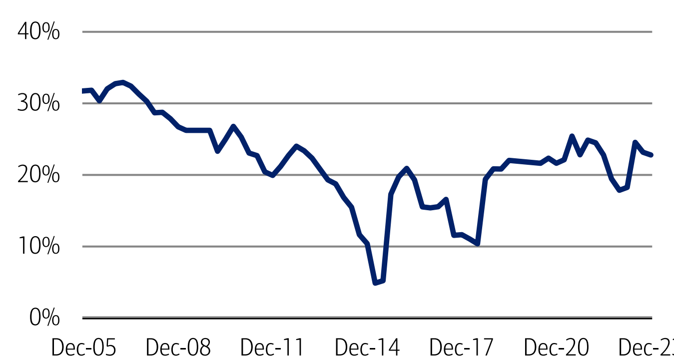
Exhibit 11: Consolidated Ibovespa trailing 12M EBITDA
The index falls during recessions, but increased on average since 2012



Source: Bloomberg

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Our real growth estimates assume potential GDP growth at around 2.5% currently, moving toward 2.0% in coming years. In our view, Brazil will need a strong investment and productivity cycle down the road to improve potential GDP. This virtuous cycle started with the approval of the labor, social security, administrative and tax reforms.

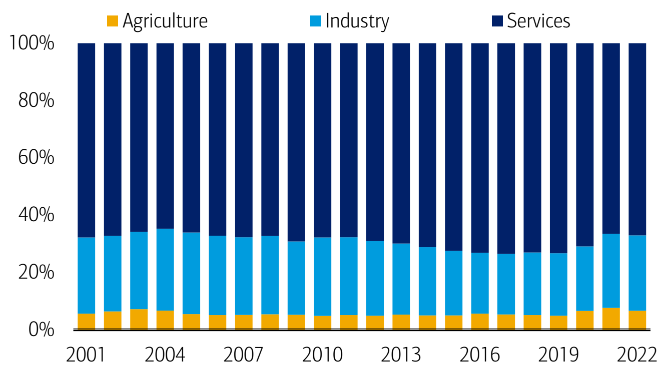
The positive impacts, however, take a few years to be felt. The tax reform, for instance, will begin to be implemented by 2026.

Investment declined to 17.8% of GDP in 2022 from 21.8% of GDP in 2010, while savings went from 17.8% to 15.8% of GDP (Exhibit 10). EBITDA margin of corporates has been gradually improving since 2012 (Exhibit 11). Also, the share of services in the economy has increased since 2004, while the share of the industrial and agriculture sectors has declined (Exhibit 12). In the long term, we believe it is crucial to increase the share of industrial sector, to stimulate productivity and boost potential GDP. Note, however, that due to the COVID pandemic crisis in 2020 and 2021, we had a temporary decline in the share of services within GDP in that period, given the sector's vulnerability to the mobility restrictions imposed. In '20 and '21, agriculture filled the gap.

More gradual social class mobility ahead

The Brazilian Institute of Geography and Statistics (IBGE) estimates the population will reach close to 230 million by 2035, from 212 million in 2020. Social class mobility has been significant since 2003. The recessions that hit the economy in the past decade, partially reverted such gains in combination with a long period of increase in the unemployment rate. According to research institute FGV, the C class, or the middle income class, increased to about 100 million in 2021 from 54 million in 2003 (Exhibit 13). Lower income classes D and E shrunk from over 104 million in 2003 to under 55 million people in 2015. That improvement was partially reduced, and lower income population increased back to 59.1 million in 2021.

Exhibit 12: Services and Agriculture grow over Industry
% of Overall GDP



Source: IBGE

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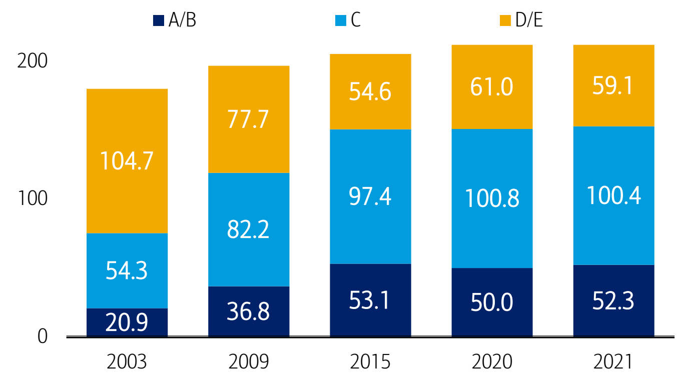
Exhibit 13: Lower income classes shrunk in 2021
Millions of people



Source: FGV

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1.3 BCB, monetary policy and inflation

- Brazil Central Bank (BCB) became independent by law in 2021.
- In 2023, BCB started the latest easing cycle, coming from a double-digit rate in 2022.
- However, still de-anchored long-term inflation expectations worries board members.

The Brazilian Central Bank objectives

The Brazilian Central Bank (BCB or BACEN) is legally autonomous since February 2021. Recall that previously, it had operational autonomy granted by the president of Brazil but was legally subordinated to the Finance Ministry. The BCB is responsible for guaranteeing the purchasing power of the local currency, maintaining adequate liquidity in the economy, keeping international reserves at an adequate level. The bank aims at boosting domestic savings, as well as promoting the stability and permanent improvement of the financial system.

The BCB is also responsible for issuing currency, receiving reserve requirements and voluntary deposits from financial institutions, conducting repo and reverse repo operations, buying, and selling public bonds and controlling credit. It supervises financial institutions and authorizes their functioning, determining conditions for managers of financial institutions, and controls the flow of foreign capital in the country.

Legal framework

The BCB was created on 31 December 1964 by the Law 4,595, which replaced the Bureau of Currency and Credit (*Superintendência da Moeda e do Crédito – SUMOC*) with the BCB. Initially, the BCB directors were named among the members of the National Monetary Council (*Conselho Monetário Nacional – CMN*).

In 1974, Brazil's president started naming the BCB directors. The current structure of one president and eight directors was set by decree number 91,961 of 19 November 1985. In June 1995, law number 9,069 created the Real Plan, which set up the BCB so that it functions as an executive secretary of the CMN. From 2004, the BCB president had minister status, which had been proposed to be revoked in 2016 with the discussion of bills providing formal independency to the BCB (more below).

Reform for the Central Bank independency

The Central Bank independence bill was turned into law on February 2021 and sets four-year mandates for the Brazilian Central Bank (BCB) president and its eight directors. Mandates are intercalated, and the president/directors can be re-appointed only once. In line with what happens in other countries, the law aims at de-linking the Central Bank from the political cycle, even if the nomination of BCB's directors and Governor is done by Brazil's president and requires approval by the Economic Affairs Committee (*Comissão de Assuntos Econômicos – CAE*) in the Senate. Since the Central Bank is now independent, the president and the directors have a preset mandate tenor and cannot be ousted by the president.

The BCB Governor's mandate starts every January of the third-year's mandate of the Brazilian president. Garden leave was set at six months after departure from the Central Bank, during which period former directors/president will be remunerated by the BCB and will not be able to work in any financial institution or activity regulated by it.

The law also sets price stability as the BCB's central objective but includes two side-focuses: to smooth economic activity growth and to boost employment. According to local news, the understanding by BCB's president Roberto Campos is that this does not imply a dual mandate for the bank.

Recall that previously the BCB was subordinated to the Ministry of Economy, but recent administrations granted the board significant freedom to pursue consistent monetary policy. However, the market was skeptical about how much the BCB can be shielded from political pressure in the longer term, especially during periods of weaker growth and government transition. We see the Central Bank independency as an important reform that will increase confidence in inflation targeting in a sustainable way by ensuring legal certainty and eliminating risk of political interference.

Decisions

The BCB's highest authority is its board of directors ("*diretoria colegiada*"). All board members (directors) vote in the monetary policy decision. In case of a tie, the president (governor) of the BCB has the final say. The BCB directors (deputy governors) are responsible for the following departments at the bank: Administration, International Affairs, Supervision, Licensing and Resolution, Economic Policy, Monetary Policy, Financial System Regulation, International Affairs, Economic Policy, and Monetary Policy have functions predominantly related to monetary policy management.

Exhibit 14: Brazilian Central Bank's board members

The Central Bank independence bill set four-year mandates for the BCB president and its eight directors.

Name	Date originally appointed	Current term ends	Term limit ends	Background
Roberto Campos Neto (president)	Feb-19	**Dec-24**	Dec-28	M.Sc in Economics from UCLA and in Applied Mathematics from Caltech. Former member of the Executive Board of Banco Santander S.A.
Carolina de Assis Barros (Administration)	Apr-18	**Dec-24**	Dec-28	M.A. in Administration and Public Policies from York University (UK). Works at BCB since 2000.
Diogo Guillen (Economic Policy)	Apr-22	Dec-25	Dec-29	Ph.D in Economics from Princeton University. Former Chief Economist at Itaú Asset Management.
Gabriel Galípolo (Monetary Policy)	May-23	Mar-27	Feb-31	M.A. in Political Economics from PUC-SP. Former President at Banco Fator from 2017 to 2021.
Paulo Picchetti (International Affairs)	Jan-24	Dec-27	Dec-31	PhD in Economics from the University of Illinois. Was the coordinator of the Weekly Consumer Price Index (IPC-S) at FGV.
Otávio Ribeiro Damaso (Regulation)	Apr-15	**Dec-24**	Dec-24	BSc in Economics from University of Brasilia. Works at BCB since 2009.
Renato Dias de Brito Gomes (Licensing and Resolution)	Apr-22	Dec-25	Dec-29	Ph.D in Economics from Northwestern University. Professor at Toulouse School of Economics and Research Director at CNRS.
Ailton de Aquino Santos (Supervision)	May-23	Mar-27	Feb-31	MBA in Acconuting from State University of Bahia. Works at BCB for more than 25 years.
Rodrigo Alves Teixeira (Institutional Relations & Citizenship)	Jan-24	Dec-27	Dec-31	PhD in Economics from the University of São Paulo. Works at BCB for more than 20 years.

Source: BCB

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The current board

The current president of the BCB, Roberto Campos Neto, has an MSc in Economics from UCLA and an MSc in Applied Mathematics from Caltech. Campos Neto has over 20 years of experience in financial markets and is a former member of the Executive Board of Banco Santander S.A. This is his first time in public office.

Regarding recent changes to the board's composition, Fernanda Guardado (International Affairs) and Maurício Moura (Institutional Relations & Citizenship) terms came to end in Dec23. The names appointed by Haddad as replacements for the roles are Paulo Piccheti and Rodrigo Alves Teixeira, respectively. Paulo Piccheti has a Ph.D in Economics from University of Illinois, and was the coordinator of the Weekly Consumer Price Index (IPC-S) at FGV. Rodrigo Alves Teixeira also holds a Ph.D in Economics from University of São Paulo, has worked at BCB for more than 20 years. The remaining positions on the board were unchanged at the time, with Carolina de Assis Barros (administration), Otávio Ribeiro Damaso (financial system regulation), Renato Dais de Brito Gomes (licensing and resolution), Gabreil Galípolo (Monetary Policy), Ailton Aquino de Santos (Supervision) and Diogo Guillen (Economic Policy).

PIX and Open Finance

The BCB created in November 2020 the Brazilian instant payment tool, named Pix, which enables people, companies, and governmental entities to send or receive payments in few seconds (almost instantly), at any time. Considering the high financial costs and the digitalization process of the retail market, Pix was remarkable in the changes financial transactions are made and it consolidated as the main means of payment. The BCB and the CMN issued a Joint Resolution, in May 2020, which established general requirements, responsibilities and regulation conditions for the Open Banking implementation in Brazil. The concept proposed the creation of a banking environment where more data is shared between institutions, especially through the reduction of information asymmetries and the resulting increase in competition. In 2022, the Central Bank changed the name of the program to Open Finance, to show its greater scope, which includes not only information on more traditional financial products and services (such as bank accounts and credit operations), but also data on exchange products and services, accreditation, investments, insurance, and pension plans.

Inflation-targeting model

In early 1999, the Brazilian Government stablished a monetary policy regime based on an inflation-targeting framework. Since then, the inflation target—a midpoint and its tolerance interval— is set by the National Monetary Council (CMN) in terms of the year-over-year increase of the Broad National Consumer Price Index (IPCA), measured by the Brazilian Institute of Geography and Statistics (IBGE). Every June the CMN sets the target for the next three years. The target is now at 3.00% for 2024, 25 and 26. Originally, the tolerance interval for the target was set at ±2%. It changed to ±2.5% in 2003, went back to ±2% in 2006 and was set at ±1.5% for 2017 onward. In Jun23, CMN also adopted a continuous inflation target, rather than year-calendar goal. As required by the law, whenever the IPCA (BZPIIPCY Index on Bloomberg, for the yoy data, and BZPIIPCM for mom) ends the year above the established tolerance range, the BCB's Governor must detail the causes for the non-compliance, the measures to ensure the return of inflation to the tolerance interval and the time span in which they are expected to take effect, in an open letter to the Monetary Council. Year-end inflation surpassed the inflation target band in seven occasions: 2001, 2002, 2003, 2015, 2017, 2021 and 2022.

Copom and Selic

The Selic interest rate (BZSTSETA Index on Bloomberg) is the key instrument used to achieve the inflation target and is set by the Central Bank at the Copom meeting (Monetary Policy Committee). The meetings happen eight times a year (roughly every 45 days), but the bank can call an extraordinary meeting to change the Selic rate if it deems it is necessary. Meetings normally take place on two consecutive days and the calendar of meetings for a given year is published up to the month of June of the previous year. The decision is announced by the end of the second day through an online statement. The minutes of the meetings are published within four business days after the date of the meetings, which provides details over the committee's expectations and suggestions for BCB's next steps on the monetary policy. Usually, Copom meetings are held on Tuesdays and Wednesdays and the minutes are released on the Tuesday of the following week, at 8:00 am - local time.

The BCB also publishes a quarterly inflation report in which analyzes the Brazilian economy, as well as its updated forecasts for inflation (forecast for the next 3 years), annual GDP, external accounts, and other key macroeconomic variables. After the release of the quarterly report, board members, including the BCB's president, give an interview commenting on it. The board posts its speeches and presentations used at public events on the BCB's website.

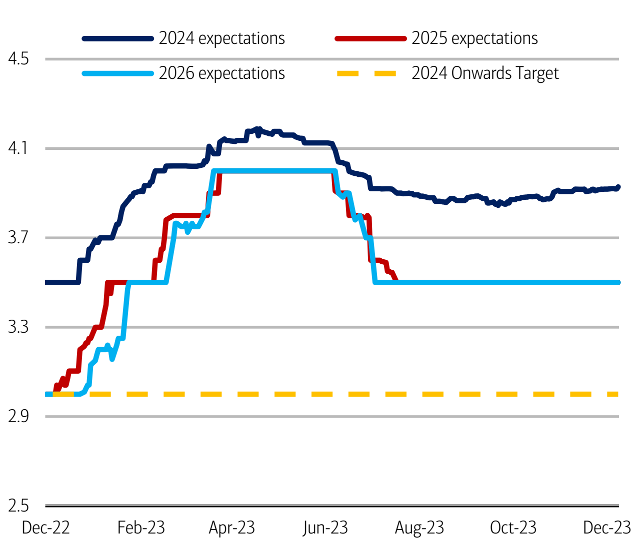
Reserve requirements and open market operations

Alongside interest rates, the BCB uses reserves requirements and other macro prudential measures. The BCB manages the liquidity in the system using repo ("*Operações Compromissadas*") and reverse repo operations backed by local government bonds. These repo operations help the BCB to steer the effective Selic rate toward the target rate. The BCB also sets reserve requirements to regulate credit concessions and liquidity in the banking system. There are three types of reserve requirements: on demand deposits (non-remunerated), on time deposits (remunerated by 100% of the Selic rate) and on savings accounts – "Poupança", remunerated by the TR (referential rate) + 6.17% if Selic is above 8.5%, or by the TR + 70%*(Selic), if Selic is below 8.5%. As of December 2023, the reserve requirement on demand deposits was 21%, while the reserve requirement on time deposits was 20% and the requirement on all savings accounts was 20%. Banks that do not meet the reserve requirement can borrow from the BCB at Selic rate + 4% for overnight operations.

Current policy stance

The BCB started the easing cycle in August 2023, with a 50bp clip, amid benign price behavior, as well as expectations of activity deceleration in 2H23. However, still de-anchored inflation expectations (Exhibit 15) and an adverse external sector (geopolitical conflicts and high levels of long-term interest rates in US) prevented an acceleration in the magnitude of cuts. Selic rate finished the year of 2023 at 11.75%. We expect the maintenance of the cutting pace during the 1H24 and one last 25bp cut in July, taking the selic rate to its terminal 9.50% level (Exhibit 16). The easing cycle should end with rates still in contractionary camp to guarantee that the monetary authority's credibility is not harmed and that long-term inflation expectations converge back to mid-target. External accounts should continue supportive to the FX during 2024. Overall, we expect USD/BRL at 4.75 in 2024-end (from 4.85 in 23´).

Exhibit 15: Inflation expectations de-anchored until 2026
Median IPCA forecasts for year-end



Source: BCB weekly market readout, as of Dec 8th

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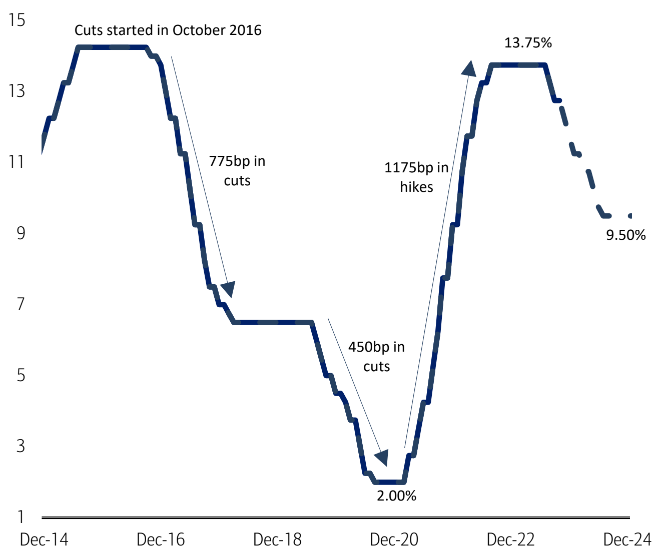
Exhibit 16: Easing cycle of -50 bp per meeting pace
Selic rate (% p.y.)



Source: BofA Global Research, BCB

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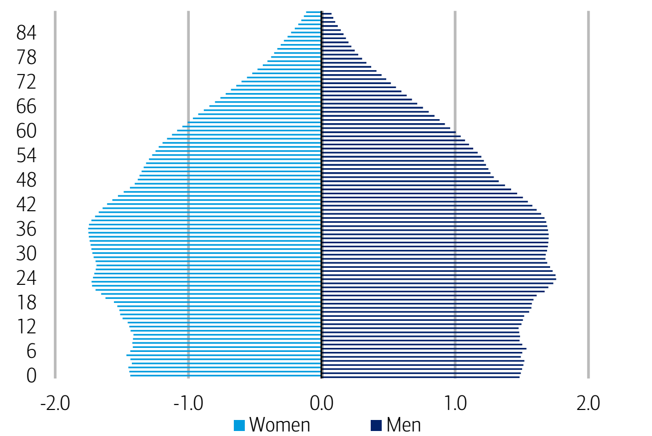
1.4 Demographic boom fading

- Brazil is still gaining form the demographic bonus, but such dynamics is about to change.
- Average real monthly income peaked in 2020 and has since declined by 13%, amid a highly inflationary context.

Brazil has over 200 million inhabitants, mostly concentrated in the Southeast (42%) and Northeastern (27%) regions. The population is relatively young compared to other countries, especially in developed markets (Exhibit 17). Brazilians' average age is 35 years, versus 39 for Americans, 45 for Germans and 50 for Japanese. However, Brazil should move towards developed markets' average by 2035 (Exhibit 18).

Exhibit 17: Brazil – 2022 age structure (Millions)
A large portion of the population is still young



Source: IBGE, BofA Global Research

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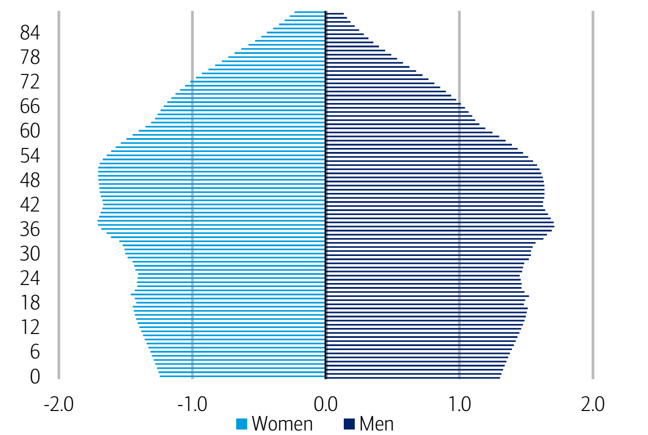
Exhibit 18: Brazil - 2035E age structure (Millions)
Demographic bonus will end over time



Source: IBGE, BofA Global Research

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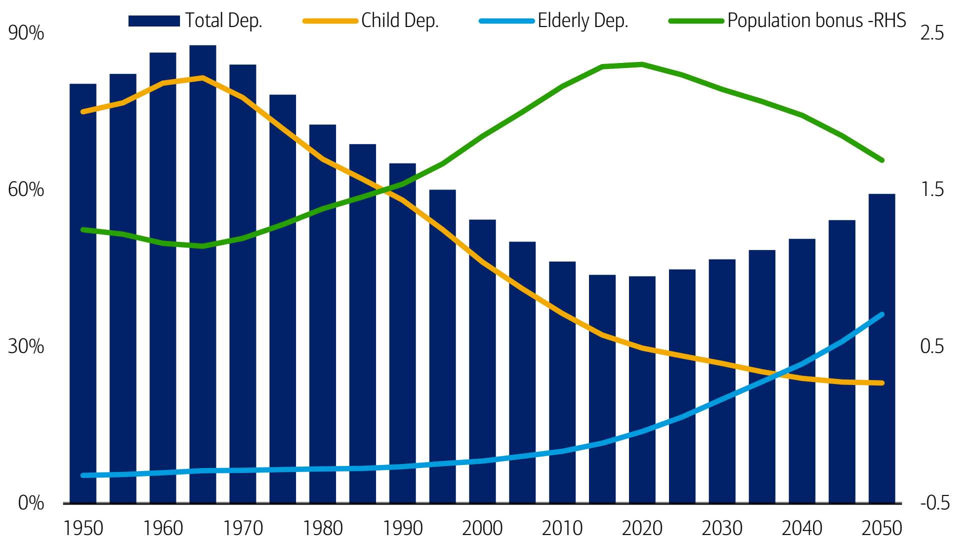
Brazil likely peaked the gains from the so-called population bonus: the ratio between the working age population (aged between 15 and 64 years) and the economically dependent population (children and elderly people). Until roughly around 2020, the working aged population was increasing faster than the dependent population, which explains the ascending green curve in Exhibit 19. However, as the elderly population starts to grow faster, the bonus begins to fade away. In fact, the statistical bureau (IBGE) estimates that by the late 2030´s the elderly population will increase faster than the number of children in the country. Unfortunately, Brazil is becoming old before becoming rich, different from what most developed countries experienced.

Working population forecasted to increase by 5 million before stabilizing

The Brazilian working age population (15 to 64 years-old) has increased 7% in the past 10 years and is expected to increase close to 3% by 2035, according to IBGE. As a result, the working age population should total roughly 152.7 million, or 2/3 of the population, by 2035. Generation Z and Millennials will be the bulk of the labor force by then, as Generation X starts to retire. This should be the last breath of the demographic boom on Brazilian society.

Exhibit 19: Brazil demographic dividend still high, but it should start decreasing now
Dependency ratios calculated as dependent population/working population



Source: BofA Global Research, IBGE

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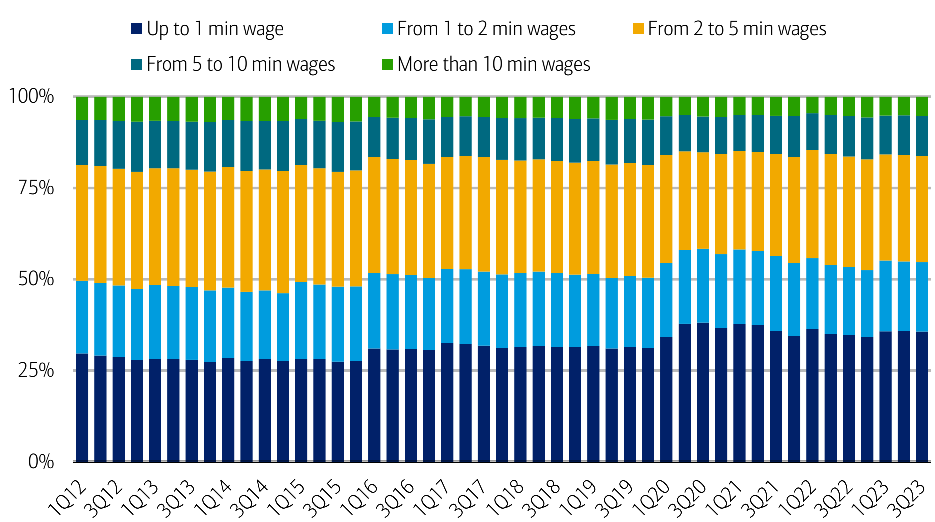
Middle class slowly regaining size

By the 1st quarter of 2015, 48% of Brazilian households lived with less than two minimum wages. This is an elevated figure even compared to Latin American neighbors, but it is the record low level in Brazilian modern history. Since then, the country suffered the 2015-16 recession and, after a period of mediocre growth, the COVID crisis came to deliver another strike. The escalation of unemployment with the rise of mobility restrictions brought perverse effects especially to the lower income classes. The population became poorer in general and income distribution worsened. In Exhibit 20, we can see an upward level shift to the poorest population brackets from 1Q20 onwards. In the beginning of 2021, the 2-5 minimum wage range started to gain ground again. In 3Q23, the number of households living under two minimum wages had declined to 55% of the total, from a peak of 58% in 3Q20.

Exhibit 20: Income redistribution back in 2021 and 2022, after poorest classes widened with the COVID crisis
Distribution of households per monthly income



Source: BofA Global Research, PNAD (IBGE)

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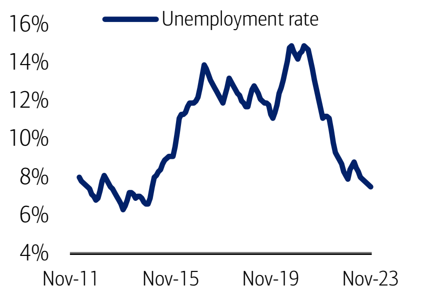
Upward social mobility in the past 30 years was possible due to historically low unemployment, real wage gains, lower inflation following "Plano Real", the increase in population bonus and improved education amid labor market developments. However, these factors dissipated during the past decade, with many returning to the lower classes with fewer prospects for upward social mobility in the short term. We expect social mobility to gradually return over the next years, dependent on the country recovering a steady growth path that was lost in the last years, as well as on effective social programs by the government.

Exhibit 21: Unemployment peaked in Sep-20

The rate has been trending down since



Source: BofA Global Research, IBGE

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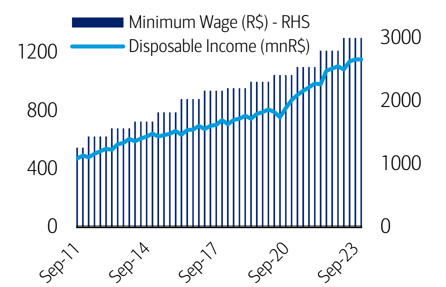
Exhibit 22: Minimum wage and disposable income rising in nominal terms

Minimum wage (R$), disposable income (R$mn)



Source: BofA Global Research, BCB

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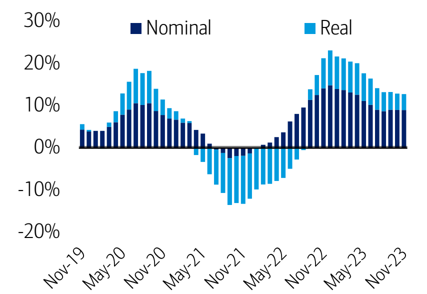
Exhibit 23: Wages growth stabilized last year

Real wages especially compromised by high inflation in 2021 (% yoy variation)



Source: BofA Global Research, IBGE

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Significant government support through income transfer programs directed at the lower income population, such as the *Bolsa Familia*, was a key driver of the social mobility movement as well. *Bolsa Familia* was a government-sponsored program that paid a monthly stipend to vulnerable families, aiming to reduce poverty and providing means for people in need to develop socially.

In 2021, the program passed through a reformulation. Rebranded as *Auxilio Brasil*, the program attended close to 20mn households, in the aftermath of the pandemic. Initially paying a minimum benefit of R$400 (from R$190 average *Bolsa Familia* before), *Auxilio Brasil* had its voucher increased to R$600 in August 2022.

As president Lula was elected for a third term, the program resumed its original format and name. Bolsa Familia continue to pay the same monthly amount in '23 and '24. The inflated benefit could be beneficial for the population to recover part of the purchasing power that was lost since 2020.

1.5 Labor market

- The Brazilian labor market dynamics was peculiar, as its correlation to macro fundamentals was essentially counterintuitive. The trajectory behavior just improved recently, after flexibilization.
- The labor market was surprisingly resilient during 2023. Unemployment rate fell and real wages moved up, though workforce component did not return to pre-pandemics levels.
- We see downside risks to non-accelerating inflation rate of unemployment (NAIRU) level. Unemployment declining without exert upward pressure on inflation.

Peculiar labor market dynamics

Brazil's labor market performance was distinctive prior to 2017, as it seemed detached from GDP growth dynamics, making its correlation with macro fundamentals often counterintuitive. This comes forward when we investigate the unemployment rate and compare it to GDP growth performance (Exhibit 24).

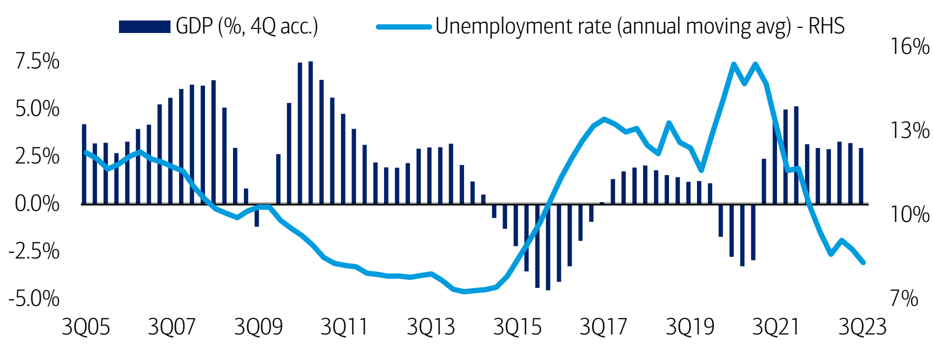
The Consolidation of Labor Laws (CLT) is the legislation that governs labor relations in Brazil, likely the main explanation for the idiosyncratic dynamics of the labor market. Unlikely its peer countries, it is extra expensive for employers to onboard and train workers (due to the high registering costs). Also, the scarcity of skilled workforce makes business managers think twice before laying off employees – the costs associated to a dismissal are often prohibitive for companies in financial strain.

From the Great Financial Crisis, the government started to use fiscal measures continuously, such as payroll tax cuts, subsidies to selected industrial sectors, etc., to support workers' stability. However, the labor market reform implemented by President Michel Temer's administration change such picture, as it increased the labor market flexibility.

Since the reform was approved, the correlation between employment levels and GDP growth has improved. Most labor market indicators, like net job creation and the unemployment rate, showed rapid loosening of the labor market.

Exhibit 24: Better correlation from '17

Unemployment showed no cyclicality with output prior to '17



Source: BofA Global Research, IBGE

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Labor market rapidly deteriorated, but recovery has consolidated

According to the Nation-wide Employment Report (PNAD), unemployment was on a downward trend since 2017, reaching 10.9% in December 2019. But in 2020, with the COVID shock, unemployment rose again peaking to an all-time high in March 2021 at 14.9%. With the economy reopening and the return to normality, unemployment has slowly declined, reaching 7.8% by December 2023. We expect unemployment to average 8.0% in 2024.

This improvement path is reflected in other indicators as well. Net job creation, reported by the Labor Ministry (MTE/CAGED – general register of employed and unemployed) shows that 1.8mn formal jobs were created in 2023 until October, reinforcing a remarkable recovery.

Informality is still high but stabilized this year. According to national statistics institute IBGE, formal labor peaked in 2015 (59.2%) and trended down afterwards. During the COVID crisis the informal sector suffered the most, with a sharper decrease in the number of employed people. While companies used to receive governmental assistance to minimize layoffs, informal workers had to count with direct transfers. With the economic recovery, the informal sector´ share on the workforce increased again. This upward trend was interrupted this year, while formal jobs remained raising.

Exhibit 25: Brazil has a very high level of informality
But it declined this year

	Absolute Number of workers (mn)			% of total workers	
	Formal	Informal	Total	Formal	Informal
2013	50,6	40,3	91	55,6%	44,4%
2014	52,0	40,2	92	56,4%	43,6%
2015	55,1	37,9	93	59,2%	40,8%
2016	53,5	37,0	91	59,1%	40,9%
2017	52,3	38,2	90	57,8%	42,2%
2018	52,5	39,6	92	57,0%	43,0%
2019	53,4	40,7	94	56,7%	43,3%
2020	51,6	36,1	88	58,9%	41,1%
2021	52,2	38,4	91	57,6%	42,4%
2022	56,2	41,6	98	57,5%	42,5%
2023	57,3	41,6	99	58,0%	42,0%

Source: PNAD (IBGE) (Data until October '23)

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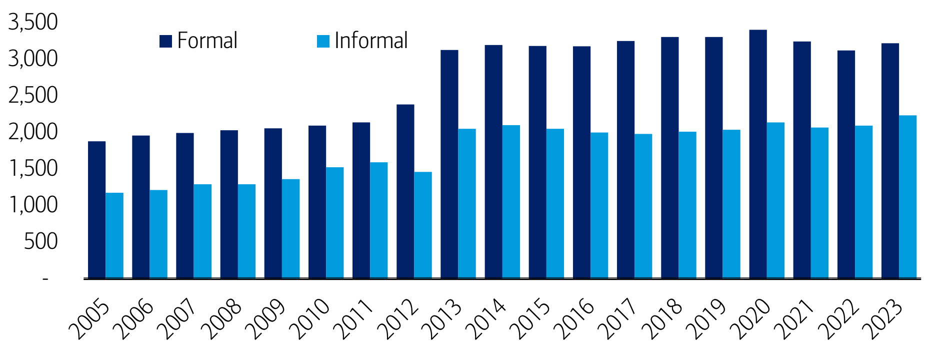
Wages in the formal sector are considerably higher than the average of the informal sector, as we see in Exhibit 26. A greater level of formality on the labor market can help improve conditions to the population, not only through higher income, but also better public services (as it raises tax collections). In 2023, both experienced real wages increase.

Exhibit 26: Average monthly income in formal and informal labor markets
12-month average (R$)



Source: IBGE, BofA Global Research (Data until October '23)

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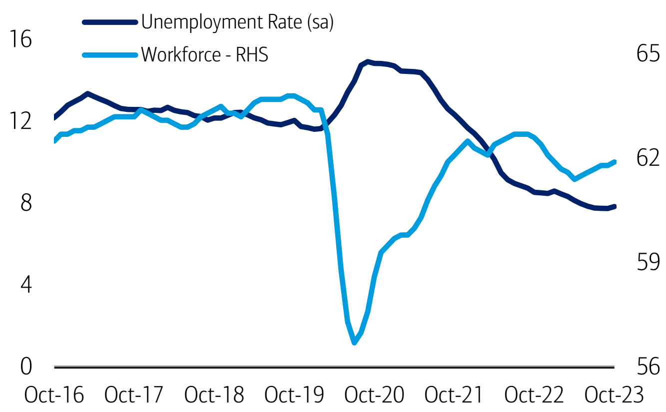
Labor market: non-accelerating inflation rate of unemployment (NAIRU)

Unemployment remained persistently below our estimate of the non-accelerating inflation rate of unemployment (NAIRU) between 2010-2016, which pressured and kept inflation high during that period. Currently, the unemployment rate is also running below the NAIRU, but without generating inflation. One hypothesis is that, after labor market reforms, the level of the neutral rate of unemployment may have declined. All in, we continue estimate NAIRU at around 9.5%, with downside bias. (Exhibit 28)

The average unemployment rate is now about 1.3pp above its bottom (reached in December 2013). We should see a decline of the NAIRU on a structural basis as unemployment starts adjusting more freely and in tandem with the ups and downs of business cycles. Unemployment level is declining, and average workers' gains are raising. However, workforce did not return to pre-pandemic levels. There is needed to see it normalizing to take solid considerations about NAIRU level.

Exhibit 27: Workforce did not fully recover so far

Unemployment rate well behaved



Source: CAGED, IBGE (Data until October '23)

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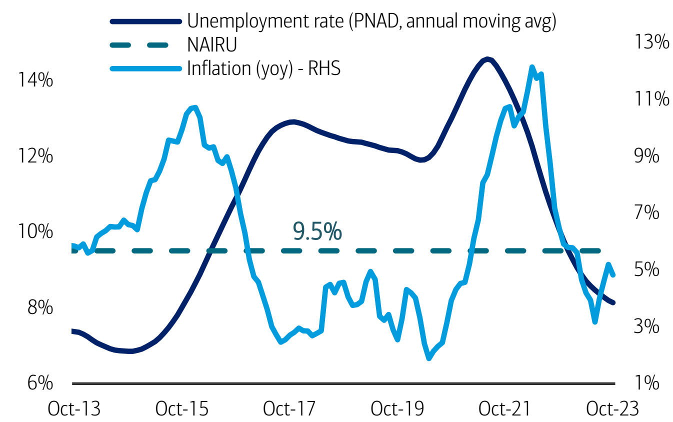
Exhibit 28: Year-over-year Unemployment below NAIRU

Downward trend in unemployment did not pressure inflation



Source: CAGED, IBGE (Data until October '23)

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1.6 Consumer credit

- Consumer credit was a key driver of economic growth in the recent past but had dramatically fallen during the 2015-16 recession.
- Credit growth was supported by government incentives, greater banking tools access (and competition) and activity resilience.
- Non-performing loans reached 2.12% in December 2020, a historical low. It has then peaked at 3.6% in July 2023. After that, NPLs are decelerating and should continue as interest rates decline.

Both private and public banks' lending slowing

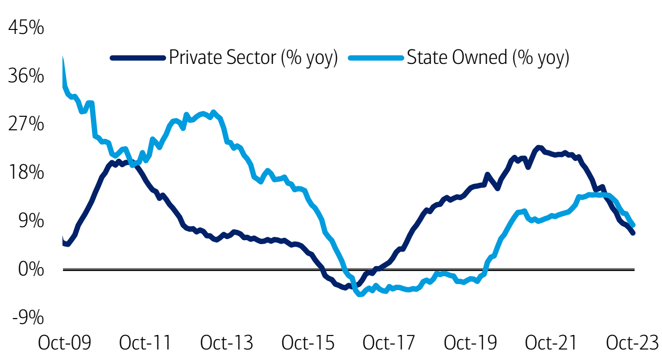
When the macroeconomic scenario began to deteriorate last decade, public banks picked up the slack at first, growing credit at a CAGR of 21% from 2009 to 2015, compared to just 10% for private banks. Government boosted public bank lending growth to increase consumption and reduce spreads. However, as the economy deteriorated, public banks' balance sheets became stretched. As a new government approached (starting with Temer's administration), public banks scaled back and registered annual average contraction from 2017 until before the pandemics (Exhibit 29).

Overall outstanding credit growth resumed positive ground in March 2018 and has remained there ever since. The COVID crisis in 2020 caused a reduction in household income. The Central Bank responded by adding liquidity to the system via credit programs, leading both private and public banks to increased credit concessions. The activity recovery that followed in 2021 and 2022 was partially supported by record high outstanding credit as %of GDP (Exhibit 29). Credit growth has decelerated throughout 2023, following the drop in new originations, likely due to the increase in default rates.

Outstanding credit sideslipping in 2023

Total credit has climbed steadily in recent years, increasing from 30% of GDP in 2007 to 54% at the end of 2015. However, as public banks pulled back lending, the level of credit reversed its trend and started to decline, reaching 45.7% in October 2018. BCB´s measures to increase in liquidity conditions in 2020 and the government fiscal support since the beginning of the pandemics helped the ratio to reach the highest value of historical series (53.2%) by December 2022 (Exhibit 30). Greater access to financial and banking tools, increasingly digital, also supported the recovery of credit.

Exhibit 29: Credit Expansion - Private vs Public
Credit volume drops steeply in the private sector



Source: BCB

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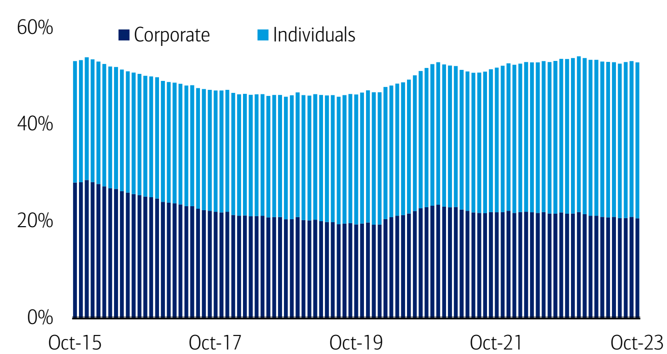
Exhibit 30: Credit Outstanding - Corporate vs Individuals
Percentage of credit/GDP raises amongst individuals



Source: BCB

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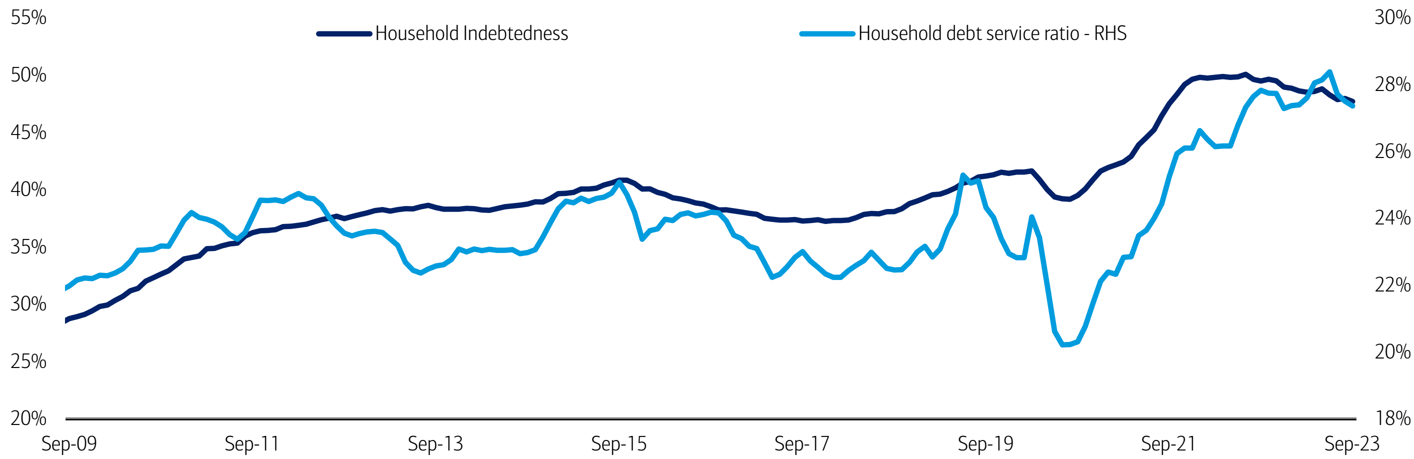
Indebtedness and NPLs already peaked

Brazil's population remains highly leveraged. The level of indebtedness started to rise gradually in 2018, dropping in the rise of 2020. Emergency measures on the back of the pandemics, brought households' balance sheet back to a significantly worse position by the 4Q20. Households' indebtedness level – the ratio of total household debt held to

12m acc disposable income – peaked in July 2022 at 50.1%, compared to a modest 22% in 2006. More recently, household debt service ratio (% of income spent servicing debt) also peaked, achieving 28.4% in June 2023 (Exhibit 31). Both are now trending down as interest rates has been lowered.

Exhibit 31: Indebtedness and debt service ratio are coming down from the peak. Situation worsened as interest rates returned to pre-COVID levels



Source: BCB

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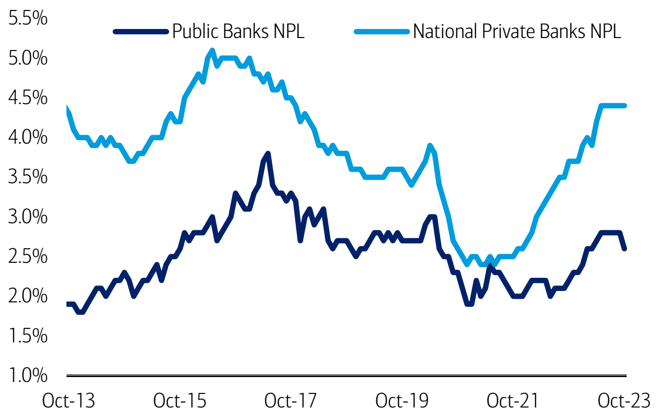
NPLs downward trajectory that began in late 2017 was also interrupted by the pandemic (Exhibit 32). In 2020, NPLs declined rapidly for both private and public banks partially explained by the COVID-recession-driven renegotiations of loans. With the monetary easing, NPLs reached 1.9% for public banks and 2.5% for private banks by the end of that year. The 1175 bps increase in the basic interest rate supported NPLs pick up throughout 2023, reaching 2.8% and 4.4% for public and private banks, respectively, in June. While public banks NPL started to decline, among private bank lines they remain at high levels. Spreads also increased since 2020, but the interest rate decline was quicker felt, starting a downward trajectory.

Exhibit 32: Public and Private banks' NPLs
High NPLs in the face of high interest rates



Source: BCB

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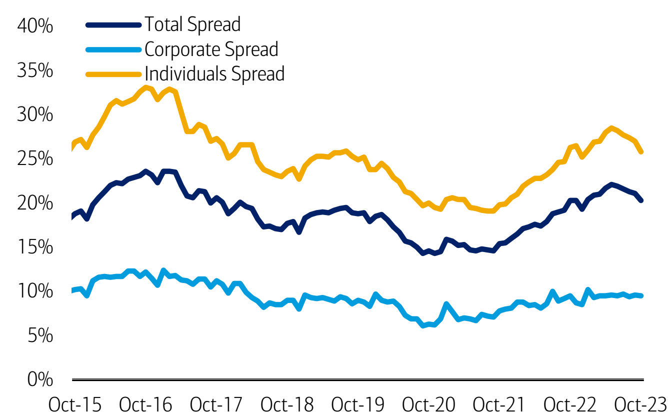
Exhibit 33: Spreads Evolution
Spreads started to decline



Source: BCB

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2. Brazil's market

2.1 Financial System: very solid. Brazil has a solid financial system and credit penetration has increased from 30% of GDP in 2007 to 53% in 2022. NPLs started to decline, with lower unemployment and inflation.

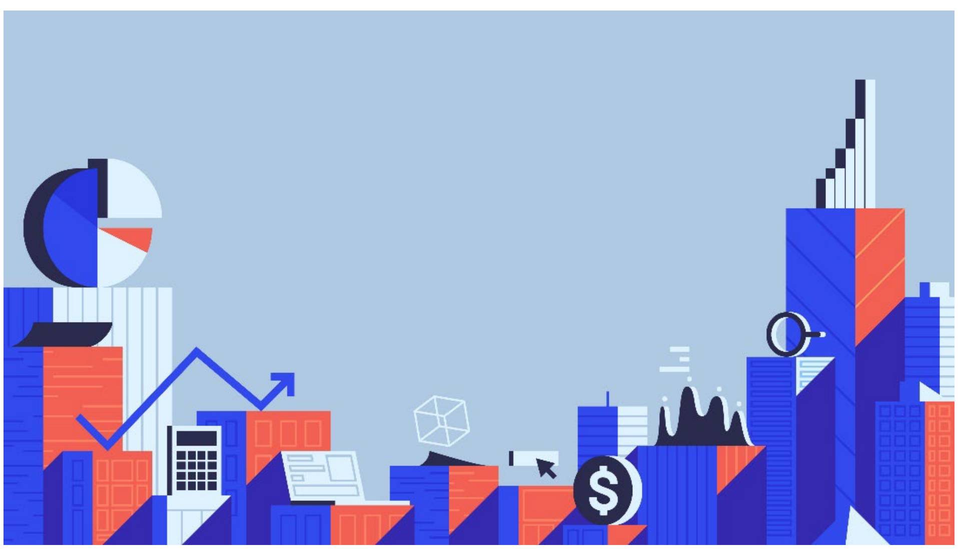
2.2 Local debt market. The Brazilian fixed income market is the largest in Latin America. The BRL is not a convertible currency, which limits foreign participation in local markets.

2.3 External Debt Market. Brazil has the 4th largest EM Corporate market and it has the 9th largest sovereign external bond issuer out of 73 EM countries. Brazil CDS are the 5th most actively traded in EM and DM sovereign and corporate CDS, with close to US$73bn traded in the first three quarters of 2023, 11% of top 10 CDS trading volume.

2.4 **Corporate debt market**. BZ corporates underperformed EM for the first time since '16 with positive returns of +7.4% in '23 on a rough beginning of the year with the collapse of Americanas.

2.5 Local equity market. Brazil has a market cap close to R$4.7tn (US$0.9tn), with 384 listed companies and an average daily trading volume of U$5.8bn in the last six months.

2.6 ESG investing: What's new? Local ESG funds in Brazil are still tiny, but doubled in the past 5 years. Using Economatica data, we estimate Brazil local funds that are categorized as ESG have only R$2.8bn AUM, which represent around 1% of total AUM of local equity funds.



Source: iStock

2.1 Financial System: very solid

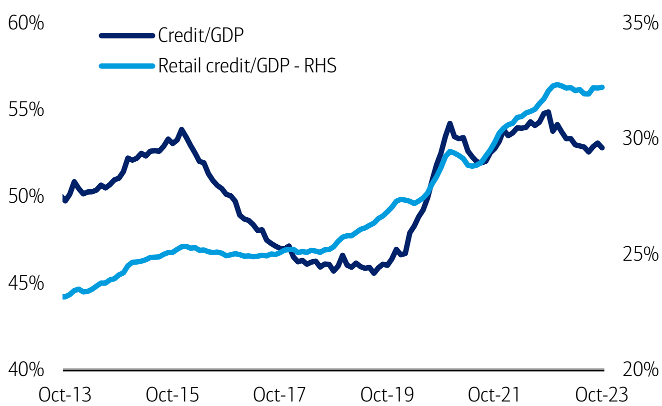
- Brazil has a solid financial system and credit penetration has increased from 30% of GDP in 2007 to 53% in 2022.
- 43% of outstanding credit comes from government-controlled institutions, such as Caixa Economica, the Brazilian Development Bank and Banco do Brasil.
- Basel III adoption is consolidating, and capital regulations were found to be compliant with the internationally agreed minimum Basel III standards.

Solid system: credit growth is decelerating

The National Monetary Council (CMN) regulates the banking sector, while the Brazilian Central Bank and Securities Commission of Brazil (CVM) supervise the financial sector. In the 1980s and 1990s, only 20% of Brazil's population above 16 years old held a bank account, while the number of credit cards totaled 10-15 million. Currently, around 79% of the population has active bank accounts, with over 134 million active credit cards. Brazil has a solid, well-regulated financial system, with more than 1,600 authorized financial institutions, including 176 banks, 65 of which controlled by foreign companies.

Outstanding credit in Brazil has increased from 30% of GDP in 2007 to 53% currently, driven by an extended period of lower rates, greater access to banking alternatives (and, therefore, credit) and credit relief programs deployed by the government and the BCB. (Exhibit 34).

Exhibit 34: Credit/GDP at high levels
Retail credit remains in an upward trajectory



Source: BCB

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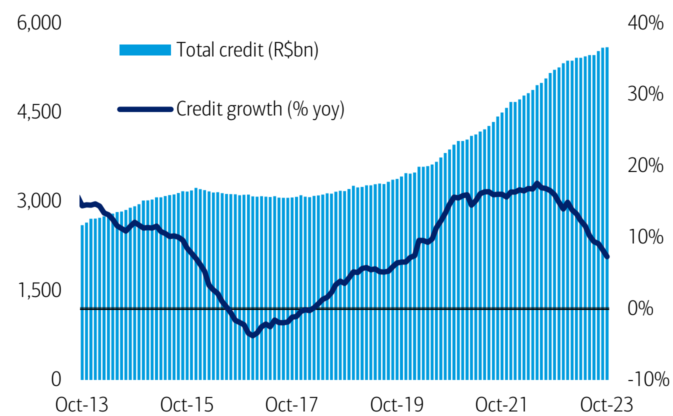
Exhibit 35: Credit growth marginally decelerating
Contractionary monetary policy tightening credit market



Source: BCB

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BNDES: providing long term financing

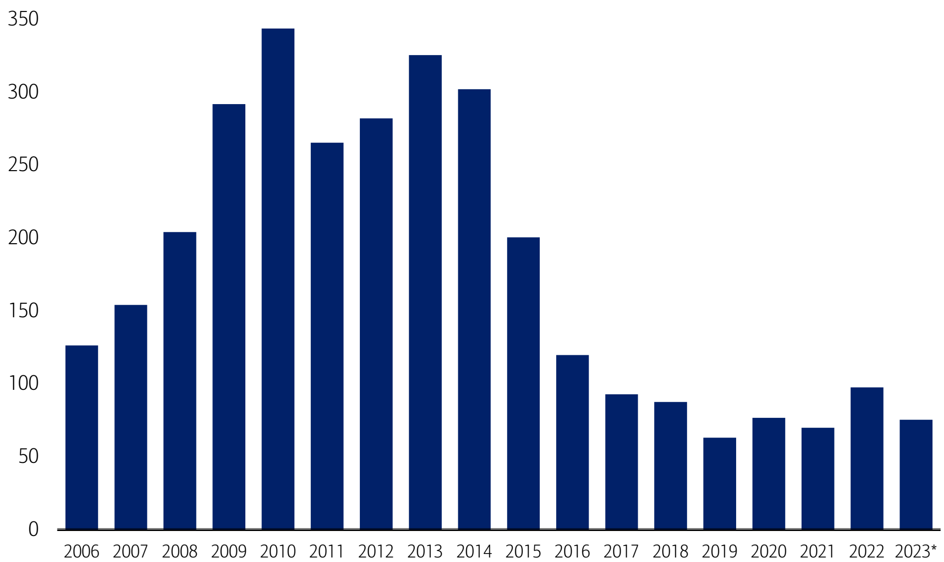
Government controlled Brazilian Development Bank (BNDES) is one of the most important suppliers of long-term funding in Brazil for investments. The bank focuses on granting loans to infrastructure projects, machinery, and exports for large and small/medium-sized companies.

The BNDES disbursements experienced a consistent downward trajectory since 2013, in 12-months cumulative terms. However, BNDES has followed the public banks trend in 2020 with disbursements increasing by 22% (Exhibit 36). At that point, support was focused on sectors with the greatest social impact, including health, education, environment, export, infrastructure, and innovation. Despite a decline in 2021, concessions seemed to be increasing at a gradual pace. Disbursements increased by 40% yoy in 2022. Up until September 2023, they grew by 20% ytd. Lula's growth acceleration program must incentive this credit concession.

The long-term interest rate, TLP, is the main financial cost in BNDES' funding. The real portion of TLP is calculated as the 3-month average yield of the NTN-B (Brazilian treasury bond indexed to inflation) maturing in approximately 5 years. The transition period from TJLP, the former long-term rate charged by the BNDES until 2017, to TLP ended this year. As of December 2023, TLP is at 6.55% p.a. (plus IPCA inflation), below monetary policy rate at 11.75% p.a.

Since 1999, the BNDES has disbursed about R$2.1tn of resources for many different sectors. In 2023 (until September), disbursements have mostly been directed towards infrastructure projects (37%), followed by agribusiness (24%), industry (22%) and trade and services (16%). Expectations are of even more disbursements from the bank in the next four years, as the next government should put BNDES in the spotlight of its development policies.

Exhibit 36: BNDES loans at low levels but gradually rising
R$ bn, YTD



Source: BNDES

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Higher NPLs as an increasing risk

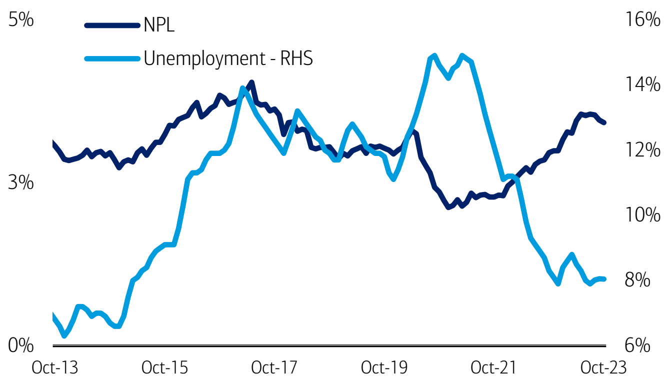
The combination of the significant increase in credit and worsening macro situation (rising unemployment, falling real wages and high interest rates) led to deterioration in bank's credit portfolio, until 2016. With unemployment declining from 2018 to 2019, NPLs entered a downward trend. In 2020, however, NPLs showed an unusual dynamic, as unemployment trajectories moved the other way. While the latter increased, due to mobility restrictions and economic recession, the former decreased steadily (Exhibit 37).

In 2021, NPLs remained relatively stable, despite declining unemployment, in a scenario in which economic recovery was driving unemployment down, but with increasing risk to creditors as inflation rose together with interest rates.

As the central bank normalized interest rates, NPLs were pushed to close to all-time highs. This unfavorable environment for banks motivated a more conservative approach and restricted new originations during 2023. That, along with a reversal of inflationary trend, motivated a drop in interest rates and debt renegotiation programs sponsored by the federal government. NPLs are in an incipient downward trend (Exhibit 37).

Prior to 2020, earmarked credit (notably mortgage) was struggling to gain momentum, while retail credit (non-earmarked lending with market-driven rates), was driving consumer credit up. Nevertheless, in 2021 and 2022, both credit terms started rising after the COVID pandemic (**Error! Reference source not found.**). During 2023, the elevated level of interest rates capped the evolution of retail credit and the small improvement in credit concession was granted by earmarked lines.

Exhibit 37: NPLs started to decline, with lower unemployment and inflation
NPL as % of total loans; Unemployment as % of total workforce



Source: BCB, IBGE

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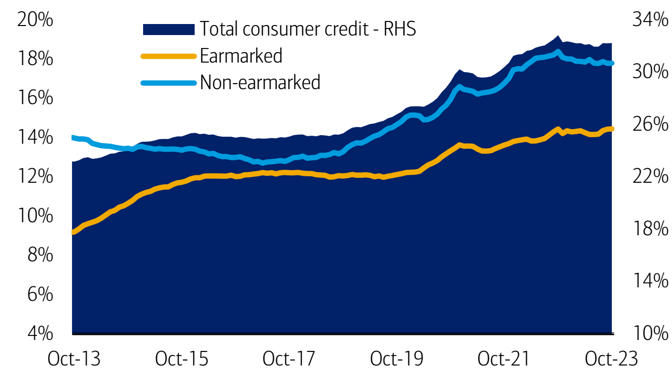
Exhibit 38: Non-earmarked consumer credit started to cool, earmarked remains increasing
% of GDP



Source: BCB

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Brazilians have almost R$1.0tn in savings accounts

One of the most important savings mechanisms for the Brazilian population is the "poupança", or savings account. At the end of December 2023, Brazilians had almost R$1.0tn in savings. Since May 2012, the interest rate for savings accounts has two components. The first is the Reference Rate (TR – Taxa Referencial), which is a Brazilian interbank rate, currently at 0.08% a month (Dec 2023). The second is a floating interest rate of 0.5% per month, only applicable when the Selic is above 8.5%p.y. (as it currently is). If the Selic rate is at (or below) 8.5%, then the floating rate will be 70% of the selic.

Savings account net inflows strongly deteriorated after pandemics. This dynamic is explained by the robust leverage levels together with high real rates, diminishing the households' propensity to save. After 2 years of outflows in 2015 and 2016 (which was closely related to the rise in unemployment and inflation as well as the relatively high Selic rate), savings account registered positive inflows from 2017 to 2019, following the economic recovery. In 2020, savings accounts registered the biggest inflow since 1995, due to precautionary savings made by high income class and fiscal transfers, aimed at the low and middle-income classes, to support the economy amid the pandemic shock. After that, we are seeing a strong reversion in flows.

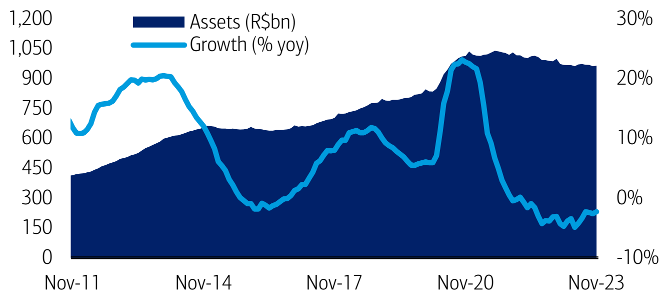
Financial inclusion increasing social welfare

Brazil has one of the most sophisticated banking systems among emerging market economies. Financial inclusion has increased significantly, with 79% of the population (15 or older) having active bank accounts, versus 49% in Argentina and 37% in Mexico. Banks have been a big beneficiary of the recent boom in the emerging middle class, increasing the number of people with bank accounts by more than 68 million in the last ten years.

Getting in line with Basel III

Brazilian banks have started to adopt Basel III requirements at the beginning of 2019. A December 2013 report from the Bank for International Settlements (BIS) found the capital regulations to be largely compliant with the internationally agreed minimum Basel III standards, the highest possible grade within its evaluation metrics. Current Brazilian banking system capitalization is at 16%, but reserve requirements remain much higher than in other countries (Exhibit 41).

Exhibit 39: Savings declined in 2022
Rising inflation contributed to the decline in savings growth



Source: BCB

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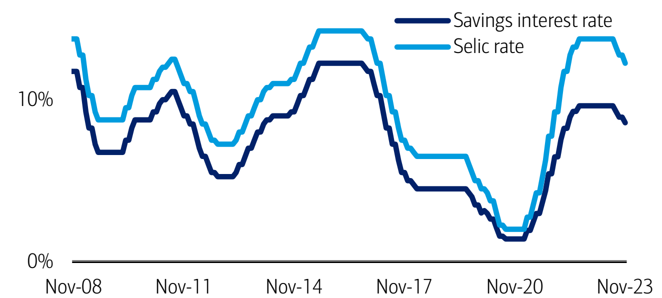
Exhibit 40: Savings rates should go down with Selic
Annual rates



Source: BCB

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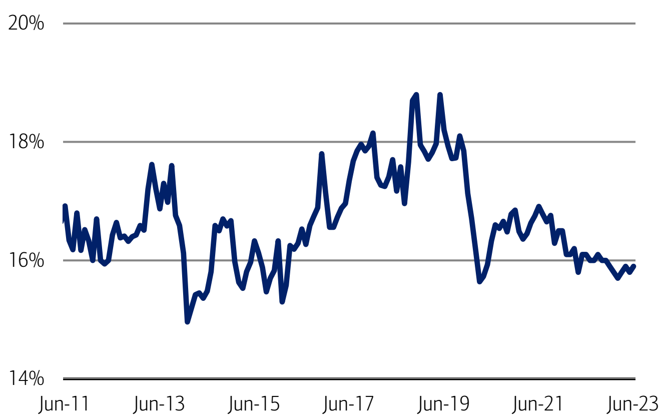
Exhibit 41: Bank capitalization remained around 16%
Basileia Index



Source: BCB

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Exhibit 42: Brazil rating upgraded this year
Brazil Foreign Currency Long-term Debt rating profile

	Moody's	S&P	Fitch
2023	Ba2	BB	BB
2022	Ba2	BB-	BB-
2021	Ba2	BB-	BB-
2020	Ba2	BB-	BB-
2019	Ba2	BB-	BB-
2018	Ba2	BB-	BB-
2017	Ba2	BB	BB
2016	Ba2	BB	BB
2015	Baa3	BB+	BB+
2014	Baa2	BBB-	BBB
2013	Baa2	A-	BBB
2012	Baa2	A-	BBB
2011	Baa2	BBB+	BBB
2010	Baa3	BBB+	BBB-
2009	Baa3	BBB+	BBB-
2008	Ba1	BBB+	BBB-
2007	Ba1	BBB	BB+
2006	Ba2	BB+	BB
2005	Ba3	BB	BB-
2004	Ba3	BB	BB-
2003	B2	BB	B+
2002	B2	BB	B
2001	B1	BB+	B+
2000	B1	BB	B+
1999	B3	BB-	B
1998	Caa1	BB+	BB-
1997	-	BB+	BB-

Source: Moody's, S&P, Fitch

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2.2 Local debt market

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- The Brazilian fixed income market is the largest in Latin America. The BRL is not a convertible currency, which limits foreign participation in local markets. Idea is to make the BRL convertible over time.
- Foreign investor participation in the domestic federal public debt declined to 9.5% in December 2023 from a peak of 20.8% back in May 2015.

Overview

Brazil's fixed income market is the largest in Latin America. Liquidity varies across the asset class. BRL is not a convertible currency, which limits foreign participation in local fixed income. The elimination of the IOF (financial operations tax) on FX inflows into Brazilian fixed income removed a key burden for foreign investors to participate in this market. The Central Bank stated that the idea is to make the BRL convertible over time.

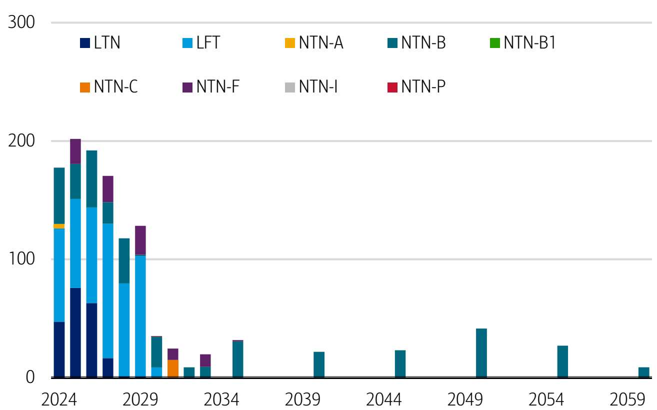
Fiscal policy

Brazil has pursued primary surplus fiscal targets since 1998 to create conditions for the debt to GDP ratio to decline. After reaching 30.0% of GDP in January 2014, net public debt rose to 59.5% of GDP in November 2023. Meanwhile, gross general government debt moved from 52.6% of GDP to 73.8% of GDP during the same period. Despite the recent approval of the government package of revenue boosting measures, the situation for fiscal accounts remains challenging and we expect gross government debt to resume an upward trend in upcoming years.

Debt market

The stock of federal public debt reached R$6.3tn in November 2023, of which 96.0% is domestic debt. On domestic debt composition, 27.1% was fixed-rate, 31.5% was inflation-linked, 41.0% was floating rate (Selic-linked) and only 0.3% FX-linked. This compares to 36.3% fixed-rate debt, 26.6% inflation-linked, 36.6% Selic-linked debt and 0.5% FX-linked debt in Dec2020, when policy rate was at its lowest levels and inflation was within target range. Regarding the external debt, 90.0% is USD-linked, 2.4% is EUR-linked, 3.3% is BRL-linked and 4.2% is linked to other currencies.

Exhibit 43: Brazil – maturity profile of local BRL denominated debt (including BRL global EXD) US$bn
Maturities concentrated in the short-term



Source: BCB

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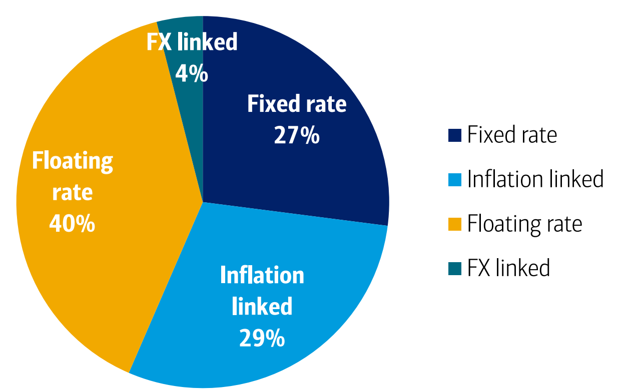
Exhibit 44: Debt profile by index
Floating debt dominates



Source: National Treasury

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Local bonds

The main local currency debt instruments are LTN (zero discount bonds), NTN-F (fixed coupon bonds), NTN-B (IPCA inflation-linked bonds) and LFT (floating rate bonds). The NTN-Cs (IGP-M inflation-linked bonds) are off the run and were replaced by NTN-Bs. Foreign investor participation in the domestic federal public debt declined to 9.9% in November 2023 from a peak of 20.8% back in May 2015.

The day count convention of local bonds is business days/252, and semi-annual coupons are compounded based on the annual coupon rate. For example, the NTN-Fs 10% coupon translates into a 4.88% payment each semester. In addition, the price to yield relation in Brazil is always expressed in terms of dirty price (Exhibit 43).

- **LTN.** The LTNs (Letras do Tesouro Nacional) are short-term, zero-coupon bonds that make up 19.2% of local issued federal government debt. LTNs are issued in 6, 12, 24, 36 and 48-month maturities, with January 2029 being the longest available. LTNs are traded mainly by locals.

- **NTN-F.** The NTN-Fs (Notas do Tesouro Nacional serie F) are fixed-rate bonds with 10% coupons and semi-annual payments. The longest NTN-F is the Jan/33.

- **NTN-B.** The NTN-Bs (Notas do Tesouro Nacional serie B) are IPCA inflation-linked bonds that pay a 5% semi-annual coupon and account for 28.9% of outstanding local debt. The IPCA is the consumer price index calculated by the IBGE, upon which the BCB's inflation target is set. The NTN-Bs are denominated in VNA (valor nominal) and settled in BRL. The NTN-B VNA is an inflation-indexed unit based on monthly IPCA variation, published by the Treasury the 15th day of each month. The longest NTN-B matures in Aug 2060. The biggest NTN-B outstanding is in August 2024.

- **LFT.** The LFTs (Letras Financeira do Tesouro) are short-term (up to six years), floating-rate, zero-coupon bonds. The total return is a function of the selic rate and the discount of the bond, as the face amount of these bonds is capitalized daily at the effective Selic rate. The LFTs are traded mainly by locals.

Derivatives market

PRExCDI futures

The DI futures market in Brazil is the most liquid interest rate derivative market in LatAm. They are traded on the BM&FBovespa exchange in Brazil and reference the overnight interbank interest rate, the CDI (*Certificado de Depósito Interbancário).* The DI future rate tracks the effective interest rate between the trade date (including it) and the maturity of the contract (excluding it). The day count convention for DI futures (and other Brazilian fixed income) is 252 business days. Contract maturities are available for the coming four months and for every quarter thereafter. The contract is quoted on a yield basis, but cash value of the position is given by the present value per contract (R$100,000 notional), discounted by the most current traded interest rate.

At the end of initial trade date, the future is marked-to-market based on the settlement (closing) interest rate. After that, the cash value of the open position is indexed daily to reflect the actual overnight rate and at the end of each day the position is adjusted. The PnL is based on the updated value of the position against the settlement interest rate at the end of the trading session. This ensures that from the trade date until expiration, the DI futures reflect the exact difference between the traded fixed yield and the reported floating DI rate for the period between the trade date and maturity. The contract performs like a fixed for floating swaps.

All DI futures contracts mature on the first business day of the contract's maturity month. Liquidity tends to be concentrated in the January contracts[1], as they match the maturities of some LTN and the NTN-Fs. Bondholders tend to use the DI futures to switch from fixed to floating interest rate exposure. Bid-ask spreads are as narrow as 1bp for the most liquid tenors and 2-5bp in the longer tenors (in up to 10k DV01).

Offshore investors that are not set up to trade locally use offshore PRExDI swaps to take positions in the onshore DI futures market. With the elimination of the IOF tax on fixed-income inflows, the spread between onshore and offshore rates declined significantly.

Real interest rate futures (DAP) [2]

On 2 May 2017, the BM&FBovespa re-launched the real interest rates futures contract. This future works as a protection mechanism to the movement in real interest rates. It reflects the difference between the DI futures and inflation measured by the IPCA index on a 252-business day basis. The contract matures in the 15th day of the contract month, consistent with the maturities of the NTN-Bs. The size of the contract is 100,000 X R$0.00025 X IPCA.

Onshore-offshore spread[3]

The onshore-offshore spread reflects the BRL convertibility risk (in and out), as the BRL is not a deliverable currency. The spread also reflects IOF taxes. In 2010, the government increased the IOF tax from 2% to 4% and then to 6%. Notably, the government zeroed the IOF tax on fixed income inflows in mid-2013. As a result, the on-off spread declined as the cost for investing in Brazilian assets became lower relative to investing in Brazilian assets abroad.

Cupom cambial and FX swaps

The cupom cambial is an onshore dollar interest rate. There are two major instruments to trade the cupom cambial: cupom cambial futures (DDI) and the cupom cambial forward rate agreement (FRC4). The DDI has exposure to moves in the local dollar rate and moves in the FX. The FRC, also known as the clean cupom cambial, has exposure to the dollar rate but not to FX moves. The FRC is made up of two DDI contracts, one receiving leg and one paying leg. One of the DDI contracts in the FRC is the front future to remove the FX exposure. The amount in the two DDI contracts is such that it has the same present value.

Offered occasionally by the Central Bank, as a monetary policy instrument, the currency swaps consist of two legs: one is the FX change + the onshore dollar rate (cupom cambial), and the other leg is the Selic. When the BCB receives the FX change and the cupom cambial and pays the Selic, the swap is called reverse-FX swap. When the BCB receives the Selic and pays the FX change and the cupom cambial, the swap is called FX swap.

Interest rate options

The two key interest rate options traded in Brazil are the swaptions (option on DI future) and IDI options (1-day Bank Deposit Index). Brazil swaptions are more common among foreign investors, while locals concentrate their positions on IDI options (options on the cumulative value of the CDI between the trade date and the maturity of the option). Another product that recently became popular in Brazil are digital options for the upcoming Copom meeting and the following one for market participants to trade the expected movement in interest rates (Exhibit 45).

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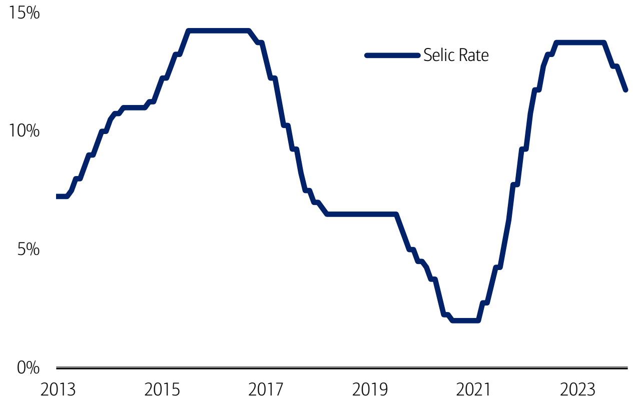
1 Contracts can be found at ODA Cmtdy CT <go> on Bloomberg.

2 Futuro de Cupom de IPCA. Contracts can be found at WLA Index CT <GO> on Bloomberg.

3 For more details see: Brazil: onshore-offshore spread 101, 9 November 2010

4 Contracts can be found at GDA Curncy CT <GO> on Bloomberg.

Exhibit 45: Easing cycle started this year
We expect BCB to remain cutting rates next year



Source: BCB

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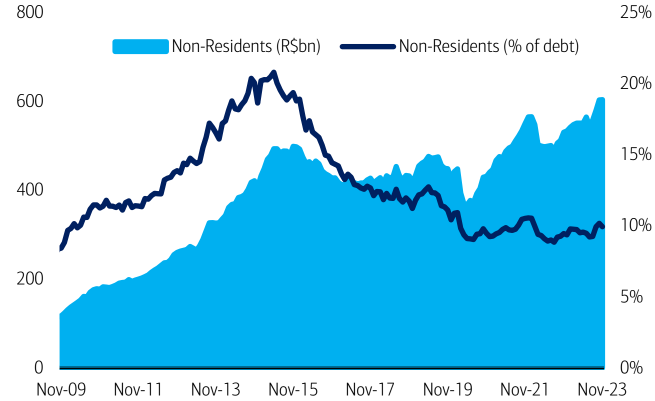
Exhibit 46: Foreign investor debt holdings increased in 2023
Back to more than 10% share



Source: National Treasury

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FX market

The BRL is not deliverable, but its daily volume including spot, futures and non-deliverable forwards exceeds US$20bn. The BRL is the most liquid currency in the region. The BRL is traded during BM&F Bovespa trading hours and the dollar futures (particularly the front future) are one of the most liquid products on the exchange. BRL liquidity declines significantly in the off-hours market (over the counter), with the bid-offer widening. There is an ongoing discussion to make the BRL convertible in the future.

PTAX: the daily reference FX fixing rate

Under new methodology implemented in 2011, the BCB surveys all 14 FX dealers[5] four times a day to get BRL price quotes. The BCB conducts one survey, choosing any point in time from 10:00am to 10:10am, 11:00am to 11:10am, 12:00am to 12:10am, and 1:00pm to 1:10pm. The dealers will receive the request with a specific time stamp, which they must use as reference to reply to the BCB.

Each foreign exchange dealer must give a quote with bid-offer for a BRL transaction in the interbank market. The BCB then excludes the outliers – the two highest and two lowest quotes – and calculates the average of the quotes. The daily PTAX is the arithmetic mean (average) of all surveys.

Investor base

Foreign investors have increased their participation in the domestic debt market significantly in the last decade. Foreign investor participation in the domestic federal public debt was roughly 5% in December 2007, 10.6% in December 2021 and 9.9% in November 2023, after peaking at 20.8% in May 2015 (Exhibit 46). Brazil local mutual funds holdings have been rising. As of October 2023, they held R$8.1tn (US$1.6tn), of which R$3.1tn accounted for local fixed income instruments.

Government securities holdings by pension funds are small. The public pension system (closed) is by far the largest share of the nation's overall retiree pool. The public system runs large deficits due to legacy benefits and early retirement age. As a result, the private system (open) is growing very rapidly, but is still very small compared to other LatAm countries. Since the pension reform was approved incentives to migrate to the private system should increase. *Associação Brasileira das Entidades Fechadas de*

[5] Banco do Brasil, Bradesco, Itau Unibanco, Credit Suisse, Citibank, Santander, JP Morgan, Bank of America, BTG Pactual, BNP Paribas, Safra, Goldman Sachs, ABC Brasil and Morgan Stanley.

Previdência Complementar (ABRAPP) oversees the open and closed pension funds offering defined-contribution or defined-benefit plans.

In February 2018 the government announced a change deciding to gradually drop the rule which sets minimum 2-year average duration in bonds portfolio. Thus, the minimum required duration in pension funds' portfolios is progressively declining until August 2019 when no minimum duration was required. The practical effect of this change is likely to be a decline in demand for hedged long dated NTN-Fs by pension funds, and probably less demand for hedge in the local yield curve after Treasury auctions.

Recall that before the announcement those funds could hedge 100% of that exposure via derivatives and still comply with the rule. In practice they would ask the Brazilian Treasury for bonds in its regular auctions but would immediately hedge that exposure, adding pressure on the local yield curve. In fact, part of the yield curve slope is usually attributed to that "non-real" demand for duration.

Rules, regulations, capital control and taxation

Taxation depends on the instruments, holding periods and origin of funds. The fiscal treatment regarding the income tax varies according to the origin of funds (from tax havens or not) and type of investment. The IOF is levied on credit and fixed income transactions of locals and foreigners. The IOF treatment depends on the type and investment tenor. All investors incur an IOF charged on very short-term gains up to a 30-day holding period, based on a declining rate.

Foreign investors are allowed to invest in Brazil, but under Resolution 4,373 must register in the BCB. A recent Resolution by CVM (the Securities and Exchange Commission of Brazil), CVM Resolution 64, edited on 02/07/2022, exempts investors (individuals) not resident in Brazil from specific registration, requiring, on the other hand, that information about the investor is inputted in CVM's platform.

Foreign investor inflows to buy local fixed income securities were taxed with a 6% IOF up to June 2013. When buying longer-maturity bonds, investors dilute the tax burden over the duration of the bond. The IOF on foreign inflows into fixed-income was eliminated in 2013. The outflows of foreign currency do not incur IOF (**Exhibit 47**). In July 2011, the government introduced a 1% IOF on the daily increase in the short USD long BRL positions in derivatives, but this was also removed in 2013. Investors should check with their tax consultants for specific details and issues.

Exhibit 47: History of IOF on foreign operations
Nothing has changed in a while

	9/19/2009	10/4/2010	10/18/2010	3/28/2011	4/6/2011	7/26/2011	12/1/2011	2/29/2012	3/12/2012	6/14/2012	12/5/2012	6/4/2013	6/4/2014	7/15/2016
Portfolio														
Fixed income	2%	4%	6%	6%	6%	6%	6%	6%	6%	6%	6%	0%	0%	0%
Equities	2%	2%	2%	2%	2%	2%	0%	0%	0%	0%	0%	0%	0%	0%
Deposit margin on derivatives	0.38%	0.38%	6%	6%	6%	6%	6%	6%	6%	6%	6%	0%	0%	0%
External loans														
90 days	5.38%	5.38%	5.38%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
180 days	0%	0%	0%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
270 days	0%	0%	0%	6%	6%	6%	6%	6%	6%	6%	6%	6%	0%	0%
1 year	0%	0%	0%	6%	6%	6%	6%	6%	6%	6%	6%	6%	0%	0%
2 years	0%	0%	0%	0%	6%	6%	6%	6%	6%	6%	0%	0%	0%	0%
3 years	0%	0%	0%	0%	0%	0%	0%	6%	6%	0%	0%	0%	0%	0%
5 years	0%	0%	0%	0%	0%	0%	0%	0%	6%	0%	0%	0%	0%	0%
Long BRL positions on FX derivatives*	0%	0%	0%	0%	0%	1%	1%	1%	1%	1%	1%	0%	0%	0%

Note: *On 16 March 2012, the government reduced the bracket from 1% to zero for export hedges
Source: BCB, Finance Ministry, BofA Global Research

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2.3 External Debt Market

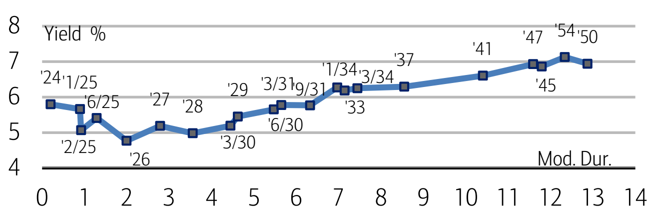
- Brazil is one of the largest sovereign external bond issuers in emerging markets.
- Brazil CDS are the 5th most actively traded in EM and DM sovereign and corporate CDS, with close to US$73bn traded in the first three quarters of 2023, 11% of top 10 CDS trading volume.

Brazil is the 9th largest sovereign external bond issuer out of 73 EM countries that have external index-eligible debt. It is 3% of the ICE BofA external sovereign debt index (EMGB) and 3% of the JPMorgan EMBI Global Index, trailing Saudi Arabia, Indonesia, Türkiye, Mexico, Romania, United Arab Emirates, Philippines, and Qatar.

Brazil has US$50bn outstanding in 22 bonds, almost all of which are fairly liquid USD-denominated bullet bonds. The most liquid are the newest issues, Brazil '33, '34, '50 and '54.

Brazil has the 4rd largest EM Corporate market in the world with $96bn outstanding bonds, trailing only China, Mexico and Korea. Petrobras is the 20th largest EM corporate issuer with $12bn face outstanding, is one of the top 7 most actively traded issuers among all EM Corporate[6].

Exhibit 48: Brazil bond yields are in the 5 - 7% range
Brazil USD sovereign bonds yield curve



Source: BofA Global Research, Bloomberg. Note: data as of January 30.
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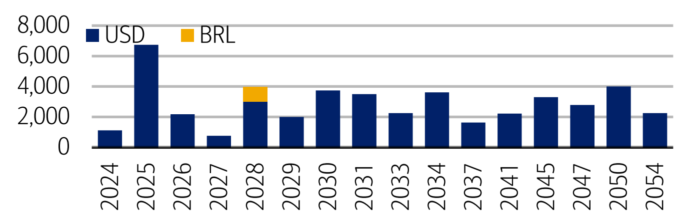
Exhibit 49: Heaviest debt burden is in 2025
Brazil debt maturity profile - principal only, in US$mn



Source: BofA Global Research, Bloomberg. Note: data as of January 30.
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Liability management very active

Brazil engages in frequent liability management activities, buying back short maturity debt and issuing longer 10y and 30y bonds. These operations improve liquidity for investors and improve Brazil's debt profile by reducing rollover risk. Exhibit 48 shows the yield curve for the USD bonds. Exhibit 49 shows the debt maturity profile for all external debt. Exhibit 50 shows the outstanding bonds, with valuation statistics, Exhibit 51 shows the main comparative countries and Exhibit 52 shows Brazil's rating history.

Credit default swaps very liquid

Brazil's credit default swaps are now in the 5th place of most actively traded CDS among all global sovereign and corporate single name CDS, preceded by Italy, China, South Africa and Turkiye. Brazil had previously ranked #1 through 2021 even out-ranking US Corporates. About $73bn Brazil CDS were traded in the first 3 quarters of 2023, according to DTCC. The most liquid tenor is the 5y. This CDS is often chosen as the instrument to hedge general emerging market debt risk due to its liquidity.

[6] Measured by Trace trading volume

Exhibit 50: Brazil has US$50bn outstanding in 22 bonds. US$45bn are USD-denominated and US$5bn BRL-denominated global bonds
Brazil sovereign bonds in US$bn

Bond	Coupon	Maturity	Currency	Price	Sinkable	Callable	Yield	Z spread	Mod Duration	Amt outstanding (US$ bn)	Issue date	ISIN
'24	8.875	4/15/2024	USD	100.59	N	N	5.8	49	0.20	1.03	3/22/2001	US105756AR10
'1/25	4.25	1/7/2025	USD	98.73	N	N	5.7	79	0.89	4.30	11/1/2013	US105756BV13
'2/25	8.75	2/4/2025	USD	103.57	N	N	5.1	24	0.92	0.69	2/4/2005	US105756BF62
'6/25	2.875	6/6/2025	USD	96.75	N	N	5.4	85	1.29	1.75	6/10/2020	US105756CD06
'26	6	4/7/2026	USD	102.51	N	N	4.8	62	1.99	2.18	3/17/2016	US105756BX78
'27	10.125	5/15/2027	USD	114.72	N	N	5.2	128	2.78	0.77	6/9/1997	US105756AE07
'28	4.625	1/13/2028	USD	98.73	N	Y	5.0	118	3.55	3.00	10/13/2017	US105756BZ27
'3/30	12.25	3/6/2030	USD	136.44	N	N	5.2	146	4.44	0.24	3/6/2000	US105756AL40
'29	4.5	5/30/2029	USD	95.64	N	Y	5.5	173	4.62	2.00	3/28/2019	US105756CA66
'6/30	3.875	6/12/2030	USD	90.60	N	N	5.7	196	5.47	3.50	6/10/2020	US105756CC23
'3/31	6.25	3/18/2031	USD	102.73	N	N	5.8	208	5.65	2.00	11/20/2023	US105756CG37
'9/31	3.75	9/12/2031	USD	87.70	N	N	5.8	208	6.32	1.50	7/7/2021	US105756CE88
'1/34	8.25	1/20/2034	USD	114.49	N	N	6.3	257	6.96	1.37	1/20/2004	US105756BB58
'33	6	10/20/2033	USD	98.64	N	N	6.2	249	7.14	2.25	4/13/2023	US105756CF53
'3/34	6.125	3/15/2034	USD	99.06	N	N	6.2	255	7.44	2.25	1/29/2024	US105756CH10
'37	7.125	1/20/2037	USD	107.28	N	N	6.3	257	8.55	1.63	1/18/2006	US105756BK57
'41	5.625	1/7/2041	USD	90.10	N	N	6.6	287	10.40	2.22	10/7/2009	US105756BR01
'47	5.625	2/21/2047	USD	85.10	N	N	6.9	323	11.59	2.79	7/28/2016	US105756BY51
'45	5	1/27/2045	USD	79.43	N	N	6.9	314	11.79	3.30	8/1/2014	US105756BW95
'54	7.125	5/13/2054	USD	99.97	N	N	7.1	350	12.34	2.25	1/29/2024	US105756CJ75
'50	4.75	1/14/2050	USD	73.81	N	Y	6.9	328	12.87	4.00	11/14/2019	US105756CB40
'28	10.25	1/10/2028	BRL	103.56	N	N	9.1	na	3.19	4.76	2/14/2007	US105756BN96

Source: BofA Global Research, Bloomberg. Note: data as of January 30.

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Exhibit 51: Brazil has the same rating as the overall index of BB-rated sovereigns, but trades at tighter spreads
Key bond index indicators

Country	Rating	Yield	Coupon	Spread	Duration	Price	FV ($bn)	# of Issues	% of BB Index
Azerbaijan	BB1	5.9	3.9	190	5.9	88	1	2	1%
Paraguay	BB1	6.1	5.0	186	8.0	92	6	9	4%
Brazil	**BB2**	**5.9**	**5.2**	**171**	**6.2**	**93**	**39**	**17**	**27%**
Guatemala	BB2	6.4	5.5	221	6.7	95	8	12	5%
BB-Rated Sovs	**BB2**	**6.3**	**5.5**	**207**	**6.5**	**94**	**146**	**110**	**100%**
Morocco	BB1	6.0	4.7	191	7.3	88	6	6	4%
South Africa	BB3	7.1	5.5	293	6.8	86	20	14	12%
Colombia	BBB3	7.1	5.3	290	8.1	85	36	19	N/A
DomRep	BB3	6.5	5.9	234	7.0	94	26	16	18%

Source: BofA Global Research, ICE Data Indices LLC, Bloomberg. Note 1: Colombia is not part of the ICE BB-rated index (I1GV) because its average credit rating rounds up to BBB3. We include Colombia for comparison purposes since it has two BB1 ratings. Note: data as of January 30.

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Exhibit 482: Brazil is rated as Ba2/BB/BB by Moody´s, S&P and Fitch
Brazil sovereign ratings history

Year	Moody's	S&P	Fitch
2002	B2	B+	-
2004	B1	BB-	-
2005	Ba3	BB-	-
2006	Ba2	BB	BB
2007	Ba1	BB+	BB+
2008	Ba1	BBB-	BBB-

Year	Moody's	S&P	Fitch
2009	Baa3	BBB-	BBB-
2011	Baa2	BBB	BBB
2014	Baa2	BBB-	BBB
2015	Baa3	BB+	BB+
2016	Ba2	BB	BB
2018	Ba2	BB-	BB-

Year	Moody's	S&P	Fitch
2019	Ba2	BB-	BB-
2020	Ba2	BB-	BB-
2021	Ba2	BB-	BB-
2022	Ba2	BB-	BB-
2023	Ba2	BB	BB
2024	Ba2	BB	BB
Outlook	Stable	Stable	Stable

Source: BofA Global Research, Bloomberg. Note: 2024 and outlook data as of January 30.

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A note on the new green bond and on the BRL external law bond

Brazil issued its first green bond in Nov'23, a $2bn 6.25% coupon March 2031 bond. Brazil previously issued BRL bonds, which have the economics of a local law bond, but it pays in USD, is under New York law and is Euroclearable. These were Issued before 2008 when foreign investors had a large appetite for BRL bonds but did not have the ability to buy or hold them. Since then, international investors have become quite active in the local market, and thus the $4.8bn BRL bond maturing in 2028 now has low liquidity.

2.4 Corporate debt market

- BZ corporates underperformed EM for the first time since ‘16 with positive returns of +7.4% in ‘23 on a rough beginning of the year with the collapse of Americanas.
- Bond issuance from Brazilian corporates grew +12% YoY. Outstanding was up to $96bn.
- Brazil is the largest issuing country in Latam, excluding Pemex from MX totals.

Brazilian corporates bonds underperformed EM in 2023

In 2023, Brazilian corporate bonds (EBRZ index) underperformed EM corporates (EMCB) for the first time since 2016 with total returns of +7.4% in 2023 vs. +7.7% for EM and +8.9% for Latam (EMRL) as a whole. The underperformance came from both high-yield and investment-grade issuers and was concentrated at the beginning of the year due to the default of Americanas and other credits including Light, Gol and Oi. Brazil high-yield (EBRH) returned +7.8% vs +9.2% for EM HY (EBHB) and +10.6% for Latam HY (EMHL). In the investment-grade space, Brazil IG (EBRI) had a return of +6.8% last year vs. EM IG (EMIB) at +7.1% and LatAm IG (EMIL) at+7.1%. Brazil’s excess returns versus US Treasuries were +3.24% last year, the eighth year in a row in which Brazil had positive excess returns.

Exhibit 49: Annual total return (%) for Brazil investment grade/high yield vs. EM indices

Brazil corporate bonds had a positive total return of 7.4% in 2023

	Brazil	EM	Brazil IG	EM IG	Brazil HY	EM HY
Year	EBRZ index	EMCB index	EBRI index	EMIB index	EBRH index	EMHB index
2012	13%	16%	13%	13%	13%	23%
2013	-4%	-1%	-4%	-2%	-7%	1%
2014	3%	4%	3%	5%	3%	-1%
2015	-15%	1%	-15%	0%	-16%	3%
2016	25%	10%	23%	6%	26%	17%
2017	13%	7%	13%	6%	13%	9%
2018	2%	-1%	-1%	-1%	2%	-2%
2019	17%	12%	15%	12%	17%	13%
2020	9%	7%	10%	6%	9%	9%
2021	0%	-1%	-1%	0%	0%	-4%
2022	-8%	-14%	-12%	-14%	-6%	-15%
2023	7%	8%	7%	7%	8%	9%

Source: BofA Global Research, Bloomberg, ICE LLC

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Exhibit 50: Annual excess return (%) for Brazil investment grade/high yield vs. EM indices

Brazil corporate bonds had a positive excess return of +3.2% in 2023

	Brazil	EM	Brazil IG	EM IG	Brazil HY	EM HY
Year	EBRZ index	EMCB index	EBRI index	EMIB index	EBRH index	EMHB index
2012	10%	13%	10%	11%	11%	21%
2013	-1%	2%	0%	1%	-4%	3%
2014	-2%	-1%	-3%	0%	-1%	-4%
2015	-16%	0%	-16%	-1%	-17%	2%
2016	25%	8%	21%	5%	25%	16%
2017	12%	6%	11%	4%	11%	8%
2018	0%	-2%	-1%	-2%	1%	-4%
2019	10%	7%	7%	6%	11%	9%
2020	2%	1%	1%	-1%	2%	4%
2021	2%	0%	2%	2%	2%	-3%
2022	3%	-4%	2%	-3%	3%	-7%
2023	3%	4%	3%	3%	4%	5%

Source: BofA Global Research, Bloomberg, ICE LLC

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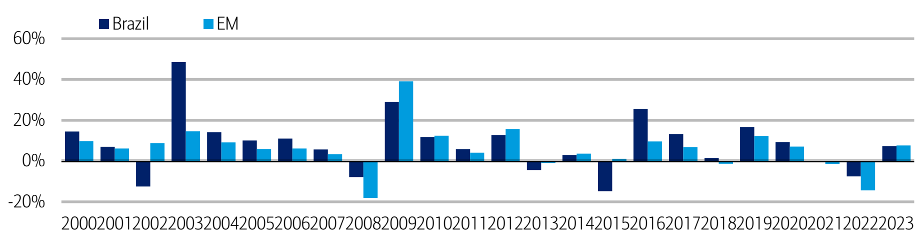
Exhibit 51: Total returns were negative due to UST widening, but excess returns were +3%

Brazilian corporate bonds (EBRZ index) underperformed EM for the first time since 2016



Source: BofA Global Research, Bloomberg, ICE LLC

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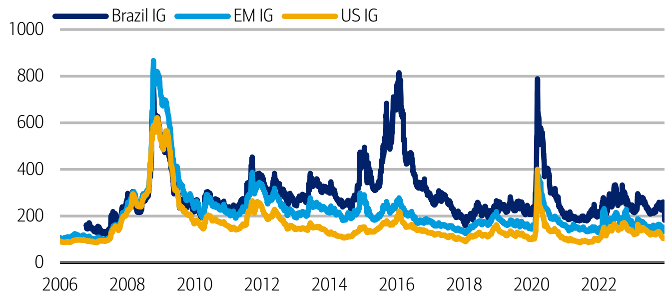
BZ HY trades tighter than EM HY

The Brazilian corporate index (EBRZ index) is currently trading with 288bps OAS and duration of 5.5 years, and trading +52bps wider to the overall EM corporate index (EMCB index) that trades at 236bps OAS with duration of 4.8 years. The spread differential is mainly driven by Brazil IG (EBRI index) which trades with 176bps OAS and +45bps wider to EM IG (EMIB index) and +75bps wider to US IG (C0A0 index). On the other hand, Brazil HY (EBRH index) trades with 348bps OAS, or -169bps inside EM HY (EMHB index) and +10bps wider to US HY (H0A0). Excluding China Real Estate from EM HY, Brazil HY still trades -139bps inside EM HY (ex-China Real Estate).

Exhibit 52: Brazil IG vs. EM IG vs. US IG – Historical OAS (bps)
Brazil IG is currently offering a spread pick-up between 45-82bps to EM & US IG



Source: BofA Global Research, Bloomberg, ICE LLC

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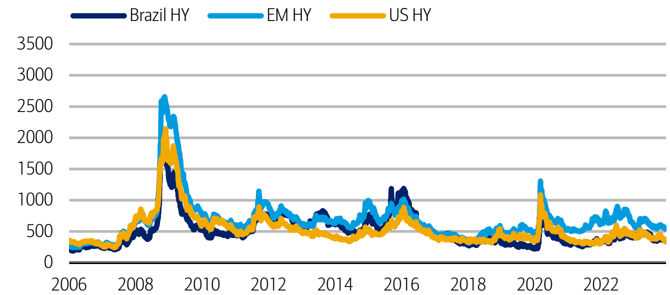
Exhibit 53: Brazil IG vs. EM IG vs. US IG – Historical OAS (bps)
Brazil IG is currently trading -169bps inside EM HY and +10bps wider than US HY



Source: BofA Global Research, Bloomberg, ICE LLC

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HY dominates the BZ bonds markets; IG is concentrated in a handful of issuers

The Brazilian corporate index (EBRZ index) is dominated by high-yield issuers representing 73% of the total outstanding while investment grade (IG) issuers represent the remainder 27%. Brazil has only seven investment-grade issuers: Suzano (40% of Brazil IG, EBRI index), Suzano (26%), Vale (23%), Gerdau (4%), Votorantim Cimentos (3%), Raizen (2%) and Guara Norte (2%). Nexa was recently upgraded by S&P to BBB- following Brazil Sovereign rating upgrade to BB, with the company now having two IG ratings. Within Brazil HY, there are 45 corporate issuers, with Petrobras being the largest (19% of Brazil HY), followed by Braskem (10%) while other issuers represent less than 5% of the outstanding each.

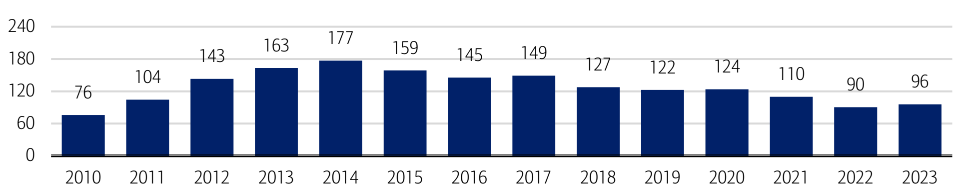
Energy, commodities, and financials are the most important sectors in BZ mkts

The energy sector dominates the Brazilian bond market with 23% of the total and Petrobras accounts for more than half of the sector. Food is the second largest sector with 21% of the index and JBS represents more than half of the sector. Pulp & Paper and financials are the third and fourth largest sector, with 11% and 10% of the index, respectively.

Brazil is the 4th largest issuer country in EM

Brazilian corporates account for 7% of the broad EM corporate bond outstanding (EMCB) vs. 6% in 2022. With $96bn of international bonds outstanding, Brazil ranks as the fourth largest country in EM. China, Mexico, and Korea are currently the top three corporate issuers in EM, with 21%, 10% and 8% of total EMCB index, respectively. If we exclude Pemex from Mexico's index, Brazil would be the largest issuer in Latam. The Brazilian foreign bond market peaked in 2014 with $ 177bn of bonds outstanding and has gradually declined reaching a bottom at $90bn in 2022.

Exhibit 54: Historical of outstanding bonds in the Brazilian market (EBRZ index – US$bn face value)
Brazilian corporates had US$ 96bn of bonds outstanding in 2023, +6% up YoY



Source: BofA Global Research, Bloomberg, ICE LLC

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Largest issuer in LatAm with issuance up +12% YoY

Bond issuance from Brazilian corporates grew +12% to $12bn in 2023, behind Korea ($47bn), China ($35bn) and Hong Kong ($17bn) for the year. Brazil was the largest issuer in LatAm in 2023, followed by Chile with $ 5.4bn of supply in the period. For 2024, we expect BZ corporate bond issuance to reach $14.5bn (+22% YoY).

Exhibit 55: EM corporate issuance per year (US$ bn)
Brazil was the fourth largest EM issuer in terms of new supply in 2023

Country	2019	2020	2021	2022	2023
China	197	197	171	74	35
Korea	26	26	37	30	47
Brazil	20	20	26	11	12
Hong Kong	20	20	19	10	17
India	27	27	25	10	11

Source: BofA Global Research estimates, Bond Radar

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Local debt market was weak in 2023

Local currency debenture issuance fell by -10% to $47bn in 2023. The local debenture market has outstanding of $270bn (vs. $281bn in Jan'23) with $19.4bn or 7% out of the total maturing in 2024.

Exhibit 56: Brazilian corporate issuance (US$ bn)
Brazilian international corporate bond issuance increased by +12% YoY in 2023

Year	Foreign Bonds	Debentures	Foreign Bonds + Debentures	Other local instruments*	Total
2015	8	18	26	10	36
2016	17	18	36	13	48
2017	28	28	56	22	78
2018	14	41	55	20	75
2019	24	47	70	29	100
2020	20	24	44	19	62
2021	26	46	73	33	106
2022	11	53	63	36	99
2023	12	47	59	32	91

Source: BofA Securities estimates, ANBIMA (Brazilian Association of Financial and Capital Markets), Bond Radar *Other local instruments: i) Commercial papers, ii) Financial bills, ii) CRA , iv) CRI and v) FIDC (Receivables Fund)

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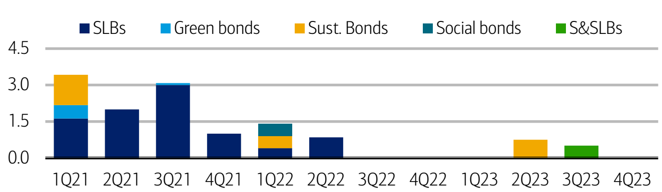
Labeled bond issuance fell substantially with only two transactions

The amount of green, social, sustainability, sustainability-linked or sustainability & sustainability-linked notes (collectively referred as labeled bonds) issued amounted to $1.3bn in FY23, a drop of -44% YoY while the overall Brazil corporate bond market was up by +12% YoY. There were only two labeled bonds issued in 2023: 1) sustainability-linked bond (SLB) issued Banco do Brasil, and 2) the first ever sustainability & sustainability-linked bond (S&SLBs) issued by Aegea. Brazil has $15.7bn of labeled bonds outstandings, or 16% of the Brazil index (EBRZ). Out of this total, 55% come from sustainability-linked bonds with largest issuing sectors being Pulp & Paper (36% of total labeled o/s), Financials (18%) and Protein (15%).

Exhibit 57: Brazilian labeled bond issuance in 2021-2023
Brazilian labeled bond issuance amounted US$ 1.3bn in '23 (-44% YoY)



Source: BofA Global Research estimates, Bond Radar

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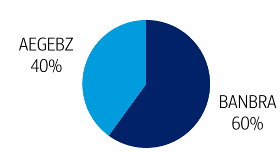
Exhibit 58: Brazilian labeled bond issuance by company
Banco do Brasil and Aegea were the only issuers in 2023



Source: BofA Global Research estimates, Bond Radar

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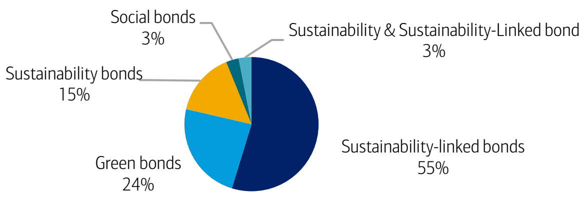
Exhibit 59: Labeled bond breakdown – by instrument (EBRZ index)
Sustainability-linked bonds are 55% of current outstanding



Source: BofA Global Research, Bloomberg, ICE LLC

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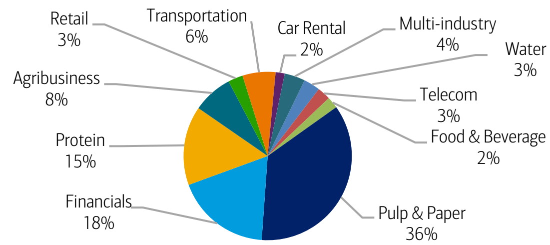
Exhibit 60: Labeled bond breakdown – by sector (EBRZ index)
Pulp & Paper, Financials and Protein are the top three sectors



Source: BofA Global Research, Bloomberg, ICE LLC

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Brazil issued 14 foreign bonds in 2023

There were 14 international bonds issued from Brazilian corporates in 2023 with only 2 being labeled bonds compared to 18 bonds (5 labeled bonds) issued in 2022. Most of the bond issuance came from Braskem and JBS, with four transactions that amounted to US$4.3bn or 37% of total the supply in Brazil last year. Vale and Petrobras also tapped the bond market in 2023 by issuing $1.5bn and $1.25bn, respectively.

Exhibit 61: Bonds issued by Brazilian entities in 2023
Brazilian bonds issuance totaled US$ 11.9bn, +12%% up YoY. Out of this total, 11% was related to labeled bonds

Month	IssuerName	Ticker	Coupon	Maturity	Currency	Industry	Amount (US$ mn)	Type
Feb-23	BRASKEM	BRASKM	7.250	2033	USD	Chemicals-Diversified	1,000	-
Apr-23	BANCO DO BRASIL	BANBRA	6.250	2030	USD	Commer Banks Non-US	750	Sustainability bond
Jun-23	VALE SA	VALEBZ	6.125	2033	USD	Metal-Iron	1,500	-
Jun-23	COSAN	CSANBZ	7.500	2030	USD	Oil Refining&Marketing	550	-
Jun-23	PETROBRAS	PETBRA	6.500	2033	USD	Oil Comp-Integrated	1,250	-
Jul-23	AZUL SA	AZUBBZ	11.930	2028	USD	Airlines	800	-
Jul-23	EMBRAER SA	EMBRBZ	7.000	2030	USD	Aerospace/Defense	750	-
Sep-23	JBS USA	JBSSBZ	6.750	2034	USD	Food-Meat Products	1,600	-
Sep-23	JBS USA	JBSSBZ	7.250	2053	USD	Food-Meat Products	900	-
Sep-23	MINERVA	BEEFBZ	8.875	2033	USD	Food-Meat Products	900	-
Sep-23	BRASKEM	BRASKM	8.500	2031	USD	Chemicals-Diversified	850	-
Sep-23	AEGEA SANEAMENTO	AEGEBZ	9.000	2031	USD	Water	500	Sustainability & Sustainability-Linked bond
Oct-23	CREDITAS FINANCIAL SOLUTIONS	CREDFN	13.000	2026	USD	Finance-Consumer Loans	40	-
Nov-23	COMPANHIA SIDERURGICA NACIONAL (CSN)	CSNABZ	8.875	2030	USD	Steel-Producers	500	-

Source: BofA Global Research, Bond Radar

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Four issuers trading at distressed levels: Gol, Abra, Azul and Coruripe

There are currently four issuers trading at distressed levels (OAS above 1,000bps) in the Brazil index (EBRZ). Gol, Azul and Abra are three of the distressed names, from the airlines sector, and are currently trading between 1,161bps and 10,000bps OAS spreads. Gol has two bonds of $342mn and $251mn, each maturing in 2025 and 2026, while Azul has one bond of $570mn with maturity in 2030. Abra's $977mn bond is due in 2028 while Coruripe's $300mn notes mature in 2027.

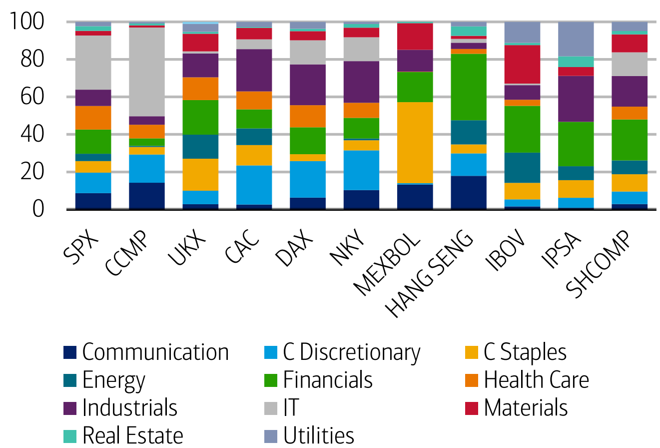
2.5 Local equity market

- Brazil has a market cap close to R$4.5tn (US$0.9tn), with 379 listed companies and an average daily trading volume of $5.1bn in the last six months.
- Equity trading is concentrated in B3, a for profit exchange created in 1845 that consolidated all of the exchanges in Brazil.
- B3 has three differentiated listing levels, including Level 1, Level 2 and Novo Mercado with stricter levels of corporate governance for each.

R$4.5tn market cap, 379 listed companies

Brazil's market cap is currently at R$4.5tn, distributed across 379 listed companies. Brazil represents close to 6% of the Emerging Markets Index and 61% of the Latin American Index. Liquidity is still concentrated in three main sectors: Financials, Materials and Energy (61% of local index, Ibovespa). The share of commodities currently sits around 36% of the index, above historical average (34%).

Exhibit 62: Sector weights as percentage of country/region
Ibovespa is more biased towards commodities



Source: BofA Global Equity Strategy, Bloomberg

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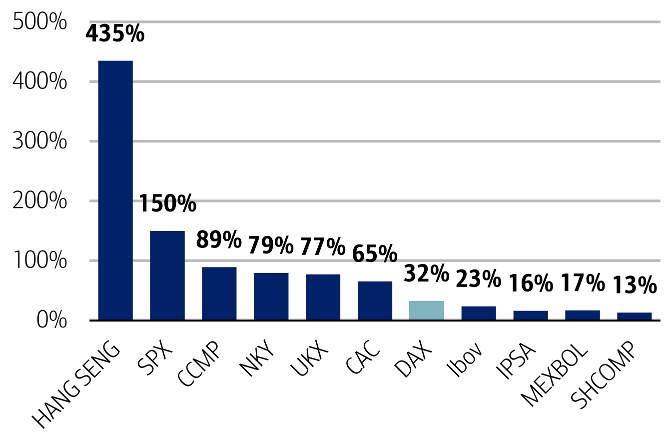
Exhibit 63: Market cap free float as percentage of 2022 GDP
Brazil equity market is a small fraction of the country's GDP



Source: BofA Global Research ,World Bank, Bloomberg

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B3: monopolistic

The Bolsa Livre (Free Exchange) was created in 1890 and consolidated other exchanges in Brazil over time. In 2008, BM&F and Bovespa combined to create Bovespa Holding, consolidating equity, FX, futures, rates, derivatives and options trading. All trading moved to an electronic platform in 2002. In 2017, BM&FBOVESPA and CETIP (a financial services provider for the organized OTC market) activities were combined. As such, B3 S.A. – Brasil, Bolsa, Balcão was established.

In Brazil, stocks are delivered two days after the trade (D+2) and financial liquidation happens three days after the trade (D+3). Brazil has a fairly liquid stock loan market, with more than R$124bn of outstanding loans in the market currently. The development of the long short industry increased demand for stock loans.

Novo Mercado: improving corporate governance

A corporate law (Lei das S.A.) and the Comissao de Valores Mobiliarios (CVM), Brazil's Securities Exchange Commission, have governed the Brazilian corporate sector since 1976. However, B3 created voluntary and distinguished levels of listing based on certain corporate governance standards, following incidents where minority shareholder rights were abused. The goal was to align the interests of the controlling shareholder and minority shareholders as much as possible.

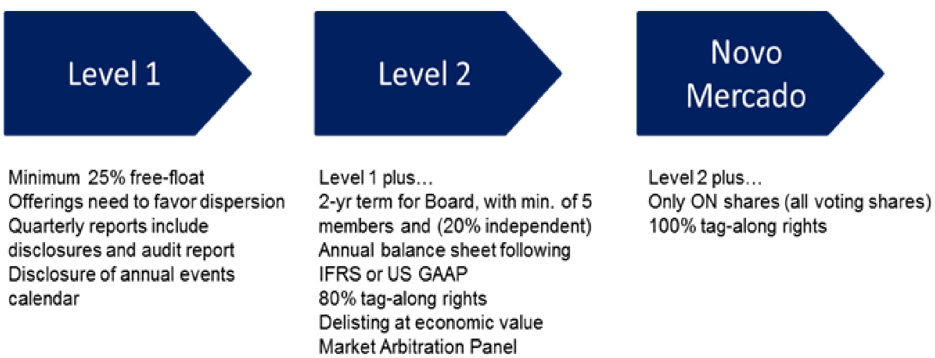
B3 created the following distinguished listing levels: Novo Mercado (highest level of corporate governance, currently with 195 companies), Level 2 (21 companies) and Level 1 (24 companies).

To be listed on Novo Mercado, a company must have 1) only ON (voting) shares; 2) 100% tag along rights (in case of a change in control, the offer would extend to all shareholders at 100% of the price offered to the controlling shareholder); 3) a minimum 20% of free float; 4) a mandatory offer to buy out all shareholders at economic value in case of delisting; and 5) any dispute between minority and controlling shareholders adjudicated by B3 Arbitration Panel.

In Feb-23, B3 reduced the Novo Mercado free float requirement from 25% to 20% (in line with international standards). New entrants for all listing levels can have free float share even lower than 15% if they meet governance requirements and if the initial public offer is at least R$1bn.

Levels 1 and 2 are also differentiated listings, but not as strict as the Novo Mercado. Exhibit below summarizes the key differences in each listing.

Exhibit 64: Novo Mercado and levels of corporate governance
Novo Mercado has the highest level of corporate governance. It currently has 195 companies.



Source: B3

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Ibovespa: free float-based index

The Bovespa Index (Ibovespa) is Brazil's main equity index benchmark. It is a cumulative index, so its value represents the current value of a portfolio that began on 2 January 1968, with a starting value of 100. The index is rebalanced every four months. The main criteria for the Ibovespa are:

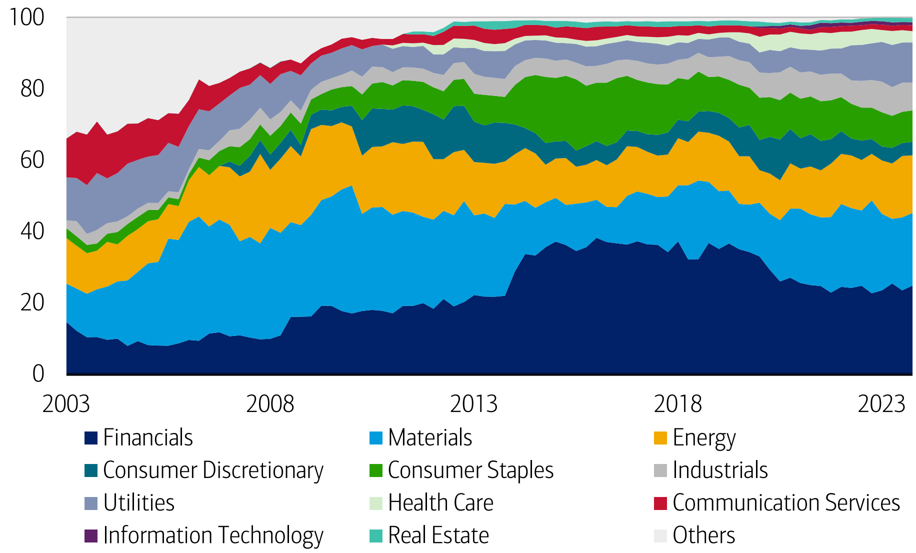
- Weighting criteria based on free float with a 2x liquidity cap.
- The tradability index giving a greater weight to trading volumes (two-thirds) compared to the number of trades (one-third).
- Criteria for inclusion: 1) stocks within the 85% highest tradability index; 2) stocks that traded in at least 95% of the trading days in the three previous indexes; 3) stocks with a volume share of volume of at least 0.1%; and 4) stocks valued above R$1.0 per share (no penny stocks).
- Criteria for exclusion: 1) stocks not within the 90% lowest tradability index; 2) stocks valued below R$1.0/share (penny stocks); and 3) stocks that enter special situations (bankruptcy), with such stocks removed by the end of the first trading day after the announcement of the special situation.

From communications to commodities to banks

The sectors with the highest weights in the Ibovespa have changed significantly over the last 15 years. For example, Communications (Telecom) had one of the highest weights in 2005, but now other sectors are much more relevant such as Financials and Materials.

Exhibit 65: Sector Weight in Ibovespa

Since 2008 Ibov's composition changed and Financials had the largest expansion



Source: Bloomberg

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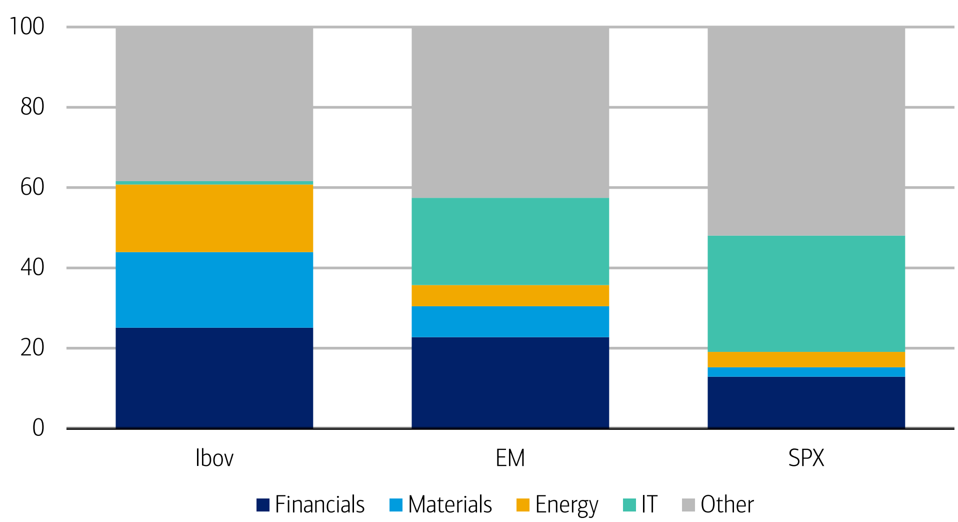
Ibovespa is biased towards value strategies

Materials and Energy are sectors that often appear in "value" screens given their lower multiples, and combined they represent more than 30% of the Ibovespa. Within the MSCI EM they are only 13% and within the S&P500 close to 6%. Also, IT (which often is considered a "Growth" type sector) is virtually nonexistent within the Ibovespa but it's the largest sector in both the MSCI EM and the S&P500.

Exhibit 66: Ibov vs global indices sector composition

Ibov has more bias towards sectors often categorized as "value" strategies



Source: Bloomberg

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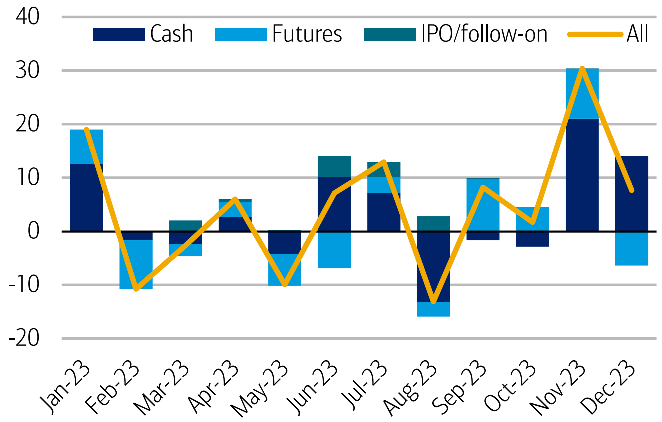
IBX: a pure free-float based index

The IBX is Brazil's second most important equity index. The IBX's methodology is more straightforward, as it encompasses the 100 stocks with the highest tradability index, and weights based on free float. Like the Ibovespa, the IBX is rebalanced every four months.

Foreign flow into B3 was positive in 2023

Foreign participation in trading volume actually increased over the past 10 years from 35.2% in 2008 to 56% in Dec-23. That said, foreign flow into Brazil local exchange was positive in 2023. We observed a pick-up in foreign inflows in the last 2M of 2023: R$41bn, mostly into cash equities. In 2023 altogether we saw R$60bn inflows (considering cash, futures and IPO/follow-ons). IPO activity in muted in Brazil since 2021, when IPOs and follow-ons reached R$130bn total volume, Exhibit 72).

Exhibit 67: Foreign flow to B3 (R$bn), Jan-23 to Dec-23 MTD
R$41bn into cash equities in 2023.



Source: BofA Global Research, Bloomberg, B3

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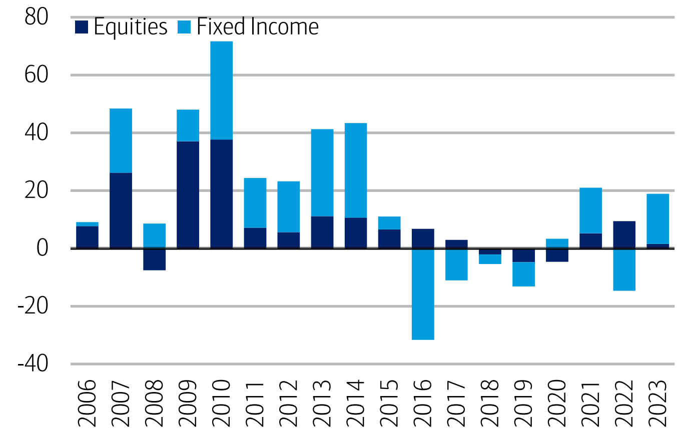
Exhibit 68: Foreign portfolio investment (US$bn), 2006 to 2023
2021 was market by equities inflows after two years marked by outflows



Source: BCB, BofA Research Global

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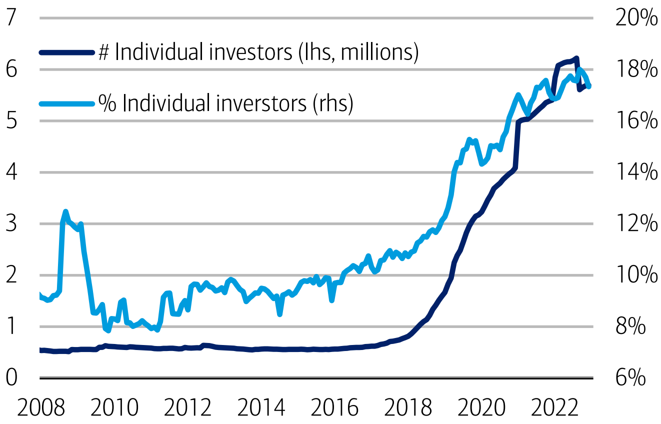
Individual investors increase their participation in B3

The participation of Brazil individual investors in trading volume surged to 27% in Jul-20, but it has been declining since then, reaching 15% in Dec-23 (Exhibit 70). Individuals' participation remains low compared to foreign investors, which account for 56% of trading volume. Ownership of individual investors in B3 remains fairly low at only 17%, vs 38% for foreign investors and 18% or institutional investors.

Exhibit 69: Individual investors depositary ownership and # of accounts
Individuals depositary ownership increased because the number accounts surged



Source: BofA Global Research, B3

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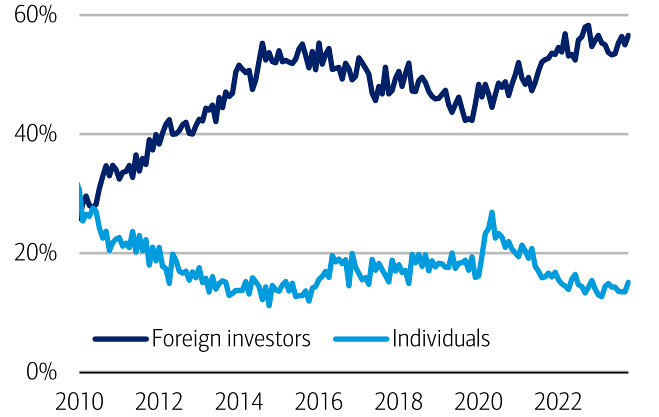
Exhibit 70: Foreign vs individuals participation in B3, 2010-2023
Foreign investors account for roughly 56% of trades



Source: BofA Global Research, B3

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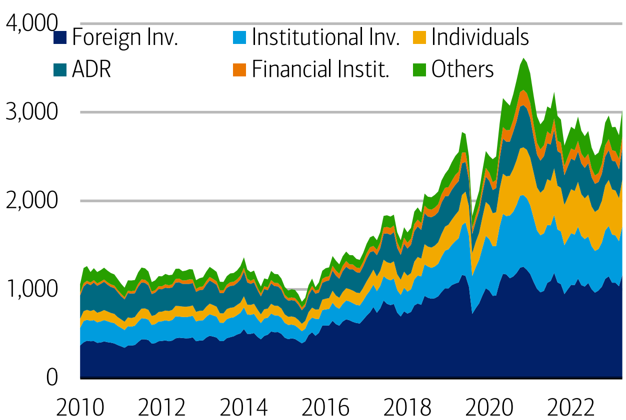
Exhibit 71: Investor ownership of B3 depositary (R$bn)
Foreigners have the largest ownership



Source: B3

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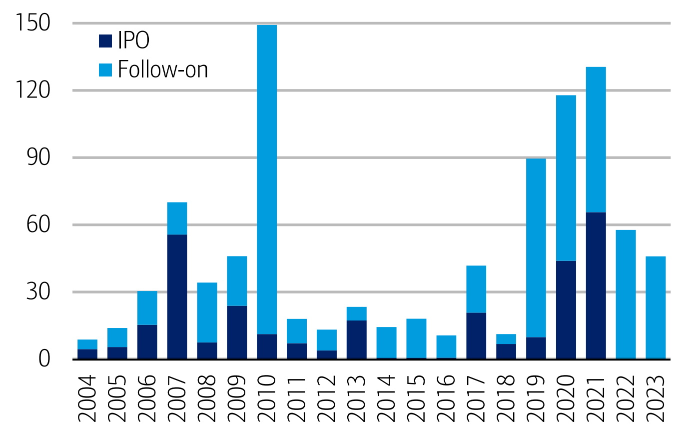
Exhibit 72: B3 IPOs and Follow-Ons (R$bn), 2004-2023
No IPOs since 2021



(*) Note: 2021 YTD
Source: B3

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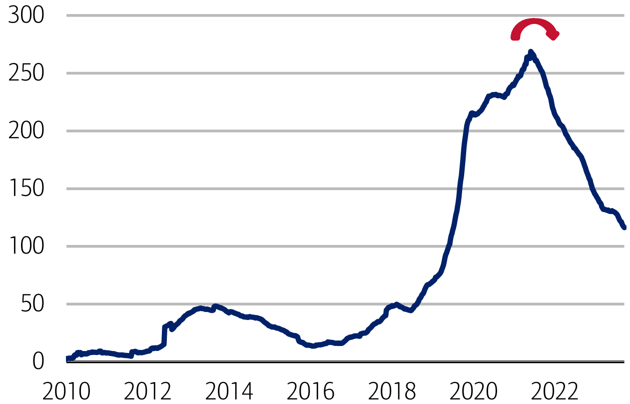
Local funds: rotation out of equities since Sep-21

Since Sep-21 we saw roughly R$150bn outflows from local equity funds. According to our weekly analysis, equity funds had R$57bn outflows in 2023 (16% of their AUM at the start of the year). Equity allocation of the local fund industry in Brazil fell from 9.6% in Jan-23 to lows in Oct-23 at 8.6%. Strong Ibov performance in the following month helped allocation to rise to 9.1% in Nov-23 (Exhibit 74). Historical lows were around 8% in 2017 after selic rate was around 14%.

In our view, equity allocation could continue to rise in 2024 if rates continue to decline in the region. In our LatAm Fund Manager Survey, investors said individuals will rotate into equities when selic reaches around 9% (Brazil selic rate at 11.75% today).

Exhibit 73: Inflows to Brazil local equity funds (R$bn)
We saw R$76bn outflows from local equity funds in 2023.



Source: BofA Global Research, Economatica

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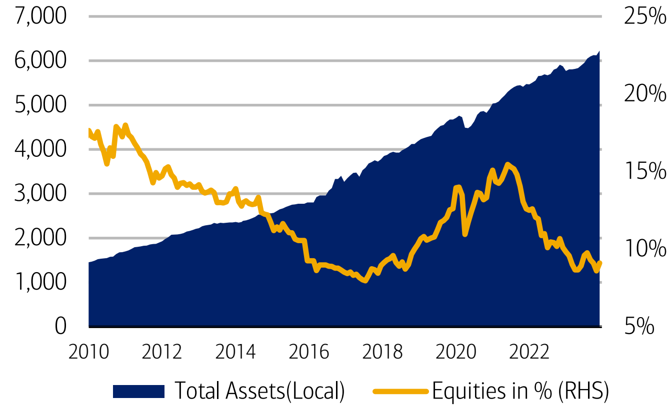
Exhibit 74: Brazil mutual funds allocation to equities (R$bn), Jan-10 to Nov-23
Allocation to equities at 9.1% in Nov-23.



Source: BofA Global Research, Anbima

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Brazil local ETFs still tiny. Growth stagged in the last 2y

ETFs are still in expansion in Latin America and Brazil, as total AUM is close to 2% of the region market cap, below EM peers and well lower than compared to US. Most of the region ETFs are foreign listed and Brazil currently accounts for nearly 56% of these assets. Brazilians are used to invest through open-ended funds and this might have slowed the expansion of ETFs in the country. But local ETFs grew fast in the last 6 years, jumping from near R$7bn in 2017 to R$41bn in 4Q23. On a local basis, Brazilian ETFs are still a mere fraction of the local equity funds industry (41bn vs 566bn).

ETFs are still the main driver of foreign flows

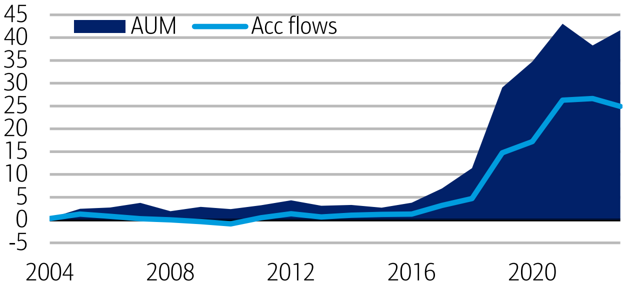
Even though ETFs in the region are small both compared to other regions and to LatAm's market cap, these are still the main driver of inflows in the region since 2018. EPFR data shows that foreign equity funds dedicated to Latin American had US$4bn inflows since 2018.

Additional ETF liquidity is a big bonus for investors

LatAm markets are small and illiquid by global standards. ETFs bring much needed additional liquidity to the region. For example, the EWZ (which is the biggest and most liquid ETF in LatAm and tracks the MSCI Brazil 25/50) historically created additional liquidity of close to 32% of that of the MSCI Brazil. On the other hand, local ETFs aren't as liquid when compared to the Ibovespa.

Exhibit 75: Brazil local ETFs (both Fixed Income and Equity) AUM and accumulated flows (R$bn, 2004 to 2023)

Brazil local ETFs AUM is stable since 2021.



Source: BofA Global Research, ANBIMA

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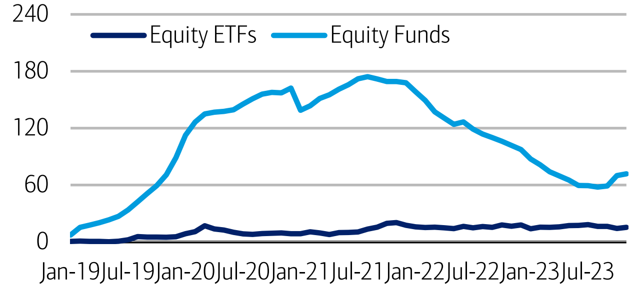
Exhibit 76: Flows to local ETFs are still shy (R$bn)

ETFs AUM are still a mere fraction of local equity funds



Source: BofA Global Research, Anbima

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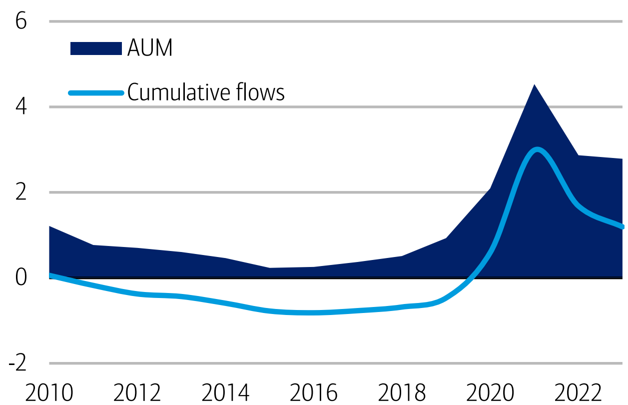
2.6 ESG investing: What's new?

Outflows from Brazil ESG funds slowed down in 2023

In 2023, our data shows R$0.5bn outflows from Brazil ESG funds (vs R$1.3bn outflows in 2022, Exhibit 77). We also saw a slowdown in outflows from equity funds (R$57bn outflows in 2023 vs R$76bn in 2022, Exhibit 78). Local ESG funds in Brazil are still tiny, but doubled in the past 5 years. Using Economatica data, we estimate Brazil local funds that are categorized as ESG have only R$2.8bn AUM, which represent around 1% of total AUM of local equity funds. In Sep-21, flows into local broad equity funds in Brazil peaked. The move started when interest rates started to go up and individuals migrated out of equities and into fixed income.

Exhibit 77: Brazil local ESG funds AUM and Flows (R$bn)
AUM and flows are slowing down...



Source: BofA Global Research, Economatica

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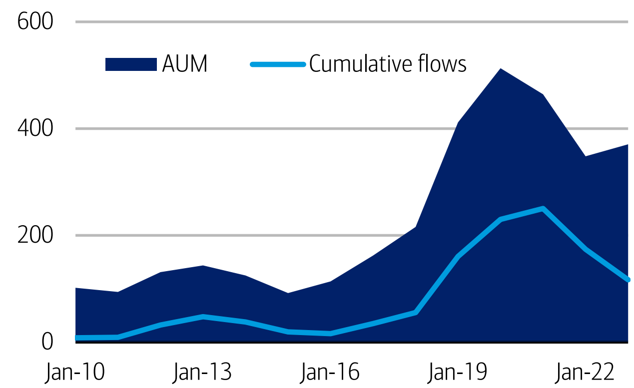
Exhibit 78: Local equity funds AUM and Flows (R$bn)
...but AUM remains modest compared to total equity funds



Increase in total assets reflects flows, performance and funds added to the sample.
Source: BofA Global Research, Economatica

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More rules for ESG-labeled funds in Brazil

Brazil is the country in LatAm with the most regulation related to ESG corporate disclosure and categorization of local investment funds. Effective in 2023, resolution CVM 59 issued by CVM (Brazil local regulator for capital markets) established disclosure thresholds for Brazilian corporations. The text focuses on reporting requirements and ESG risk management. This regulation is based on European regulations (EU 2021/1253).

Publicly traded companies are now obligated to incorporate ESG factors into their activities and report ESG related data, or either explain why ESG practices are not considered. Companies should indicate (i) if the ESG disclosure is reported in annual reports or separated (ii) reporting standards (iii) if the report is audited by an independent party (iv) structure of report (v) key ESG performance indicators and targets (vi) if they meet with the Sustainable Development Goals (SDGs) of the United Nations (vii) if they consider climate change issues in their operating activities (viii) greenhouse gas emissions inventories. (IX) if they do not comply with the previous guidelines and explain why.

Brazil is fighting against "Greenwashing"

The resolution CVM 175 became effective in Oct-23, and it brings Brazil closer to international standards on investment funds framework. Among the main advances, the resolution CVM 175 established rules for identifying investments funds related to sustainability, which is key for fighting greenwashing. According to the regulation, funds described as "ESG", "environmental", "green", "social", "sustainable" or any term related to sustainable finance must report:

1) What are the ESG measures adopted; 2) What principles and guidelines are followed according to the denomination; 3) ESG certificates; 4) What is the report format and periodicity of ESG-related analysis.

First sustainable sovereign green bonds in Brazil

In Sep-23, the Brazil government launched the Ecological Transition Plan. The plan aims to increase investments in sustainable projects while reducing social inequality. The government also outlined the plans for sustainable sovereign bond issuance in the upcoming months. According to the Brazil Finance Ministry, the "green bonds" issuance should initially generate around R$10bn (approximately US$2bn). The sovereign sustainable bond framework includes criteria for such bonds in 17 areas including: pollution control, clean transportation, and renewables.

Coming soon: carbon credit market framework

The Brazilian lower house approved in Dec-23 a bill creating Brazil's carbon credit market framework (PL 2148/15). The bill establishes a "cap-and-trade" system, which regulates industry emissions.

Earlier in May-23, the Brazilian senate approved a provisional measure (No. 1.151/2022) which enables the development of a carbon credit market and other economic activities in public conservation units, through concessions.

Green taxonomy in Brazil could become effective in 2026

In Sep-23, the Brazilian government opened a public consultation for the first Brazilian taxonomy. The project is called "Sustainable Taxonomy Action Plan". Similar to the Mexican taxonomy, the proposal includes social goals, like gender equality and diversity. The environmental objectives are focused on the climate change theme, protection of biodiversity and ecosystems, sustainable water and soil management and transition to a circular economy. A new aspect of Brazil and Chile taxonomies is the inclusion of extractive activities within their taxonomy sector coverage. As there is no precedent in international guidelines, Brazil and Chile are expected to pioneer on developing an entirely new taxonomy for extractive industries.

Energy transition in Brazil: what to expect in the future

Brazil's current administration has expressed a desire to speed up the transition to renewables. President Lula has said new energy contracts would be as relevant as the biggest hydroelectric plants and that Brazil would become a "green hydrogen powerhouse." Solar and wind power generation will likely continue to grow, in our view (Exhibit 79).

Brazil's state-controlled oil company, Petrobras, is frequently in the spotlight when such discussions rise. The company intends to net zero its greenhouse gases emissions by 2050. Wind power is among the preferred strategic plans by 2027. The company is studying offshore wind power generation projects, with 14.5GW energy capacity.

A Worldbank study showed that Brazil has the potential to generate 1.2TW of offshore wind power, which is roughly the total energy capacity generation of Europe in 2020.

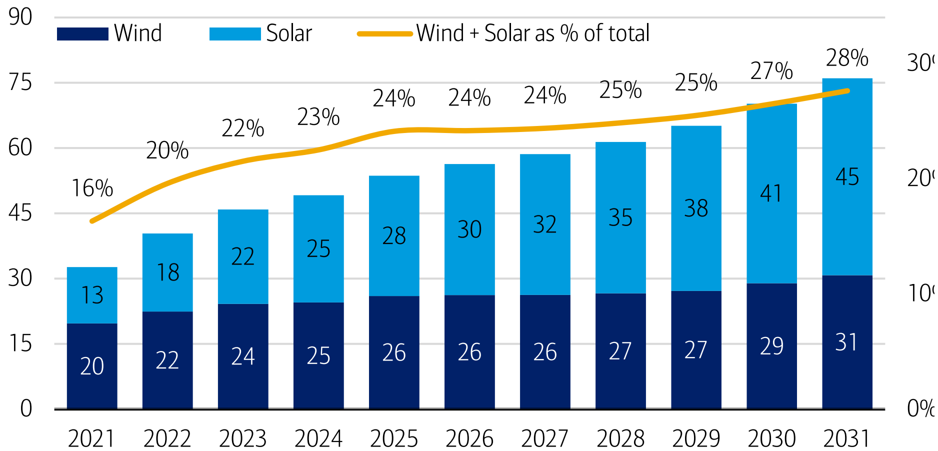
Wind conditions in Brazil are better than world's average. According to ABEEólica (Brazilian association of wind power companies) Brazil wind capacity efficiency is 42%, which is an indicator of the electrical energy produced in a certain period divided by the total electricity capacity within the same period. The world average is around 25%.

Brazil also has significant potential in solar power generation. Its generation capacity is around 84% (electrical energy produced per year divided by total installed photovoltaic capacity). The world average is 38.

According to the Brazilian government, 70% of the solar energy produced in the country comes from small system generators installed on the roofs of homes. The new legal framework for solar energy approved in 2022 states that consumers who adhere to photovoltaic home systems would pay no energy taxes until 2045.

In 2022, the Senate approved a legal framework on offshore energy generation (either wind, solar or tidal power). The project aimed to diversify the Brazilian energy matrix and to attract investments to the sector. See our Brazilian Power Generation – Shining on Renewables for more.

Exhibit 79: Renewables will continue to gain share on energy matrix
28% of energy matrix will come from wind and solar in 2031



Source: EPE, BofA Global Research

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3. Challenges and accomplishments

3.1 Municipal elections in focus. Brazilian elections in 2024 are key for the federal government to obtain support and increase popularity. Currently, most city halls are controlled by opposition parties. Fiscal accounts are already under pressure this year, and elections can add another layer of challenge.

3.2 Reform agenda: much to be done. Eyes on the current government remain in the Tax Reform, as a simplification in the Brazil's system could lead to higher productivity.

3.3 Fiscal as the main challenge. A new fiscal rule was approved last year, and 2024 will be the first year that the mechanism will come into force. To maintain fiscal credibility in the medium term, structural reforms on the spending side are still necessary.

3.4 Tax reform: first phase completed. Changes in the Brazilian tax code have been discussed for more than 30 years in Congress. On December 15th, 2023, the Lower House (LH) approved the tax reform constitutional amendment. The approval of the reform was a big victory for the country, as the overhaul should simplify Brazil's tax system in the long term, increasing productivity ahead.

3.5 External policy: Increasing openness. Much can still be done to enhance efficiency and boost productivity in the Mercosur. Advancements in negotiation with the EU could boost trade over time. The new government is seeking to restore Brazil's image abroad, particularly focused on the ESG agenda and in strengthening relations with Europe.

3.6 Black gold winds lift the economy. The oil trade balance reached a record surplus of 1.3% of GDP last year. We expect it to peak at 2.3% of GDP in 2029. The oil boom is positive for growth, trade and fiscal.

Source: iStock

3.1 Municipal elections in focus

- Local elections this year to determine the mayors and local representatives for 5,570 municipalities.
- Elections are key for the federal government to obtain support and increase popularity. Currently, most city halls are controlled by opposition parties.
- Fiscal accounts are already under pressure this year, and elections can add another layer of challenge.

New administration came from a polarized election

In the last Brazilian presidential dispute, President Lula was elected for the third time, but this time by the tightest difference in the runoff since the return of civilian rule: around 2.1 million votes, or under 1% of total Brazilian population.

Such polarization was reflected in Congress as well, which shifted to a more right-leaning profile. However, after the cabinet reshuffle in the 1H23, government has been able to gather a significant base of support in the legislative branch. Focus now moves to the local elections.

Local elections are key to increase support

The 2024 municipal elections in Brazil are a significant event in the country's political calendar. Voters across the country will go to the ballots to choose mayors and councilors, who will play fundamental roles in the administration of their respective cities. These positions are crucial for parties' dynamics and local governance, as they directly impact the daily lives of citizens.

The Workers' Party (PT) used to oversee many city halls. However, this situation gradually reversed, dropping from the peak of 11% in 2012 to 3% in 2020 (Exhibit 1). So, the current administration started with few representatives in municipalities across the country, limiting the party's influence and popularity.

Having representatives in the city halls supports the president's popularity due to closer contact with the population. A reasonable popular support would prevent an increase in the pressure on the economic team led by Finance Minister, Fernando Haddad.

Exhibit 80: Center parties have carried most of the municipalities historically
Parties that won state capitals are key

	Number of mayors per party			
Party	**2008**	**2012**	**2016**	**2020**
(P)MDB	1201	1024	1028	784
PSDB	791	702	793	520
PSD	-	497	539	654
PP	551	469	494	685
PSB	310	442	413	403
PDT	352	311	334	314
PL/PR	385	275	295	345
DEM	496	278	265	464
PTB	413	295	262	212
PT	558	635	256	183
PPS/Cidadania	129	123	118	139
PRB/Republicanos	54	79	104	211
PV	75	96	101	47
Others	41	336	500	607
Total	5356	5562	5502	5568

Source: BofA Global Research, Arko Advice

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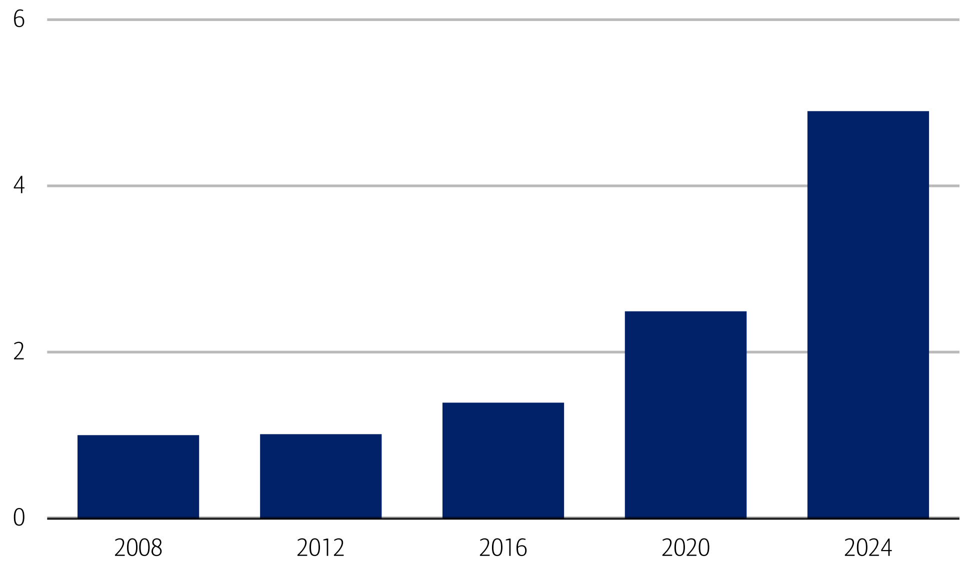
Elections in a challenging fiscal year

The 2024 Budget law set a record amount of R$ 4.9 bn to fund the local elections – 150% more than 2020. On May 15, pre-candidates will be able to start the campaign.

Another point that has an impact is that: as the campaigns begin, the agendas in congress will take longer to move. Thus, priorities should change and there will be less time to deal with relevant topics as VAT and income reform.

The 2024 fiscal year is challenging, due to the ambitious zero-deficit target for the primary balance. In addition, the elections exert two pressures: one directly with campaign spending and the other indirectly with processes moving more slowly in the legislature.

Exhibit 81: Expenditures in local elections will be a record this year
Amount foreseen in official budget. Inflation adjusted to 2023 prices. (BRL bn)



Source: BofA Global Research, TSE

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3.2 Reform agenda: much to be done

- Traditionally, Brazil has a large public sector relative to GDP. By the end of the 1970s, the model showed signs of stagnation and the government started to deregulate the economy. In the 1990s, focus on structural reforms increased.

- The last governments approved the labor and pension reforms. Eyes on the current government remain in the Tax Reform, as a simplification in Brazil's system could lead to higher productivity.

Brazil government intervention in the private sector and the large public sector relative to GDP can be traced back to President Getúlio Vargas' 1930-1937 administration. That period saw the wake of the Great Depression and the collapse of coffee prices, by far the most important segment of the Brazilian economy at that time. The peak of the government's interventionism and its role in economic activity spans from the 1950s to late 1970s and early 1980s. At that time, a structural approach was the main driver of economic policy, manifested during President Juscelino Kubitschek's Goals Plan (1956-60) and the Second National Plan for Development (1975-79), known as II PND, under General (then President) Ernesto Geisel during the military dictatorship.

Policy focused heavily on promoting industrialization by imports´substitution, through high import tariffs, quotas, and prohibition, as well as subsidies to key sectors. Numerous state companies were created, mainly in the infrastructure sector, with the fiscal deficit particularly high. Monetary policy centered on keeping the exchange rate devalued through periodic currency devaluation, adjusted for inflation, as a way to enhance competitiveness. However, by the end of the 1970s the model showed signs of nearing its limit; and after the Latin American credit crunch in the 1980s, the government had no way to finance itself anymore. The model collapsed, with average GDP growth plunging to 1.7% from 8.7% in the 1970s and average inflation jumping to 370% from 30% per year.

In the wake of the stabilization plans in the 1980s and 1990s, the government started to deregulate the economy to boost efficiency and improve fiscal accounts. Aside from ending hyperinflation with the Real Plan in 1994, the government promoted privatizations and concessions for a wide range of companies. Reforms allowed private entrepreneur participation to increase, and transparency of public accounts and the remaining state companies to improve. Capital market legislation developed significantly, increasing volumes. However, key reforms – on the macro and micro side – still need to take place not only to enhance economic performance, especially after growth decelerated significantly following the 2008 financial crisis, but also to push potential growth higher.

Reform agenda: much done, but much more to do

Prior to the COVID-19 health crisis, former president Michel Temer's administration managed to approve a labor market reform, a political system reform and started discussing changes to the tax system. Furthermore, Temer also presented a social security reform to Congress, which was not voted in his mandate. Discussions about the independence of the central bank also took place then but were not approved either.

The main accomplishment of the Bolsonaro government was the approval of the pension reform in late October 2019. The proposed bill had an initial estimated saving of R$1.2tn in ten years. After voting, savings were significantly diluted – as expected – to R$800bn, in the same time frame.

Alongside with the structural reforms that Brazil underwent, government also implemented a microeconomic agenda to increase potential growth, as their impact are to be seen only in the medium/long run: Economic Freedom Law, Workers Severance Fund (FGTS) yearly withdrawals, a new bankruptcy law and reduction of bureaucracy measures. Also, some sector specific measures to create a better regulatory framework, such as the sanitation bill and gas bill. This agenda is clearly positive in our view, but the impact of these measures is hard to monitor and estimate.

The government also presented in November 2019 a package of reforms to strengthen fiscal dynamics, boost confidence and anchor lower interest and rates. The package, which is labeled "Plano Mais Brasil", was meant to create a new institutional framework for the fiscal and federative system as the government aimed to transform Brazil's fiscal regime. The proposal contained the fiscal emergency PEC, which is structured with temporary measures that create special conditions – for two years – to facilitate the federal government, states, and municipalities to recover fiscal health. The PEC of Federal pact, which would establish a new division of resources raised between the Union, states, and municipalities; create new fiscal rules for regional governments; and integrate fiscal rules already followed by the Union (spending cap, golden rule and fiscal responsibility law) with those of regional governments. And finally, the Public Funds PEC, that would extinguish most of the 281 public funds, freeing between R$100bn and R$200bn, which would be used to pay public debt and to reduce poverty via social programs.

The plan was ambitious, but it partially failed after the COVID shock hampered the progress of the reformist agenda. Substantial fiscal deterioration in Brazil required a re-thinking of the original plan. From the three PECs, only the first one was approved. The version of the Emergency PEC that was enacted also had to be modified to deal with the sanitary crisis. The final version encompassed elements of both Public Funds and Federal Pact PECs but did not manage to fully achieve its objective which was to secure more control over public expenditures.

Other projects were expected to be voted in the Bolsonaro's term, but were also impacted by the pandemic and the elections (in 2022), and did not advance either: a tax reform that would simplify the tax system by creating a value added tax and reducing accounting bureaucracy; an income tax reform, which would lower corporate income tax and institute a tax on dividends; an administrative reform that would restructure federal civil service careers and establish new rules for hiring, promotion and stability of public workers in order to avoid tight public accounts in the future; and a privatization law that would accelerate the process of privatization state owned companies.

Structural reforms

Exhibit 82: Fiscal Agenda

Advancements since the Temer Administration, and pending projects

Reforms Approved by Temer's Government (2H16 to 2018)	Reforms Approved by Bolsonaro's Government (2019-2022)	Lula's agenda of Pending Reforms	Perspective
Constitutional Spending Cap	Social Security Reform	Administrative reform	Low probability of approval
	MP Anti-Fraud in INSS	New Fiscal Rule	Approved in 2023
	Fiscal Emergency		
	Precatorios PEC		
	Transition PEC		

Source: Local Newspapers, BofA Global Research

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Exhibit 83: Micro Agenda

Advancements since the Temer Administration, and pending projects

Reforms Approved by Temer's Government (2H16 to 2018)	Reforms Approved by Bolsonaro's Government (2019-2022)	Lula's agenda of Pending Reforms	Probability of Approval
Flexibilization of Pre-salt Oil Actions	Positive Credit Bureau	Consumption Tax Reform	Approved in 2023
Electricity Sector Reform	Airlines and Telecom Bills	Unilateral reduction in import tariffs (to expire in Dec23)	High
Labor Reform	Economic Freedom Law	Free Trade Agreements	High
Outsourcing Law	Sanitation and Gas Bills	Income Tax Reform	Medium
Creation of TLP rate to replace TJLP rate	BACEN Autonomy Law		
	Eletrobras Privatization		

Exhibit 83: Micro Agenda
Advancements since the Temer Administration, and pending projects

Reforms Approved by Temer's Government (2H16 to 2018)	Reforms Approved by Bolsonaro's Government (2019-2022)	Lula's agenda of Pending Reforms	Probability of Approval
	Bankruptcy Law		
	New Regulatory Framework for Concessions and PPPs		

Source: Local Newspapers, BofA Global Research

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What to expect for 2024?

2023 was marked by key victories for the government, mainly due to the approval of a new fiscal rule and the VAT Tax Reform. In this sense, 2024 will be the first year to assess the feasibility of both matters.

This year will be the first in which the new fiscal framework will come into force (For more, see: Emerging Insight: Brazil – Fiscal: in the search for revenues. Updating our forecasts.). Although the economic team is reiterating its efforts to comply with the zero-deficit fiscal target in 2024, the legislation credibility should continue to be tested as the market is expecting a worst result than the target.

Then, the focus will remain on a possible change in the zero-deficit fiscal target initially proposed by the government. A key date to watch is March 22nd, when the first Bimonthly Report of Revenues and Expenses will be released (fiscal numbers would be more accurate by then). Despite all the revenue boosting measures proposed in 2023 being approved, the result expected by the economic team is hard to be achieved.

Regarding the Tax Reform, during 2024, Congress will focus on supplementary bill to specify the details for the new tax system, which includes the VAT rates. The follow-on legislation will also rule on governing specific regimes, the parameters for credits based on the old tax system (PIS, Cofins, ICMS, ISS), the detailed list of goods and services receiving VAT discounts, exempts and those subject to excise tax regulation. (For more, see: Brazil Watch: Tax reform final approval in the Lower House. Big win for government and Brazil)

Discussions on the Income Tax Reform will also begin, as the government seeks new measures to increase progressiveness in the current system. The next step is not expected to be easy and will require a significant legislative effort in a short span, given the municipal elections in 2H24. The theme will also face some resistance, as it involves a conflict of interests between the federation and other national entities.

Labor market reform to improve productivity

The Consolidation of Labor Laws (CLT) were especially restrictive, given collective bargaining; high taxes on employers and employees; labor unions; employee benefits, including bonuses for contribution time and unjustified dismissals; and high costs associated with hiring and layoffs, especially due to registering new workers at the CLT and the scarcity of skilled labor force. With the labor market reform approved in July 2017, negotiation between firm and worker will prevail over the law in several points, like vacations, working hours and participation in earnings, for instance. Points such as the Workers' Fund (FGTS), minimum wage, bonus salary, motherhood license, workers' safety rules, family benefits and proportional vacations cannot be negotiated.

The reform opened room for intermittent work regime, in which a worker earns proportional to the effectively worked hours, rather than for 30 working days currently. In case of labor lawsuits, the worker will need to attend to all court meetings and will have to pay for the lawsuit costs if losing the case. The reform also changed judges' assumptions for the cases, somewhat limiting the courts power. Labor contracts agreed between employer and employee who have a college degree and earns twice or more the Social Security benefits limit (R$5,645.80) will prevail over the CLT. In case of a resignation agreement between the firm and the worker, the latter can receive up to 80% of their FGTS account balance but will not be eligible to receive unemployment insurance. The former government also approved an outsourcing bill, allowing companies to outsource core activity employees, making the labor market more flexible.

There used to be a disconnect between unemployment rate dynamics and the economic growth cycle due to high costs for employers to onboard and to train workers, which translated to a certain rigidity in the labor market. The unemployment rate trended down from 2004 to 2014, showing almost no cyclicality despite significant variations in the economic cycle (Exhibit 84). This caused severe imbalances; for example, by remaining relentlessly resistant during economic contractions, low unemployment rates continue to feed into inflationary pressures, which in turn continue to erode disposable income and growth. The rigidity on the labor market should decrease further with the reform and the modernization of labor laws.

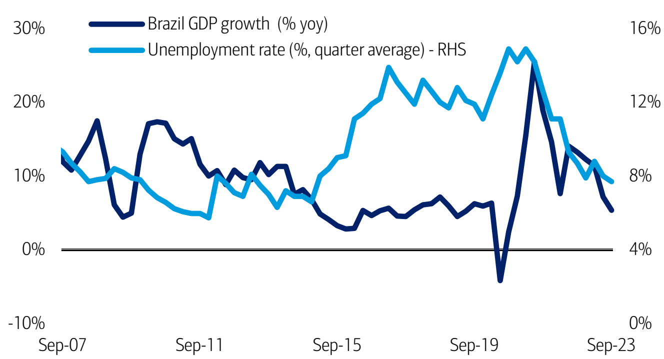
PT's policy guidelines during Lula's campaign mentioned the proposal of a new and revised labor legislation, to, according to the text, ensure the rights of workers and the autonomy and strengthening of unions. Lula directly accused the current legislation of depriving workers of their rights and creating an unfavorable environment for productivity. However, reversal of the labor reform is not expected for 2024, and any attempt to do so should face difficulties in Congress.

Incentives to reduce wage indexation and improve productivity

The minimum wage rule – which adjusts minimum wage by the previous year's inflation plus GDP growth of two years ago – favors wage indexation. This resulted in a lack of coordination between productivity and wage growth, with wages growing much faster than productivity since 2010. Some studies (see Sorkin, 2015) find a permanent readjustment in the minimum wage is responsible for a portion of inflation inertia, which in turn limits a looser monetary policy. This rule expired in 2019. Given the spending cap rule constraints, the government had to be stricter negotiating salary adjustment rules. Minimum wage was set at R$1412 for 2024, with an adjustment of around 2%, after years of zero real gain. Notably, avoiding minimum wage real increases would be beneficial for government social security expenses, as a large part of benefits are linked to minimum wage increases.

Exhibit 84: Unemployment shows little cyclicality with output until 2014

Unemployment and GDP quarterly data



Source: IBGE

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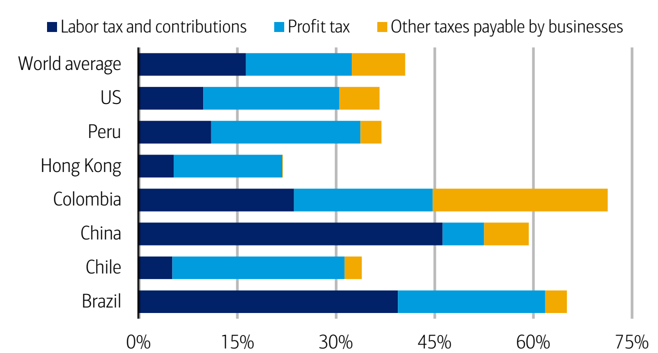
Exhibit 85: Brazilian taxes on companies among the highest in the world

The income tax reform would potentially lower the companies' burden



Source: World Bank

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Political reform to improve governability

The political reform was approved in October 2017 and made the Brazilian political system less fragmented by potentially reducing the number of political parties. This should improve governability and therefore approve measures that require a high political support in Congress. The reform puts an end to coalitions for elections and stablished a barrier clause for parties, which should lead to a reduction in the number of parties. The new rules presented in the political reform became valid from the 2020 municipalities' elections onwards.

Before the reform, the rule allowed parties of different ideological positions to freely form coalitions for proportional elections. There was an incentive to form a coalition of parties during electoral campaigns only to gather the highest possible number of votes, as chairs in Congress are distributed according to the total votes of elected and non-elected candidates of a party/coalition. If parties ran elections without colligating, only medium to large sized parties would be elected. According to local media, in the 2014 elections only 16 of the 32 existing parties at that time would have been elected for the state of Sao Paulo if there were no coalitions.

The barrier clause for the performance of parties was already valid in 2018 elections. According to the rule, each party needed to gather at least 1.5% of total votes distributed in at least nine states to gain access to the parties' cash fund and free TV and radio propaganda time. Not having access to these items likely would make the survival of small parties difficult. This required percentage of total votes for parties to increase by 2030 to 3.0%, distributed in at least nine states, with at least 2.0% in each one of them. Notably, local press noted that the barrier clause should gradually decrease the number of parties (currently at 33) by more than half. As a result of the 2022 elections, 16 parties were affected by the barrier clause (from 14 in 2018).

TLP rate at stake

The Long-Term rate (TLP) has replaced the subsidized Long-Term Interest Rate (TJLP) for new BNDES loans since January 2018 and had a significant positive impact on National Treasury subsidies. These implicit subsidies are classified as financing expenses and therefore affect public gross debt but not primary expenses.

The introduction of the TLP gradually lowered subsidies over time, thereby reducing the acceleration of the public gross debt (see section 3.3 for more). Also, since a subsidized interest rate creates a distortion in the credit market, the replacement of the TJLP rate by the TLP rate is supportive of a lower neutral level for the Selic rate. As we wrote in our viewpoint in early 2017, we expected lower structural real interest rate levels, if this distortion via the existence of TJLP dissipated – which, indeed, started. Accordingly, the approval of the TLP in September 2017 was supportive of the easing cycle being bigger than anticipated. Lower structural rate levels should help economic activity in the medium to long-term, as financing costs would tend to be lower.

Trade policy reform

Recent governments have maintained a high level of protectionism when it comes to trade policies; and although trade barriers may at first guarantee a safer market for domestic manufacturers, it hurts productivity in the long run. The degree to which the economy is closed has prevented a much-needed improvement in productivity. Notably, Brazil has had one of the lowest productivity rates since the 1990s (Exhibit 95).

Thus, reforms to increase trade liberalization in Brazil could become a source of growth by fostering foreign competition and lifting inflationary pressure on domestic prices. The previous government signaled alignment towards a more open economy in the future. This should also continue to be a goal of the current government, especially as Lula is expected to lean on the strengthening of relationships with other countries and economic blocks, as well as on the ESG friendly agenda. However, trade liberalization reforms specifically shouldn't progress in the next three years of his mandate. For more, see section 3.5.

Either way, for economic openness to have a deeper impact on the country, industry needs to first recover its strength to be able to compete with a wider market. Competitiveness has to improve, and companies need to focus on diversifying their product base. This trade policy agenda, then, would foster a more open economy for Brazil in the long run.

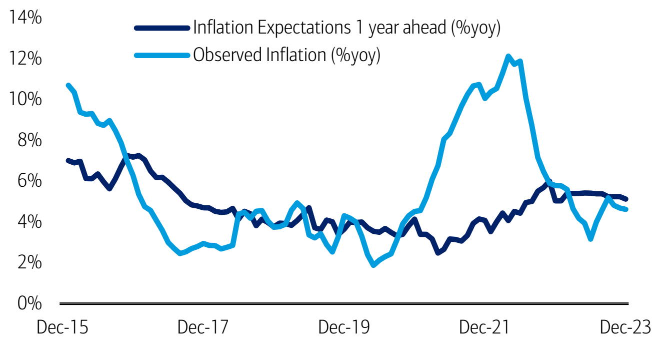
An autonomous central bank

Another significant win of the last government was the approval of the Central Bank Independence Law in February 2021. The new framework has set four-year mandates for the Brazilian Central Bank (BCB) Governor and its eight Directors. Mandates will be intercalated, and the president/directors can be reappointed once. In line with what happens in other countries, the bill aims at de-linking the central bank from the political cycle. The nomination of BCB Directors and its Governor is made by Brazil's president and requires approval of the Senate. The BCB Governor's mandate now starts in the third year´s mandate of Brazil's president.

Recent administrations granted the board significant freedom to pursue consistent monetary policy. However, the market remained skeptical about how much the BCB could be shielded from political pressure, especially during periods of weaker growth. The approval of this project has significantly improved market confidence in monetary policy and the bank's commitment to stable inflation levels.

Exhibit 86: Poor inflation predictability in 2016/17 and again in 21/22

Expected and observed inflation (yoy, %)



Source: BCB, IBGE

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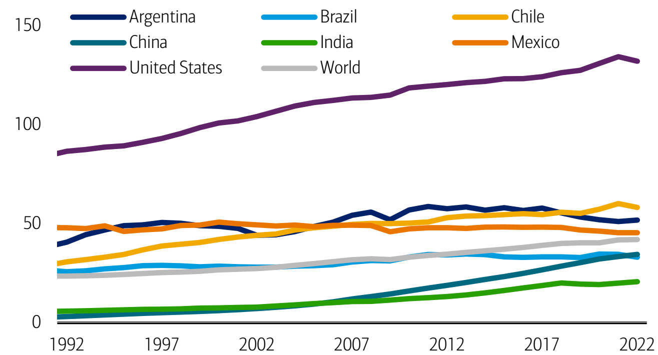
Exhibit 87: Brazil's productivity one of the lowest in World

Output per person employed (in thousands, 2017 prices)



Source: World Bank

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3.3 Fiscal as the main challenge

- Government budget is rigid with over 90% of mandatory expenditures, giving little leeway for fiscal adjustments.
- A new fiscal rule was approved last year, and 2024 will be the first year that the mechanism will come into force.
- To maintain fiscal credibility in the medium term, structural reforms on the spending side are still necessary.

The fiscal accounts need fixing at a structural level, so the country can sustainably produce primary surpluses large enough for the public debt to converge to lower levels. The fiscal adjustment needs to be meaningful and to tackle mandatory budget lines, as since the enactment of the spending cap almost all the adjustment on public accounts came from reduction of discretionary expense – below 10% of total spendings in the past 4 years – notably investments. Despite the successful changes on the pension system back in 2019, other reforms continue to be necessary to stabilize government finances.

The COVID pandemic in 2020 brought an unprecedented and unexpected fiscal slippage, with a significant drop in revenues and a large fiscal stimulus package of R$524bn (7.3% of GDP). Structuring reforms are more urgent than ever to consolidate fiscal dynamics and stabilize government debt. The successive breaches to the spending cap, though necessary to fund social assistance during the pandemics, reduced the credibility of the previous fiscal rule. In 2023, the approval of the Tax Reform and new fiscal rule were the highlights. The new fiscal framework establishes that expenditures will grow at a slower pace than revenues, while contingency measures will be activated in case of non-compliance with the targets.

Mandatory spending over 90% of total expenditure

The government has been working hard to contain expenditures, but with mandatory spending at around 90% of total, there is not much room for further cuts (Exhibit 90). The room for fiscal adjustments continues to shrink and led the government to rely increasingly more on non-recurring revenues to improve primary results. The central government spent R$1.8tn in 2023, until November, of which only R$146bn were related to discretionary expenses.

When we look back, the government was counting with more revenues from privatizations in the 2020-2021 biennium, but the pandemic and the political scenario prevented the agenda from moving forward. Note that privatizations and BNDES pre-payments to the Treasury are not accounted as primary revenue and go directly to reduce the level of public debt. The reliance of primary results on non-recurrent revenues reduces their "quality", as it becomes less predictable and pushes back the expenditure reduction debate.

The three fiscal challenges

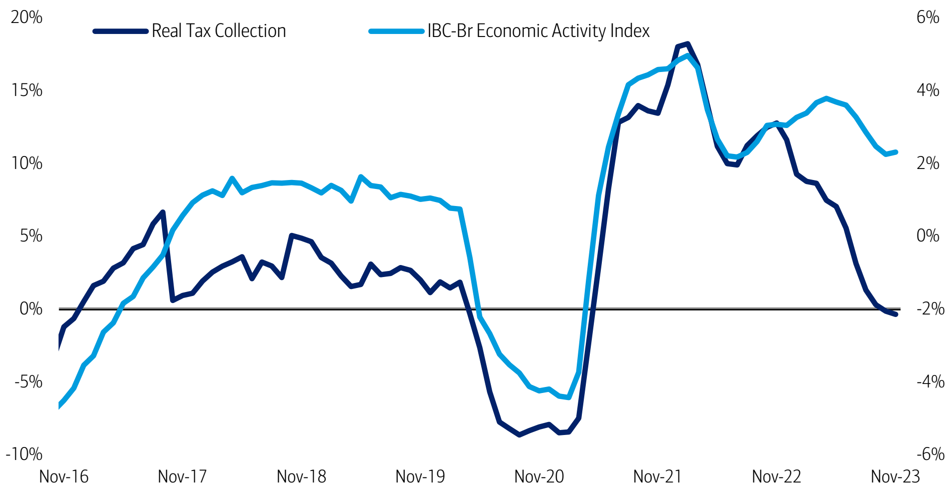
Currently, there are three rules combined into the Brazilian Fiscal Framework: a primary target set for the year, the new fiscal framework, and the golden rule that limits public debt issuance. Higher GDP growth rates could help meet the primary targets as this would boost government revenues.

1) Primary fiscal targeting pro-cyclicality

The primary target setting for a coming year is part of the Fiscal Responsibility Law. One of its main flaws is pro-cyclicality, as it has been expansionary during moments of economic growth and restrictive during recessions. For instance, assuming a downward turn on tax collection due to slow activity during a giving year. It is hard to increase revenues in the short-term, so the government's way to achieve the fiscal goal tends to be by cutting discretionary spending, commonly investments, which aggravates activity slowdown. Another issue is precisely the uncertainty of the macroeconomic parameters used during budget discussions. The latest governments kept expenses down at the beginning of the year and, if surprised by stronger revenues, released funds rapidly, without questioning the quality of expenditures. The opposite also happened, with unrestrained expenditures in certain moments, such as elections, followed by severe cuts to avoid government shutdown. Ideally, deficits achieved during recessions should be compensated by surpluses once economy is back on track. However, this recommendation is not commonly followed and now this rule that once worked needs to be revisited.

In 2020, the biggest driver of the decline in fiscal primary results was decelerating economic activity (Exhibit 88). The decline in recurring revenues incentivized the government to seek for extraordinary revenues, in the form of privatization and asset sales of oil and gas fields, electricity and transmissions companies. This was not a novelty on Brazilian fiscal accounts. In 2016 alone, non-recurring revenues amounted to R$73.7bn and for 2017, the government collected R$76.1bn in the same line (roughly 1p.p. of GDP).

Exhibit 88: Real tax collection growth has varied alongside with economic activity
The dissociation in 2023 was probably caused by the agriculture outstanding performance



Source: BCB, IRS

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However, in 2021 and 2022, the government was surprised by stronger than expected growth recovery and was able to count with large tax collection. In 2023, though activity surprised to the upside again, the result was mostly driven by the agriculture sector, which not translated into higher tax revenues. Taking this backdrop into account, we estimate that a 1pp increase in GDP brings an additional R$18bn (or 0.2% of GDP) of revenues.

2) Golden rule prevents debt issuance above government capex

The golden rule prevents the government from issuing debt above the level of capital expenditures (i.e. investments, amortizations, and interest rate payments) in a given year. Any public debt issuance that exceeds capital expenditures needs Congressional approval for supplementary credit operations. Amongst the punishments for breaching the rule is mandatory payment of the amount that exceeded the capital expenses limit in the following year and a prohibition on performing new financing operations until the payment is made.

Revenues from state-owned companies' privatizations and BNDES loan devolutions to the Treasury can help the government to comply with the golden rule in the short term, as these financial resources can be used to redeem public debt thereby creating room for new issuances. However, medium to long-term compliance with the rule depends on structural fiscal adjustments. The main risk to comply with the rule has come from successive primary deficits seen since 2014, which have increased the needs of public debt issuance since then.

3) 2024 will be the first year of the new fiscal framework

The new fiscal framework establishes that expenditures will grow at a slower pace than revenues, limited to 70% of the net primary revenues in the 12 months ended in June of the previous year. The increase will be limited to the range of 0.6% and 2.5% above inflation. Notice that this band has a counter-cyclical aspect to it, as it establishes a cap to times of great revenues, and a floor in case of the opposite situation (Exhibit 89).

The government also established a commitment to improve the fiscal results ahead and move to higher primary surpluses over time. The team is responsible to set an annual primary balance target, with a tolerance band of ±0.25. This rule is important because, if the result is lower than anticipated, contingency measures are triggered, with the percentage of spending growth declining from 70% to 50% of the revenue increase in the subsequent year.

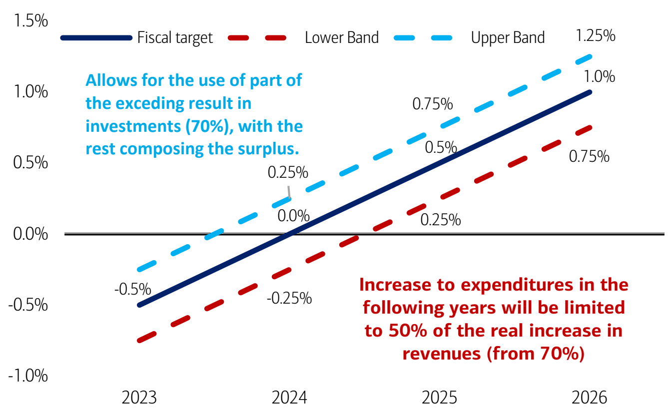
Besides that, investments also received a floor of about R$79bn in Jun23 values, adjusted for inflation each year. In cases where achieving a fiscal surplus above target, the government will be allowed to use part of this excess in investments up to a limit of R$25bn per year.

Different from the spending cap - the previous fiscal rule, the new framework allows higher revenues to help reaching the target. On the other hand, this also means that there are incentives to increase taxes overtime given indexation.

Another issue is that the government can change the target at any time just by sending a bill to Congress. That means that activating the automatic expenditure reduction triggers is a difficult job. The following years' budget would not suffer from the constraints in the legislation, incentivizing interfering with the targets when complying with them demands too much effort.

Exhibit 89: New fiscal rule to begin in 2024

Primary targets seem challenging to achieve



Source: BofA Global Research, Congress

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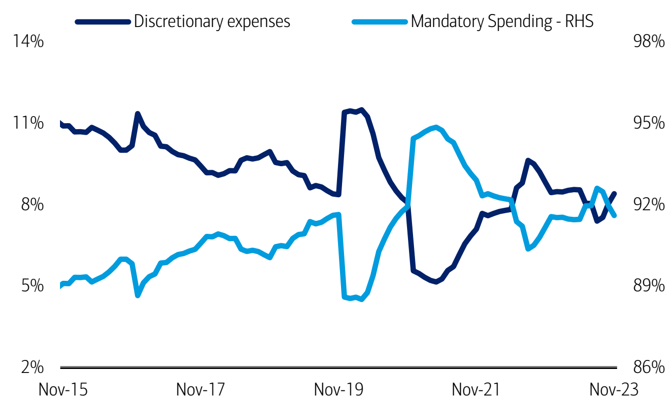
Exhibit 90: The bulk of government spending is mandatory

12-month accumulated, % of total spending



Source: National Treasury

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Regarding penalties, a first breach to the rule will forbid the government of (1) creating new positions and (2) changing a career structure that implies an increase in expenditure, (3) creating or increasing aid, (4) creating or readjusting mandatory expenditures, and (5) granting or expanding tax incentives. In the case of a second consecutive year of missing the target, the restrictions will be freezing of (1) civil servants' wages, (2) hiring and (3) public examinations.

Complying with the cap from 2020 onwards: a series of fiscal exceptions

Complying with the spending cap in 2020 was only possible because all fiscal packages in response to the pandemic crisis were done under a State of Emergency. That allowed for all emergency spending to be categorized as extraordinary credit (a spending line outside the spending cap rule). The government approved a series of fiscal packages totaling R$524bn (or 7.3% of GDP), with extraordinary credit reaching R$429bn in 2020. As a result, despite the very large increase in spending (much above the inflation rate of the previous year), the spending cap was not breached.

Among the fiscal stimulus measures, the largest program was the Coronavoucher, a cash-transfer that has been a very popular program among the population but also at a very high fiscal cost. The program was initially created to last for three months (April-June), with a R$600 transfer to vulnerable households, being, then, extended by another two months (July-August); and finally, it was extended for a second time, for another four months (September-December), but with a reduced transfer value of R$300.

In 2021, after a year of extraordinary spending, the uncertainty regarding the pace of vaccination and recovery from the pandemic put pressure over the fiscal. “Bolsa Família” was rebranded as “Auxílio Brasil” and significant changes over the previous programs’ rules happened. This shift, however, required a breach in the cap. Thus, the funding of the program came from the deferral of precatórios payments (court-ordered debt), which created room for up to R$106bn in expenditures in 2022.

Looking for a zero-deficit target in 2024

2023 showed important advances to the fiscal side, with all the revenue boosting initiatives presented by the Ministry of Finance being approved. The objective of these measures was to meet the zero-deficit target for 2024, as proposed in the Budget Bill. Although these bills did not end as the government first proposals, the enactment of these measures represented a major victory for the government.

Government's efforts have been high because the non-compliance would undermine the credibility in the first year of the new fiscal framework. As we mentioned above, not meeting the target would also trigger a reduction on the expenditure growth next year and in 2026, a presidential election year.

Simulations show gross debt growing

The dynamics of public debt will only improve in a sustained way once we solve the structural problem of the expenditure-side of fiscal accounts. Higher GDP growth rates can improve primary results even as expenditures rise, which means that higher GDP growth rates can also ease the rise of public debt to GDP. However, this also means that debt dynamics will be highly sensitive to economic activity. This was the case in 2014-end, when the economy entered a severe recession and prompted gross public debt to jump almost 18pp, to 74.0% of GDP in 2017. More flexibility of government accounts would allow the government to cushion the natural rise in public debt during downturns.

The COVID crisis brought an unprecedented fiscal deterioration, leading to a worse starting point for public accounts. The starting point of public debt is relevant because debt servicing is sizable in Brazil. Nominal budget deficit averaged 9% of GDP since 2015, reaching 13.1% of GDP in December 2020 compared to a primary deficit of 8.9%.

In 2023, short term fiscal data deteriorated, as we expect gross government debt to end the year at 76.1% of GDP, up from 71.7% in 2022. For 2024, we expect gross government debt to go up to 77.8% of GDP.

Privatization agenda at stake

Former President Jair Bolsonaro and his economic team led by Paulo Guedes presented an ambitious economic agenda, which was in favor of privatizations. Bolsonaro’s administration, however, could not fulfil most of its commitments. Yet, the government managed to conclude of the main projects: the privatization of Eletrobras.

Lula, however, is against this agenda. Petrobras, Correios and the public banks will remain under state management.

3.4 Tax reform: first phase completed

- Brazil has one of the most complex tax systems in the world and taxes are considerably high relative to peers.
- Increasing fiscal risks might pressure the government to elevate the tax burden.

The Brazilian Tax System

Federal, state, and municipal governments have the right to levy taxes as defined by the constitution, which allows the three spheres of the executive branch to institute taxes, tariffs, and contributions. However, only the federal government is responsible to set the bigger part of the social contributions. Formal employment requires Brazilians to contribute to their public pension fund under the federal budget, as well as their respective regulatory bodies (e.g., lawyers).

The 1988 Constitution increased the role local governments play in collecting and administering revenues, but the tax system still puts significant weight on federal collection, with the government then redistributing revenues according to its needs. The constitution establishes that transfers between governments must always be from the largest to the smallest entity, meaning municipalities cannot transfer resources to states or states to the federal government, only the other way around.

Several agencies are responsible for managing tax collections and contributions. The main body for tax management is the Secretary of Federal Revenues (*Receita Federal*, ie, Brazilian IRS), which is responsible for all taxes levied by the federal government and the main social contributions. Brazilian IRS is not responsible for taxes levied on payrolls, which are the responsibility of the National Institute for Social Security (INSS). The remaining members of the federation, including states, municipalities, and the federal district, have their own tax management bodies.

Exhibit 91: Taxation remains very centralized in Brazil
About 2/3 of the tax revenues are collected by the federal government

	2021		2022	
	% of GDP	% of revenues collected	% of GDP	% of revenues collected
Federal government	21.9%	66.3%	22.8%	67.6%
Fiscal budget	8.0%	24.3%	8.8%	26.1%
Income	6.6%	19.8%	7.6%	22.6%
Industrialized products	0.8%	2.4%	0.6%	1.8%
Social Security Budget	10.2%	30.9%	10.3%	30.7%
Others	3.7%	11.1%	3.6%	10.8%
State government	8.9%	27.0%	8.6%	25.5%
Circulation of goods and services	7.4%	22.4%	7.0%	20.7%
Municipal government	2.2%	6.7%	2.3%	6.9%
Services of any nature	0.8%	2.5%	0.8%	2.3%

Source: Brazilian IRS

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A hard nut to crack

Brazil has more than 90 different taxes distributed among federal, state, and municipal spheres, as well as compulsory contributions to regulatory bodies. In 2022, the general government (federal, states and municipalities) collected a total of R$ 3,342,093 million (33.7% of GDP). Federal government was responsible for over 68% of total taxes and contributions in Brazil, while states and municipalities were responsible for roughly 25% and 7% of total collections, respectively (Exhibit 91).

Municipal revenues represented about 6.9% of the consolidated collection in 2022 (2.3% of GDP). The main revenue sources were taxes on goods and services (54.2%), with the largest contribution coming from the tax on services (ISS) at 46.2% of total municipal taxes.

Looking at states revenues, the share was about 25.5% of general government revenues (8.6% of GDP). Taxes on goods and services (ICMS) represented the largest contribution, with 81.3% of collection. Property taxes (9.2%) came in second, with the tax on vehicle property (IPVA) representing 7.5% of total state revenues.

The federal government collected about 68% of total revenues (22.8% of GDP). Income taxes were 23% of total revenues, for which withholding taxes represents 55.4%, while the contribution to the social security system represented 31% of total revenues.

The breakdown reflects the overall reliance on ad valorem taxes or contributions. When looking at the top 10 taxes by overall revenue, many of those are levied on the same classes of products and throughout the production and supply chain (Exhibit 92).

Exhibit 92: Main taxes in Brazil are levied throughout the supply chain and on the same classes of products

Tax structure is very complex

	2021		2022	
Tax	% of GDP	% of revenues collected	% of GDP	% of revenues collected
Tax on the circulation of goods and services (ICMS)	7.39%	22.37%	6.98%	20.71%
Income tax (IR)	6.56%	19.84%	7.61%	22.56%
Contribution to the Social Security	5.07%	15.33%	5.23%	15.53%
Contribution for Financing the Social Security (COFINS)	3.03%	9.17%	2.74%	8.14%
Contribution to the Fund for Time of Service (FGTS)	1.54%	4.66%	1.58%	4.68%
Social contribution on net profits (CSLL)	1.26%	3.82%	1.57%	4.67%
Taxes on any kind of service (ISS)	0.84%	2.53%	0.79%	2.35%
Contributions to the Program of Social Integration (PIS) and Program of Social Security of the Public Servant (PASESP)	0.79%	2.39%	0.59%	1.76%
Tax on industrialized products (IPI)	0.70%	2.11%	0.60%	1.77%
Taxes on foreign trade	7.39%	22.37%	6.98%	20.71%

Source: Brazilian IRS

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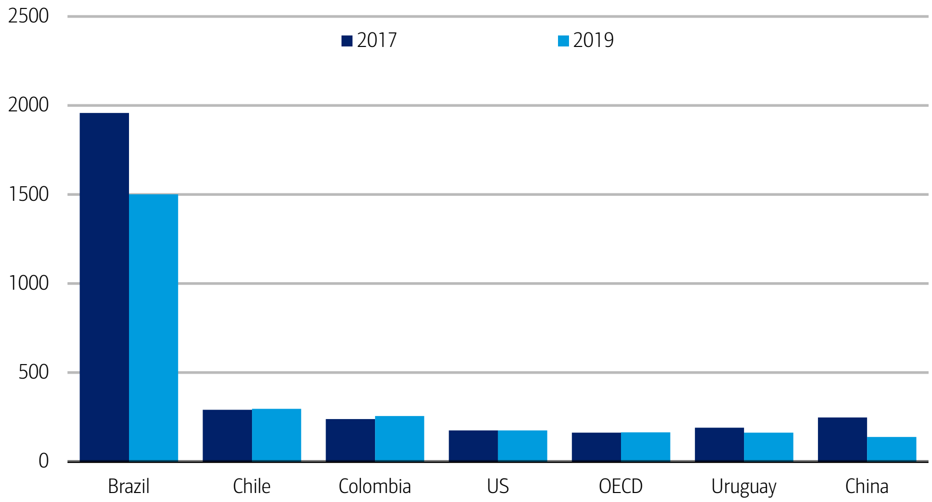
An intricate system with a high tax burden

Brazil has one of the most complex tax systems in the world. Multiple consumption taxes coexist and the legislation covering each differs from state to state, increasing the complexity of the system. The World Bank reports that in 2019, Brazilian companies took 1,501 hours on average each year to prepare and pay taxes, versus the global average of 233 hours (Exhibit 93). The complexity of the system inhibits new potential enterprises and drives several smaller businesses into informality, reducing the economy's dynamism.

Exhibit 93: Businesses spent 1,501 hrs preparing and paying taxes in Brazil in 2019
Hours required to prepare and pay taxes



Source: World Bank

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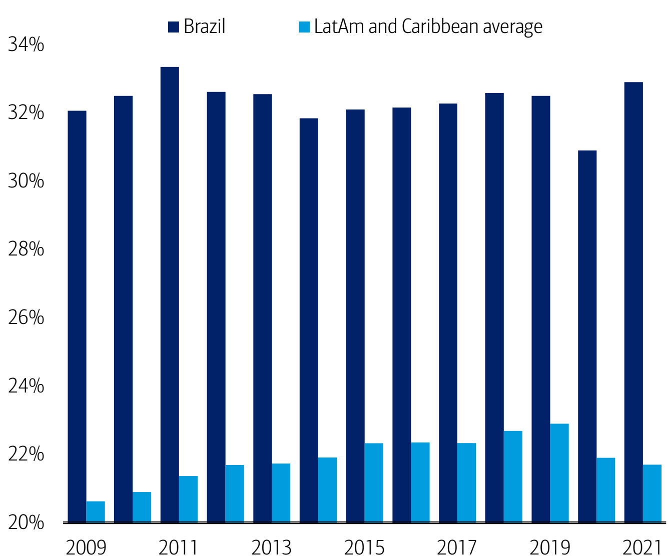
Besides, taxes are considerably high in Brazil compared to peers. The overall tax burden represented 32.9% of GDP in 2021 (from 30.9% in 2020), according to data released by the Brazilian IRS (*Receita Federal*). Brazil's overall tax burden is above LatAm and Caribbean economies average of 21.7% in 2021 (Exhibit 94 and Exhibit 95).

Exhibit 94: Brazilian tax burden is higher than its peers in LatAm
Tax Burden in % of GDP



Source: Brazilian IRS, OECD. Stat

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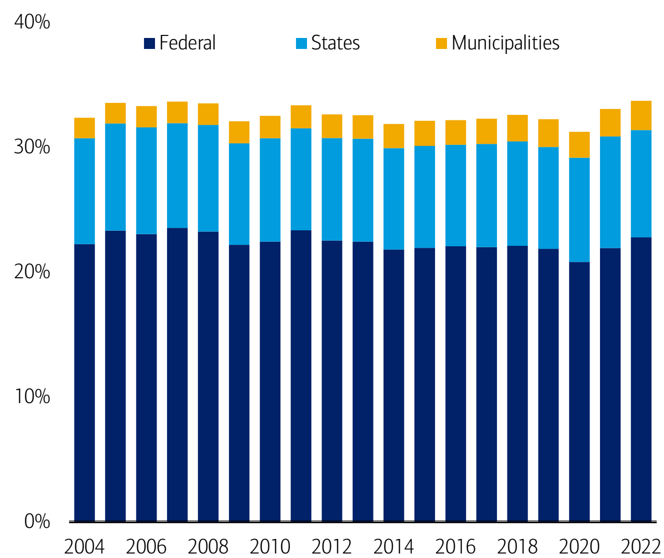
Exhibit 95: Tax burden at very high levels historically
Federal collections account for most part of revenues (% of GDP)



Source: Brazilian IRS

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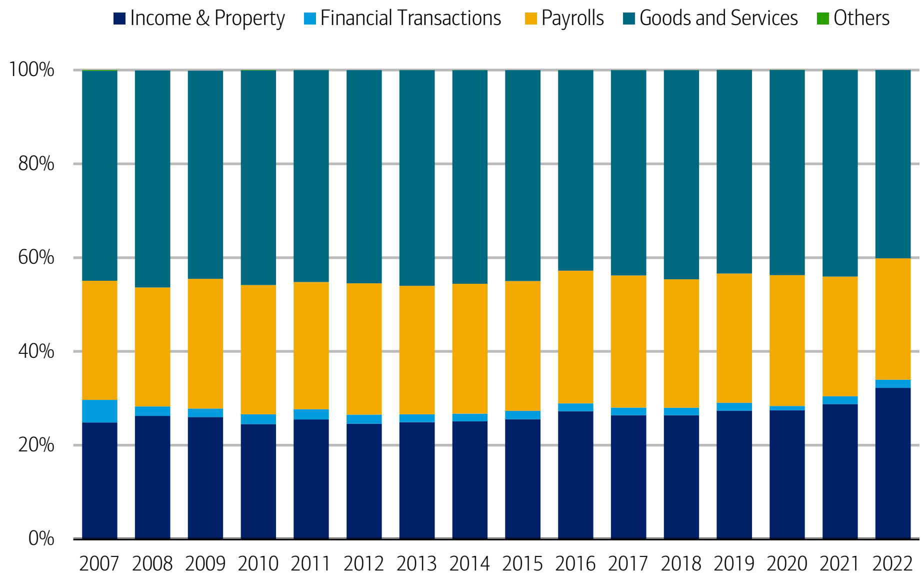
The tax system also enhances inequality, as the proportion of regressive taxation in total tax revenues is expressive: 40% government revenues come from regressive taxation (i.e., consumption tax), while about 58% of government revenues come from progressive taxation, meaning contributions increase with income (ie, income tax). The outlook for consolidated revenues clearly shows this scenario (Exhibit 96).

Exhibit 96: Tax collection breakdown shows a regressive outlook
Income, payroll, and goods & services taxes dominate



Source: Brazilian IRS

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Transition to the new VAT system to start in 2026

Changes in the Brazilian tax code have been discussed for more than 30 years in Congress. On December 15th, 2023, the Lower House (LH) approved the tax reform constitutional amendment. The approval of the reform was a big victory for the country, as the overhaul should simplify Brazil's tax system in the long term, increasing productivity ahead.

The main change from the current system is the consolidation of five taxes into a non-cumulative dual VAT - one for federal taxes (IPI, PIS and Cofins) and one for states (ICMS) and municipalities (ISS) - plus an excise tax (federal) on items that are harmful to citizens' health or the environment. The VAT will not be cumulative and will have an ample base (Exhibit 97).

During the process, a Federative Council will be responsible for centralizing the collection for states and municipalities, with a composition attending the requests of larger states. ICMS fiscal incentives will be valid until 2032 and there will be a fund of R$32bn to compensate for the tax losses. The period expected to unify taxes is seven years, beginning in 2026 (and ending in 2032), with the two VATs' transitions already starting in 2026 - with a rate test of 0.9% for the federal VAT, and 0.1% for states and municipalities. Another goal of the reform is to tax goods where they are consumed (destination) instead of where they are produced (origin), a transition that should take 50 years.

In the new backdrop, there will be one single standard rate, but some items will also have a 60% tax reduction – such as Education, Health, Public Transportation, etc. The standard rate will be capped at the average revenue raised from 2012 to 2021, as a proportion of GDP, ensuring the final base rate's neutral impact. Estimates from the Ministry of Finance is pointing to a standard rate of 27%; but, according to Tax Reform Secretary Bernard Appy, it may remain below the calculated value, depending on the details in the supplementary legislation.

More on the bill: while some services will be levied the reduced 40% of the standard rate, self-employed professionals, such as lawyers, will be taxed with a lower 70% of the standard rate. A national food basket tax free and a new “cashback” mechanism (which provides for the return of taxes to a particular public, such as the low-income population) were created. The Zona Franca de Manaus will remain with fiscal incentives, as federal duties on industrialized goods (IPI) will continue to be levied on competing goods produced elsewhere in the country. Besides, a federal government R$60bn fund was also created to reduce the regional inequalities; and legislators maintained the excise tax on mining and oil exports – with a limit of 1%. Regarding income taxation, the approved Constitutional Amendment now include jets, yachts and speedboats on the list of motor vehicles taxation (IPVA), on top of progressive taxation on heritances and real estate property (IPTU) updates. For more, see: Brazil Watch: Tax reform final approval in the Lower House. Big win for government and Brazil.

Exhibit 97: Tax Reform

Final approval in the Lower House on December 15th, 2023. Awaiting Supplementary legislation for further details.

Regulatory Act	Constitutional Amendment Bill + Further Bills of Supplementary Law	
Taxes to be extinct/unified	**5 taxes unified in a dual VAT** **CBS (Federal):** PIS, Cofins and IPI; **IBS (subnational)**: ISS municipal tax unified with the ICMS state tax	
Tax Regime	Maintenance of the differentiated treatment systems for the Manaus Free Trade Zone and small businesses (Simples Nacional)	**Selective Tax:** For goods and services harmful to health and environment Non-renewable natural resources extraction (minerals and oil) will be charged at a maximum rate of 1%
Tax rates and brackets	**Standard tax rate to be defined later via Supplementary Law.** According to Bernard Appy, to maintain the current collection, the new tax rates would have to be 9% for the Union, 14% for the states and 2% for the for municipalities, totalling 25%. Tax burden lock as a percentage of GDP (average revenue from 2012 to 2021), reviewed every five years.	**Brackets:** **(1) Standard rate**; **(2) 40% of standard rate**: Education; Health; Medicines; Public Transportation; Foodstuff; Personal Hygiene; Cultural activities; National security; **(3) 70% of standard rate: Self-employed professionals** **(4) Tax exemption**: national foodstuff basket; cars purchased by disabled persons and taxi drivers; health services for people with disabilities; innovation, science and technology; urban recovery; Zero CBS to ProUni (the national program that grants scholarships to students by giving tax benefits to universities) **Special taxation regime:** Fuels; Financial Services; Real Estate transactions; Healthcare Insurance; Govt purchases; Hospitality Services; Restaurants; Amusement Parks; Sporting Activities
Transition Period	**For Taxpayers - 7 years:** CBS: 2026= 0.9% experimental tax rate; 2027= full tax rate (to be defined) IBS 2026-28= 0.1% tax rate. 2029-32 = 1/10 per year ICMS and ISS reduction	**For States & Municipalities - 50years (2029-78)** 2029-34 = 90% at origin 2034-78 = 1/45 (2.2 pp) reduction per year at origin
Regional Development Fund (FDR)	**Fund to reduce regional inequalities - R60bn** Resources into the FDR would be gradual, increasing each year until the total amount is reached. 2029 R$ 8bn + R$ 8bn/year until 2033 2034 R$ 2bn + R$ 2bn/year until 2043	
States Compensation Fund	**Fund to replace the fiscal benefits policy in States - R$ 32bn** Annual resources funded by the Union 2025-32 2025 R$ 8bn + R$ 8bn/year until 2028	
Federative Council	**Centralizing the collection of IBS**	27 members - States + DC 14 members - Municipalities (equal weight) 13 members - Municipalities (weighted by population)
Income Taxation	**IPVA** (motor vehicle property tax): for jets, yatchs and speedboats **ITCMD** (inheritance tax) : progressive taxation **IPTU** (municipal property tax): updates to tax basis	
Other	**Cashback;** **Income taxation overhaul:** government to present a proposal up to 180 days after PEC enactment	**National Basket:** Zero Rate

(*) Updated on December 15th, 2023. Final approval in LH.

Source: BofA Global Research, Brazil Lower House

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What is yet to come?

During 2024, Congress will focus on secondary legislation setting the details for the new tax system, which includes the VAT rates. The follow-on legislation will also rule on governing specific regimes, the parameters for credits based on the old tax system (PIS, Cofins, ICMS, ISS), the detailed list of goods and services receiving VAT discounts, exempts and those subject to excise tax regulation. According to the PEC, the government will now have 180 days to send to Congress all the supplementary bills.

For the Income Tax Reform, the constitutional amendment also compels the government to send within 90 days to detail the new measures. The government goal is to increase the system progressiveness by taxing profits and dividends, as well as reducing the Corporate Income Tax (IRPJ). This next phase will require a significant legislative effort in a short span, given the municipal elections in 2H24.

3.5 External policy: Increasing openness

- Brazil is a relatively closed economy, but gradually improving in this front. Its trade openness ratio (imports + exports to GDP ratio) was 39.3% in 2022, versus 62.2% for Latin America & Caribbean and for OECD countries, according to the World Bank.
- Much can still be done to enhance efficiency and boost productivity in the Mercosur. Advancements in negotiation with the EU could boost trade over time.
- The new government is seeking to restore Brazil's image abroad, particularly focused on the ESG agenda and in strengthening relations with Europe.

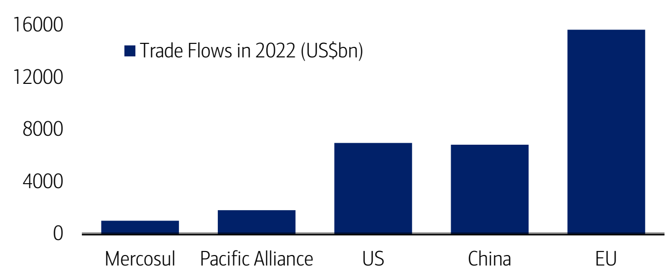
With the largest territory, population and GDP among Latin American countries, Brazil has played a major role as a regional economic and political power since its independency. Brazil has been at peace and pursued cooperation with its neighbors since the Triple Alliance War (1864-1870), known as the Paraguayan War. A clear example of bilateral cooperation is the Itaipu hydro plant, built between 1970 and 1984 in a joint effort with Paraguay. This is the second largest operating hydroelectric facility in the world in terms of annual energy generation, only behind the Three Gorges Dam on the Yangtze River in China.

Efforts to integrate the various countries in the region have intensified since the end of the military dictatorships and the return to the democratic regime. The Southern Common Market (MERCOSUR for its Spanish initials) is a regional integration process, initially established by Argentina, Brazil, Paraguay, and Uruguay. Its main objective has been to promote a common space that generates business opportunities through trade, investment, and free movement among its members. The economic union bloc evolved from the Argentina-Brazil Integration and Economics Cooperation Program, signed in 1985 by Presidents Raúl Alfonsín and José Sarney, into a free trade bloc with full membership of Argentina, Brazil, Paraguay, Uruguay, and Venezuela. Venezuela, however, is currently suspended in all rights and obligations related to Mercosur. Peru, Bolivia, Colombia, Chile, Ecuador, Guyana, and Suriname are currently associate members.

Relevant, but with significant room for expansion

The Mercosur is a relevant economic area given the sheer land area and population of member countries. Considering just the States Parties, total population is almost 300 million, with a combined GDP of US$2.7tn in 2022 and a total area of 6.4 million square miles. In terms of trade flow (imports plus exports of goods and services), the bloc totaled US$1.027bn in 2022 (Exhibit 98) and net foreign direct investment inflows mounted to US$116.8bn (Exhibit 99).

Exhibit 98: Trade flows of goods and services still small
Mercosur's trade flows smaller than Pacific Alliance's...



Source: World Bank

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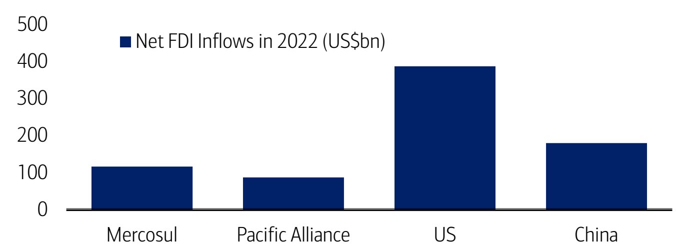
Exhibit 99: US and China are still relevant destinations for FDI
... and so are the FDI inflows



Source: World Bank

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Though the Mercosur is a step in the right direction, in our view, much can still be done to enhance efficiency and boost productivity. The common import tariff adopted by the bloc has been ignored numerous times, with individual members setting tariffs according to their needs to increase sectorial competitiveness.

While the bloc represents an important destination for its members' exports, different countries frequently resort to trade barriers, either by imposing import quotas or tariffs (Exhibit 98). This has been a recurring procedure in Argentina, which imposed higher tariffs on Brazilian autos and clothes in 2011 and subjected imports to government approval, for example.

Brazil also implemented restrictions to other countries´ goods, for instance, in vehicles, auto parts, wine and wheat imported from Argentina in 2012. Yet, local industrial production failed to pick up even with increasing protection for local markets. The Brazilian government launched the National Exports Program in June 2015, which aimed to increase Brazil's market share in exports. The program is based on five main goals: access to markets, commercial promotion, trading facilitation, strengthening of financing instruments and improvements in tax regimes.

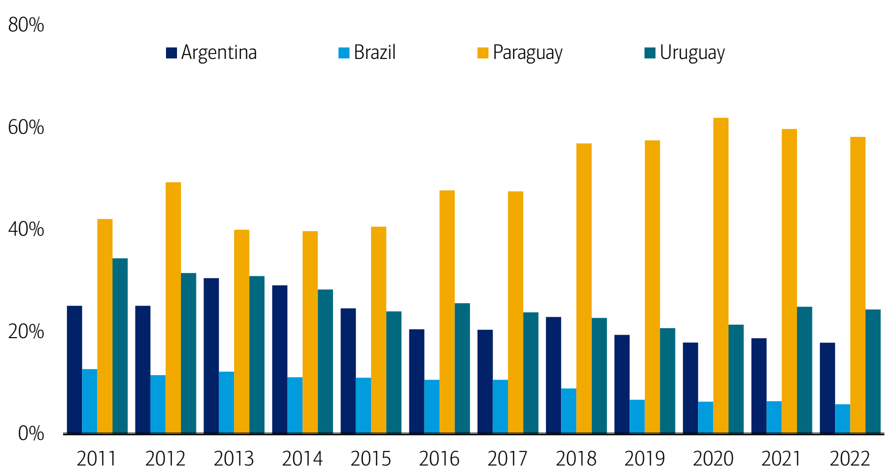
Argentina seemed to be focusing more on gradually expanding trade integration after President Mauricio Macri took office at the end of 2015, easing trade and currency controls already during the first month of his mandate. Furthermore, Argentina's president Alberto Fernández stated, after being elected at the end of 2019, that he wanted to strengthen Mercosur and the relationship with Brazil. It is key to watch how the bloc evolves following the election of Javier Milei as the new Argentina's President.

Still, ending internal disputes and advancing on the debate regarding trade tariff unification remains a challenge.

The grass is always greener on the other side

Though the Mercosur relevance to Brazilian exports has dropped in the past decade, the country could gain a lot from better agreements within the bloc. Mercosur has a long way to go compared to the Pacific Alliance, which includes member states Chile, Colombia, Mexico, and Peru, as well as Costa Rica and Panama in the process of becoming State Parties. In addition, the Pacific Alliance has 59 countries as observers, such as the US, Germany, China, UK, France, Japan, and South Korea.

Exhibit 100: Mercosur is a significant market for its members
Share of exports to Mercosul



Source: Haver

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Average import tariffs of Pacific Alliance member states are 4.6%, versus 10.9% in Mercosur. Average exports of goods and services for the Pacific Alliance totaled US$3,752 in 2022, versus US$1,929 per person in the Mercosur.

Last year, the first horizontal revision of the External Common Tariff (TEC) happened since its creation in 1995. In July 2022, the Mercosur Common Market Council approved a 10% reduction in overall Import Tax rates, maintained (and increased the scope) of tax exemptions, encompassing about 87% of the items that make up the Mercosur. This was the largest review of the tariff structure ever adopted by the bloc since the creation of the TEC.

Mercosur needs to increase its efforts to mirror the Pacific Alliance polices. By bringing down trade tariffs and getting more bilateral trade agreements, Brazil can boost trade and improve external account results structurally, enhancing local businesses' competitiveness and efficiency. It would also benefit consumers through more affordable products, therefore, reducing the cost of living.

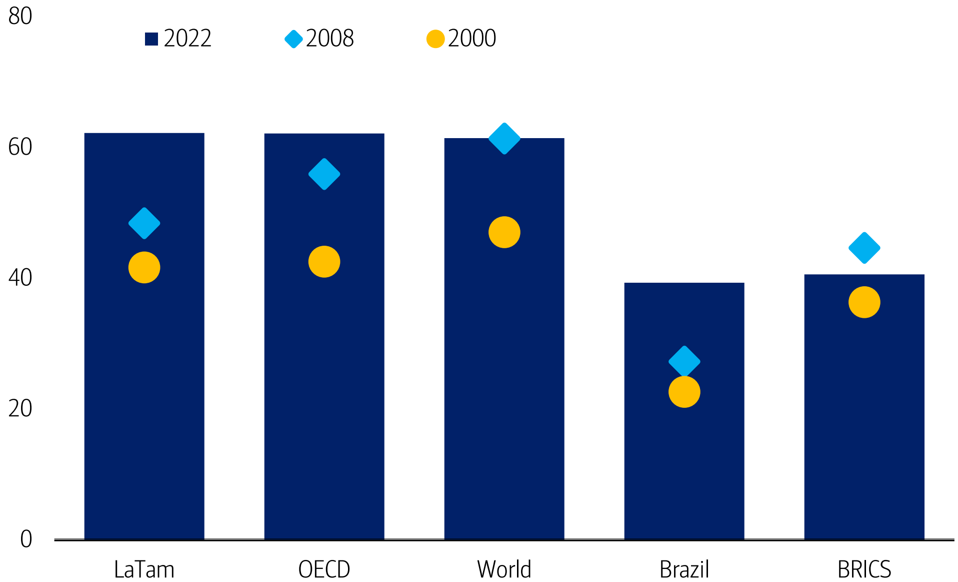
Current proposals are a good start…

A major issue for the Brazilian economy is that it remains relatively closed to trade. Trade openness, measured by the sum of imports and exports as a share of GDP, increased to 39.3% of GDP in 2022, versus 61.4% of GDP for the World and 62.2% of GDP for OECD countries (Exhibit 101). As a result, potential gains from increasing trade flows are significant for Brazil, but it will need to reach agreements with other major economies and trade blocs.

Brazil wanted to join the Free Trade Area of the Americas (FTAA), which was supposed to either eliminate or reduce trade barriers among all countries in the Americas, except Cuba. The agreement was supposed to be an extension of the North American Free Trade Agreement (NAFTA), with talks going back to 1994, but ongoing disagreements between the major countries stopped the negotiations in 2006. The main disagreements involved agricultural subsidies by developed economies and intellectual property rights on emerging economies.

Other relevant international negotiations include the agreement between Mercosur and Colombia (which benefited the Brazilian auto sector), Mercosur and Egypt (favoring Brazilian construction sector), and public bid opening agreement among the Mercosur countries. The country also set bilateral-trade agreements with Singapore, and is in advanced negotiations with Canada, Lebanon and South Korea.

Exhibit 101: Brazil is still very closed, but is improving
Trade openness (% of GDP)



Source: World Bank. Note: Trade openness is the sum of exports and imports of goods and services measured as a share of gross domestic product.

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… but the Mercosur-EU trade agreement is the most promising

In 2019, Mercosur and the European Union reach good terms of the free trade agreement between the two blocs after 20 years of debates and 39 rounds of negotiations. The treaty covers both tariff and regulatory issues – such as government proceedings, trade facilitation, sanitary regulations, and intellectual property. Under the agreement, some Brazilian products (like orange juice, fruit, instant coffee, and industrial products) will have their tariffs eliminated, while others (like meat, sugar, and ethanol) will gain access to the European market through quotas. The agreement also aims to guarantee effective access in several services segments such as communication, construction, distribution, tourism, transportation, and finance.

Brazil exported US$46.3bn to the EU in 2023, which accounts for 13.6% of total Brazilian exports. The MERCOSUR-EU agreement should increase Brazil's GDP by US$87.5bn over 15 years, according to the Ministry of Economy. Regarding bilateral trade, Brazilian exports to the EU will increase US$100bn by 2035, according to government´s estimate.

The agreement still must be approved by Congress of all countries involved and by the European Parliament but should facilitate the insertion of Brazil into global trade in the future. In 2020, the Mercosur-EU trade agreement faced difficulties to gain full approval of its terms due to disagreements on the environmental policies of the Mercosur members. Some European countries like Netherlands rejected the trade agreement due to concerns on Mercosur countries' environmental policies, as they are regarded to disrespect the Paris Agreement. Furthermore, the European Parliament also rejected it as it disapproved Mercosur's environmental policies and asked for changes.

In July 2021, Brazil and EU representatives published the first draft of the bill. And in November of the same year, both signed a commitment to conclude the trade agreement deal. In 2023, During the Mercosur summit, the South American bloc and the European Union released a brief unified statement, but disagreements prevented the signature of the text.

Former government focused on trade agreements with DMs and lower tariffs

The previous economic team emphasized the need of advancing in trade liberalization measures, with focus on bilateral agreements with developed markets. This represented a departure from Brazil's historical position towards multilateral agreement with focus on EMs. Particularly, Bolsonaro and former Economy Minister, Paulo Guedes, criticized Mercosur throughout the mandate, saying the regional bloc was driven essentially by ideological interests.

The relationship with the US was a key priority for former President Bolsonaro, under Donald Trump's administration. Notably, both countries signed a trade agreement in 2020 aiming to extinguish or reduce non-tariff barriers between both countries. However, with the election of Joe Biden, tensions appeared due to ideological differences and disagreements on Brazil's environmental policy. In September 2022, the two countries signed a mutual recognition agreement that allows Brazilian companies to accelerate export processes and bypass red tape.

Moreover, the OECD approved the invitation for Brazil to negotiate its entry in the organization. The decision means the discussions will formally begin. However, the process is not expected to be completed before 2025. Among the candidate countries, Brazil was the first to deliver, in September 2022, its Accession Memorandum.

Meanwhile, several Latin American countries undertook other large-scale transport infrastructure projects to improve regional and international connectivity and trade. One of the most ambitious, the Bioceanic Corridor, aims to connect Brazil's Port of Santos on the Atlantic Ocean with Chile's ports of Iquique and Antofagasta on the Pacific Ocean through a series of roads. However, the project is still years from completion.

A different approach from the current administration

Highly critical to the previous administration in most matters, the current government also aims take a different approach regarding external politics. Lula and his cabinet's idea is to continue to focus on relationship with other countries in Latin America and Africa, cooperating with their development. The president previously announced support for the reconstruction of the "lofty and active" dialogue with the United States, the European community, China, and the countries of the East, also pointing towards the strengthening of the BRICS bloc.

Lula also stated that his administration will resume South American integration plans, through the development of Mercosur, the revitalization of the Union of South American Nations (Unasul) and other instances of articulation in the region. While the Minister of the Environment, Marina Silva, highlighted the Mercosur-EU trade agreement as one of her priorities. The new government's focus on an ESG-friendly agenda is expected to help with negotiations.

Still, the focus should stay in Latin America. The disruption of global supply chains in 2022, including capacity constraints, higher freight costs, labor shortages and port slowdowns, weighed heavily on the global economy. Going forward, Brazil can capitalize from the increasing reshoring/near-shoring initiatives, as having a partner close to you will shorten transit times, cheapen import costs and make conducting business easier.

3.6 Black gold winds lift the economy

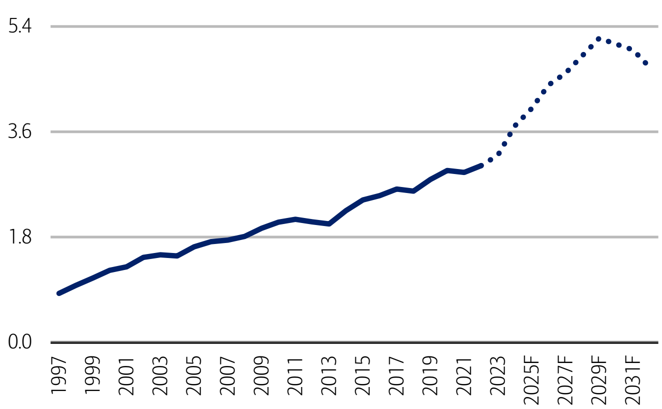
- The oil trade balance reached a record surplus of 1.3% of GDP last year. We expect it to peak at 2.3% of GDP in 2029.
- Crude oil production was boosted by pre salt oil fields, reaching 3.6mn b/d in 2023. Output could get to 5.4mn b/d in 2029.
- The oil boom is positive for growth, trade and fiscal.

Brazil's journey in oil production began in the 1930-40s, just before the creation of Petrobras in 1953. In the 1997, when Petrobras's legal monopoly of the oil and gas production ended, production was around 840kbpd. Today, the production is up to 3.6 million b/d – a consolidated increase of 330% - and is expected to continue to rise. Petrobras is still the main producer in the country. The Energy Research Office (EPE), subjected to the Brazilian Ministry of Mines and Energy (MME), estimates that production could reach up to 5.4 million b/d by 2029, growing more than 50% from today's level – see Exhibit 102. After that, production is expected to stabilize (or even drop) considering that no new reserves will be discovered.

A pivotal change for Brazil occurred with the discovery of the pre-salt reserves, leading to a surge in production. These fields are rich in high-quality oil and have been crucial to the growth of Brazil's oil industry. Petrobras's activities in the pre-salt started in the early-2000s, but the first pre-salt discovery occurred only in 2006. Since then, the pre-salt has been the main responsible for the increase in oil production and represents approximately 80% of Brazil's output. Nonetheless, the pick-up in oil production took two decades amid progress in extraction and refining technologies.

Brazil is now the ninth-largest crude oil exporter in the world, with the most relevant recoverable ultra-deep oil reserves. Benefiting from the ongoing development of its pre-salt offshore fields, the country has attracted significant foreign investment, solidifying and increasing its position in the global oil market. This has led OPEC+ (Organization of Petroleum Exporting Countries and Allies) to invite Brazil to join the group (For more see: BofA - LatAm Oil & Gas: Brazil gets invited to join the "Big Boys" at OPEC+).

Exhibit 102: Crude oil production must increase at a faster pace
Million barrel per day



Source: BofA Global Research, MME, EPE

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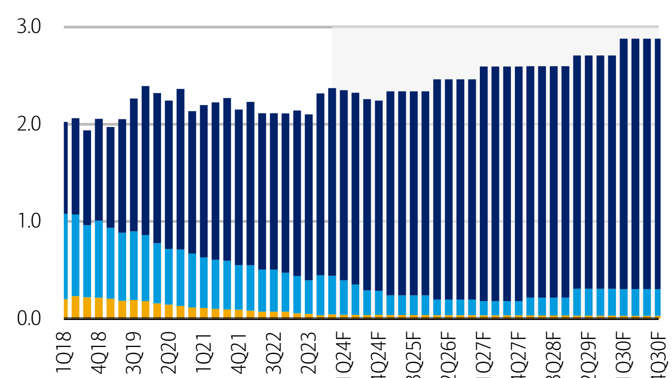
Exhibit 103: Pre salt reserves will likely continue to be the biggest source of production
Million barrel per day



Source: BofA Global Research, Petrobras

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Petrobras remains key to production

Despite the end of monopoly in 1997, Petrobras is central to the country's oil production. Following its divestment program along with the several partnerships it has built with other companies, Petrobras' participation in Brazil's total oil production stood at approximately 65% in 2023. Its strategic plan for 2024-2028 calls for investment of

US$102 billion (31% more than the previous plan) of which 72% will be dedicated to upstream activities.

With 13 new platforms expected to start-up in the 2024-2028 horizon, our LatAm Oil & Gas team estimates Petrobras to increase oil production to 2.9 million b/d from the current 2.4 million b/d. The increase is explained by further development of the pre-salt reservoirs - as demonstrated in Exhibit 103. Apart from these platforms, we expect Brazil's output growth to be supported by: 1) additional seven platforms to be implemented by other oil companies (Equinor, Shell, among others) in the next few years; and 2) participation of other oil companies in consortiums with Petrobras.

Even though the pre-salt is likely to be the main responsible for Brazil's oil production growth in this decade, it is important to discover new oil frontiers to avoid further depletion in early-2030s onwards. In this regard, Petrobras has earmarked US$ 7.5 billion for exploration projects, including the drilling of approximately 50 wells in areas where the company has exploration rights.

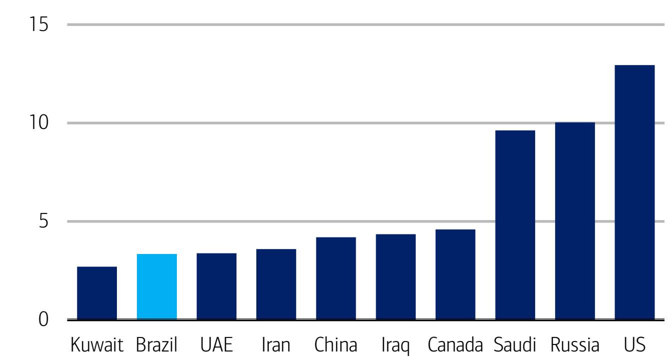
Ahead of the neighborhood, behind world leaders

The US, Saudi Arabia and Russia continue to dominate global oil production. Top #10 oil producers are presented in Exhibit 104. While Brazil has yet to approach the production of the leaders, in 2015 it surpassed its neighbors in Latin America outshining key players such as Venezuela and Mexico.

Venezuela, despite its vast reserves, has seen a decline in production due to internal difficulties. Meanwhile, Mexico is striving to recover its production levels lost with the decay of its giant offshore Cantarell Field, which at one point produced 2.1 b/d. Argentina is progressing with the development of the Vaca Muerta shale formation, but it is still behind Brazil in infrastructure. Colombia has comparatively smaller reserves and faces exploration issues due to a prohibition on fracking. Ecuador production has been stable. As shown on Exhibit 105, production in Brazil is the one growing in Latin America.

Exhibit 104: Brazilian crude oil production still lags top producers…

2023 average production. Million barrels per day



Source: EIA

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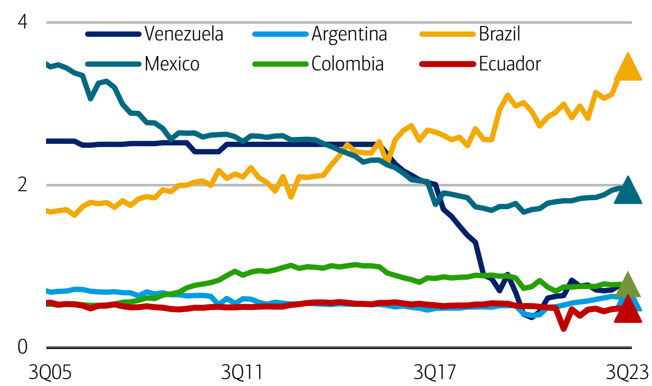
Exhibit 105: … but has considerably surpassed other LatAm' countries

Million barrels per day



Source: EIA

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Oil & derivatives balance in the spotlight

Global oil dynamics remains key. Earlier this year, our global commodity research team cut its forecast for oil prices in 2024. (For more details, see: BofA - Global Energy Weekly: Can (geo)politics Trump fundamentals?).

Based on softer fundamentals, BofA's brent crude oil price forecast was lowered from $90 to $80/bbl for 2024-year average (vs. $83/bbl in 2023) and our WTI forecast was reset to $75/bbl (vs. $78/bbl in '23). The higher supply in US, Brazil, Guyana and Canada contributed to these revisions. Our analysts also noted that the geopolitical backdrop has not improved, and that Russia, Middle East and Venezuela risks could keep the oil market on edge this year.

Brazil historically exports mostly crude oil and imports oil derivatives (mostly gasoline and diesel). Until 2016, that resulted into a persistent oil and derivatives deficits in the trade balance. More recently, that has begun to change.

The transformative phase of oil production begun in early-2010s, marked by a remarkable uptick in oil production, largely attributable to the development of pre-salt reserves, enhanced Brazil's exports while concurrently diminishing import dependencies. Brazil's oil and derivatives trade balance not only rebounded but also began accruing progressively larger surpluses.

Particularly during 2023, the oil and derivatives surplus increased, reaching new records each month. These levels were the result of solid gains in production coupled with high international oil prices, which boosted exports. At the same time, imports dropped with Brazil buying cheaper diesel from Russia.

Looking ahead, we expect the trade surplus to keep rising. Last year, the oil and derivatives trade balance surplus reached a record 1.3% of GDP. We expect the peak will likely come in 2029, with a later stabilization at around 2% of GDP. The balance could be higher, but limited refining capacity will cushion the country’s need to import fuels.

The positive impact to net exports and the boost to investments has the potential to improve GDP growth by up to 3% in the next five years.

Exports are booming, as well as their share

The surge in exports, driven by both volumes and prices, is pivotal for the performance of the oil and derivatives sector. This combined growth propelled its position in the trade balance, culminating in the commodity becoming the second-largest Brazilian export last year, as showed in Exhibit 106 – given it faced competition with a record soybean crop.

Exhibit 106: Exports escalated with high prices and production
12m acc., Bn US$

Source: MDIC

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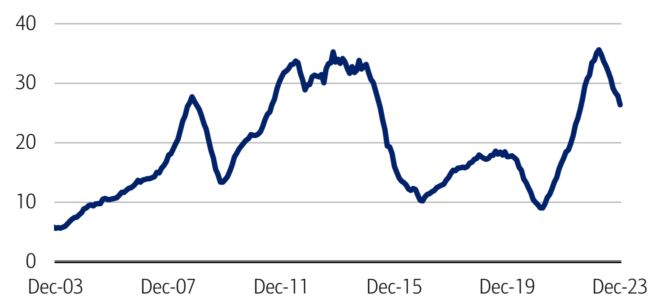
Exhibit 107: Oil and derivatives imports declined on the margin
12m acc., Bn US$



Source: MDIC

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This trend is evident when examining historical data; in the 2000s, oil and derivatives exports represented 0.3% of GDP. It´s now 2.5% and we think there is still room for improvement (See Exhibit 106).

Since 2017, volume has been increasingly robust, thanks the enhanced production following the pre-salt discoveries. Moreover, international demand, particularly from China, has also played a crucial role in sustaining the pace of growth. As a result, an expansion in production has been accompanied by strong market demand. We expect production to continue increasing with Petrobras’s growth plans.

On the price front, recent geopolitical events have had a significant impact. The 2022 sanctions on Russia, driven by its invasion of Ukraine, caused a spike in international oil prices. While Russia is primarily known for gas exports, the sanctions impacted the entire fuel export profile. In 2023, this situation didn't fully reverse, and OPEC announced cuts in oil production. These measures led to noticeable price increases, boosting the value of Brazil's oil exports. In the long term, even in a scenario with stabilizing prices, the increase in volumes can act offsetting it and the level of exports can be maintained.

Imports compromised by low refining capacity

Until the 2000s, Brazil was unable to satisfy internal demand for oil and derivatives. Even after the country gained so-called self-sufficiency in oil, derivatives dependency from abroad continued. More recently, the value of oil-byproduct imports dropped significantly, because sanctions on Russia restricted diesel exports is several markets, allowing Brazil to access cheaper diesel. However, this is not a structural change. This dynamic motivated marginal declines in oil and derivatives imports value, (Exhibit 107).

We note that Petrobras intends to increase its refining capacity over the next years. A more prominent improvement should be perceived from 2028, with the conclusion of the construction of the second train of RNEST refinery which will add around 130k b/d. Given that no other major investments have been announced, we highlight that we expect Brazil to continue being a net importer of gasoline and diesel in the long-term.

Fiscal situation likely to improve

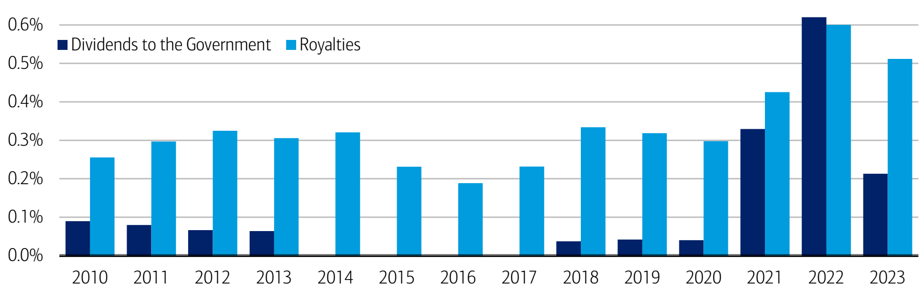
An expected improvement in oil production will likely bolster Brazil's fiscal accounts due to increases in royalties, dividends and taxes. Recent years have seen an increase in extractive sector fiscal gains. The peak was in 2022, largely due to high global oil prices driven by the Ukraine-war.

The royalties from oil and natural gas production are calculated based on the production value of each field. Compared to the pre-pandemic levels, the amount collected in royalties almost doubled, moving from R$ 23 bn (0.32% of GDP) in 2019 to a record R$ 59 bn (0.60% of GDP) in 2022.

Dividend payments from Petrobras are also key. In 2022, Petrobras paid a record dividend of R$ 216 bn, more than all other B3 stock exchange companies, which together paid R$192.4 bn. These figures were boosted by higher oil prices and assets sales.

As production moves even higher, Brazil's fiscal accounts will continue to benefit (See Exhibit 108). However, some uncertainty is to be expected given the volatility of international prices.

Exhibit 108: Positive oil momentum has boosted government revenues
Ahead, it should be influenced by higher production



Source: Petrobras, ANP, IBGE

BofA GLOBAL RESEARCH

4. Sectors

4.1 Agribusiness: natural leader

4.2 Beer: a portfolio game

Source: iStock

4.1 Agribusiness: natural leader

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Brazil's large land reserve, favorable climate and widespread water availability are the main factors that drive its agriculture, positioning the country as a leading producer and exporter globally. Brazil is one of the largest global producers and exporters of grains. It is the largest producer of sugar and soybeans and the third largest producer of corn.

In the last 20 years, Brazil's grains production increased 5.2% per year, and should reach 312mn tons in 2023-24, vs. 320mn tons in 2022-23. Planted area is set to remain flat at 78.5mn hectares. Long term, we see yields in Brazil trending up on more professionalized and digital management, greater and more assertive use of chemicals, GMOs and automated machinery.

Soybean is the most relevant crop produced in Brazil and should planted area should total 45mn ha, or 57% of total planted area, and production should reach 150-160mn tons, or 50% of total crop production in the 2023/24 season. Corn is the second largest crop with a 27% share of planted area in 2023/24 season and 38% of production, or 118mn tons.

The sector 10 years from now

Brazil should become the largest producer and remain the largest exporter of soybean in the next decade. Soybean exports should total 130mn tons by 2032/33 (vs. the US at 60mn tons), implying an export CAGR of 3.7% and a 60% share of the global trade, according to the US Department of Agriculture (USDA). Brazil is the 3rd largest global producer of corn, behind the US and China, and the second largest exporter in the world. The USDA expects BZ corn exports to total 69mn tons by 2032-33, similar to the US, accounting for 30% of global trade each.

Strengths

Brazil has the largest potential arable land among the main commodity producers in the world. Brazil has 342mn ha of agricultural land, of which 86.7mn ha (25.4%) corresponds to planted area, 196mn ha (57.3%) to pasture lands and the remaining 59.7mn ha of available land.

Productivity gains were mostly supported by Brazil's agricultural research corporation EMBRAPA. The corporation main contributions have been on 1) genetic improvements to cereals, soybean and corn; 2) biological control; 3) biotechnology; and 4) soil management. Among developments, this institution has contributed to soybean adaptation to the Cerrado ecoregion in Central Brazil, developing seeds that were more resistant to climate conditions in the Cerrado during the 1980s.

Weaknesses

Logistics are a major bottleneck for the Agro sector, and transportation costs take away much of Brazilian Agro sector's competitiveness. Comparing the transportation cost of soybean from Brazil to China through the Santos port, and from the US to China, we conclude that the costs from Brazil are ~50% higher than from the US (in USD terms).

The country has a high dependence on international supply or fertilizers and crop defensive products, being more exposed to international supply shocks, logistical constrains and geopolitics.

Bureaucracy is also a problem. In the chemical segment, registration of new products takes 36 months on average, as agrochemical companies must register requests with three different regulatory agencies. Also, foreign companies and individuals and Brazilian companies controlled by foreigners have been subject to area limitations of 25% per municipality since 2010.

Opportunities

Better logistics could reduce freight costs and increase competitiveness in exports. Brazil has important transportation projects in the pipeline, including investments in railways, highways and ports. Increases in productivity and yields are also opportunities, and we still see room for mechanization levels to increase.

In 2023, China issued import permit and approval of Brazilian corn. The country consumes 300mn tons of corn annually, 7% of which is imported, mainly from the US (70%) and Ukraine (30%). If Brazil were to supply 50% of the Chinese import demand for corn, this could imply an additional 12mn tons demand for Brazil, which is higher than the estimated ending stocks for 23/24 season at 8mn tons.

Approved in 2017, Renovations has been an important driver for the ethanol market, as it adds predictability to demand, rewards companies' efficiency, and prices in ethanol's positive externality to the environment. The program showed rather positive results for the commercialization of carbon credits (CBIOs). Furthermore, new S&E initiatives such as the development of biogas operations to use by-products of the ethanol production as a feedstock for renewable natural gas continue to pop across mills. Lastly, Brazil is in the edge when it comes to cellulosic fuel development with the largest plant running in the world and initiatives to expand production in the next five years.

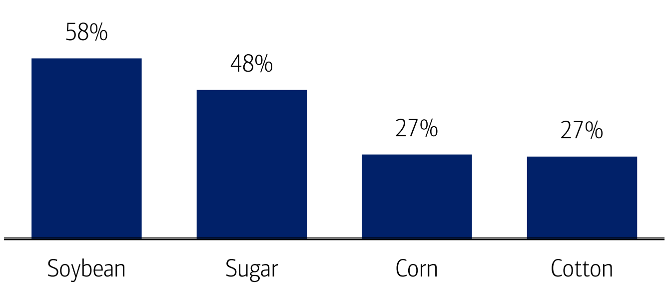
The development of the biologicals industry is an opportunity for Brazil to reduce its reliance on imports of crop chemicals, which comes mostly from Asia. According to ABISOLO, biologicals are already 2% of the chemical's market, and a number of Brazilian and foreign companies started operating in Brazil.

Risks

Climate events are also relevant risk to agriculture. In 2023/24, a strong El Nino has been negatively impacting soybean production in the Midwest region of Brazil, although it has been supportive of good yields in the South and in Argentina. A delayed soybean planting and harvesting could also negatively impact the 2nd crop of corn in Brazil, which deserves monitoring.

On renewable fuel, the Brazilian government announced the Future Fuel bill, in order to raise ethanol blend rates, develops sustainable aviation fuel and increase the biodiesel blend. Although this is positive for renewable fuel producers, we have seen changes to such blend rates in the past, which causes volatility to the companies' results, while the current pressure on ethanol prices given a domestic oversupply has been negatively impacting producers' margins.

Exhibit 109: Brazilian crop exports – share of global trade - 2023
Brazil is a leading exporter across many commodities



Source: US Department of Agriculture

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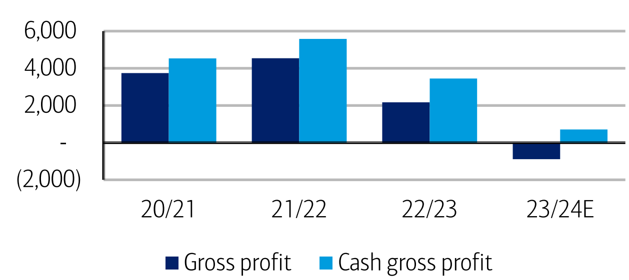
Exhibit 110: Gross profit of soy producers in Mato Grosso state (R$/ha)
Gross profit is set to reduce on higher input costs



Source: IMEA, Bloomberg and BofA Global Research

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4.2 Beer: a portfolio game

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Brazil is currently the 3rd largest beer market in the world. Mexico is the other LatAm country ranking within the top-5 countries in the world. Brazil has 1) the 3rd largest beer PCC in LatAm at ~72 liters/year; 2) ~55% of beer sales are in the off-trade; 3) a highly concentrated market, with the top 3 players having more than 90% market share; and 4) beer accounts for 67% of total alcoholic beverage consumed in BZ (pure alcohol basis).

Based on our annual survey with Brazilian consumers, we estimate AmBev (ABEV3) is the market leader in Brazil with a 61% market share, followed by Heineken with ~31%, while Petropolis has been losing share after it filed for Chapter 11 in 2023. We believe AmBev has been gaining share over Heineken, given the launching of new brands (i.e. Spaten), which have been performing well.

The sector 10 years from now

The sector has posted a 4% volume CAGR since 2017, while it did not grow between 2010 and 2017, according to Euromonitor. The COVID-19 pandemic negatively impacted the sector at the very beginning but greater consumption of food & beverages, combined with higher income and innovation led to a significant recovery of the per capita consumption.

Going forward, we see more limited room for volume growth, as per capita consumption is the highest level in the last twelve years. In this scenario, we believe the main drivers of the industry will be premiumization and innovation, while beyond beer products (malt-based spirits for example) could also be relevant growth avenues for the companies.

In terms of channels, we believe Ambev is developing a new way to sell beer, through its BEES (business-to-business platform) and Ze Delivery (direct to consumer platform), which is promoting beer in different occasions, offering convenience and giving the company a greater agility to manage revenues.

Strengths

Market structure is a key strength for beer in Brazil. The market is large and concentrated, giving the main players advantages of scale. In addition, half of the beer volumes are sold in the on-premise segment, which has higher margins than the off-premise segment. This is mostly due to lower price sensitivity of consumers, less bargaining power of bars and restaurants versus larger supermarket chains, and higher penetration of returnable bottles.

In addition, Brazil has a relatively high beer PPC (72 liters per year), the 3rd highest in LatAm behind Panama and Mexico with 82 and 76 liters per year respectively. Beer per capita consumption in Brazil is also higher than in many developed countries, suggesting there is also a cultural factor behind beer consumption.

Weaknesses

The beer market in Brazil is mature and already very concentrated, which limits the companies' ability to grow top line significantly. Also, M&A opportunities are scarce. In that sense, the companies are continuously challenged to sustainably grow sales, which we believe will happen via new beer-related categories and innovation. Moreover, inflation deceleration limits pricing power and nominal earnings growth.

Opportunities

The sector is investing in technology and ways of using its business as a platform. AmBev has a great success with both its B2C and B2B platforms, Ze Delivery and BEES respectively. New contracts are being put in place to trade products with third parties to leverage its commercial scale and create new points of contact with costumers, which allows for better category management tools. Following the growth in the B2C platform, Ambev started pushing for RGB (Returnable Glass Bottles) products, as a way to cut costs and increase brand loyalty.

After four consecutive years of margin contraction, we believe 2023 was an inflection point and we expect significant expansion in 2024, given significant cost decline and SG&A normalization given lower logistics costs, deceleration of labor inflation, and efficiencies.

Risks

Beer is a highly competitive market. We conduct a virtual survey of ~1,000 Brazilian consumers every year, most recently in November 2023. Even though we see the industry now as more rational than five years ago, we continue to see a strong competition between Ambev and Heineken, especially as our survey shows Heineken is the preferred brand among consumers. Also, Coca-Cola is gradually developing its own beer business, which could be a risk going forward.

Taxes have also been a major concern. The announced changes to the interest on capital (IOC) calculation brings downside risk to Ambev's earnings, while the changes in the state tax benefits could also negatively impact the company. Finally, the Brazilian government has announced a sin tax to be implemented in 2027, which should affect alcoholic beverages.

Exhibit 111: Preference of Beer brands among 1000 virtual consumers; Most to least preferred

Q: What are your preferred beer brands? (Check all that apply)

	2018	2019	2020	2021	2022	May-23	Nov-23
Heineken	10.1%	10.5%	10.4%	11.8%	12.4%	11.8%	12.9%
Brahma	9.9%	9.7%	8.3%	9.3%	9.4%	12.6%	12.5%
Budweiser	9.7%	9.6%	9.7%	10.6%	9.4%	8.5%	8.4%
Amstel	6.1%	6.4%	6.1%	7.6%	7.2%	8.0%	8.3%
Bohemia	5.0%	5.3%	5.6%	6.2%	5.5%	7.4%	7.0%
Skol	8.0%	8.7%	7.8%	8.1%	7.5%	6.1%	5.8%
Stella Artois	7.2%	6.4%	6.1%	6.7%	7.3%	6.4%	5.5%
Corona	4.5%	4.6%	5.4%	5.9%	5.6%	5.5%	4.5%
Antarctica	6.2%	5.5%	4.4%	4.4%	4.7%	4.3%	4.4%
Eisenbahn	4.9%	5.4%	4.8%	5.5%	5.6%	4.4%	3.7%
Spaten							3.6%
Original	3.9%	3.2%	3.8%	4.0%	4.1%	4.1%	3.6%
Itaipava	4.7%	5.3%	4.7%	4.6%	4.6%	3.9%	3.2%
Petra			2.6%	4.4%	3.7%	3.3%	2.9%
Becks			1.1%	1.1%	1.1%	2.0%	1.8%
Heineken Zero							1.7%
Devassa	2.3%	2.6%	2.4%	2.9%	2.8%	2.3%	1.5%
Budweiser Zero							1.2%
Crystal	1.6%	2.1%	1.3%	1.7%	1.5%	1.2%	1.2%
Kaiser	2.8%	3.0%	1.8%	1.7%	1.8%	1.4%	1.0%
Nova Schin	1.1%	1.2%	1.0%	1.3%	1.2%	0.9%	0.8%
Michelob Ultra						0.7%	0.6%

Source: BofA Global Research survey

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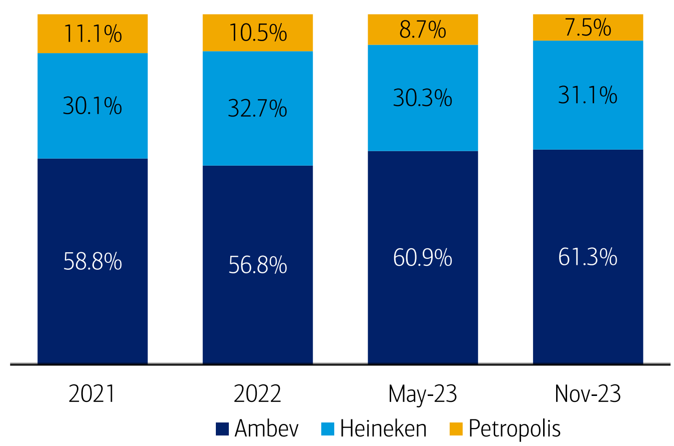
Exhibit 112: Ambev is gaining volume share, Petropolis losing

Q: Which brands do you usually buy?

Note: Considers Heineken, Ambev and Petropolis as 100%



Source: BofA Global Research survey

BofA GLOBAL RESEARCH

4.3 Protein: Feeding the world

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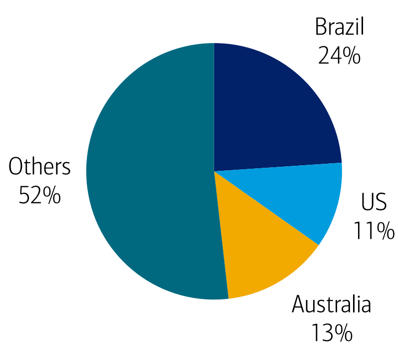
Brazil is one of the top protein producers and exporters. Brazil is the #2 producer and the #1 exporter of beef, and the #2 producer and #1 exporter of poultry. It is also the #4 global producer and #3 exporter of pork. Brazil's leading position in beef and poultry is due to: 1) Brazil's easy access to feed grains and land availability; 2) reduced cattle supply in the US in the last year; 3) higher income levels from emerging markets, and 4) global per capita meat consumption continuing to increase, with poultry consumption rising faster while pork and beef consumption should stay flattish.

Exhibit 113: Global beef exports breakdown (2024E)
Brazil is the largest exporter



Source: US Department of Agriculture

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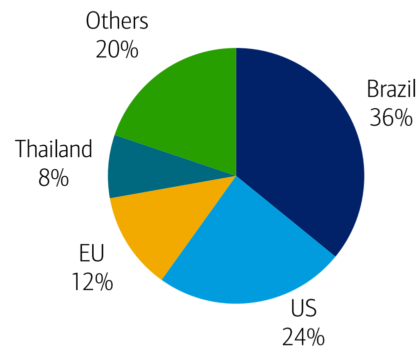
Exhibit 114: Global chicken exports breakdown (2024E)
Brazil is the largest exporter



Source: US Department of Agriculture

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The sector 10 years from now

According to the US Department of Agriculture, Brazil is expected to remain the #1 beef exporter, and remain the #1 exporter of poultry in the next decade. Brazilian beef exports are expected to grow by 3.2% per year and reach 4.0mn tons in 2032 vs 3.0mn in 2023. Brazil should also remain as #1 poultry exporter for the next decade within the largest producers, as exports are expected to reach 5.8mn, up 2% per year from current 4.9mn.

Global pork trade is expected to grow by 2% per year for the next decade and Brazil should surpass Canada and become the top #3 pork exporter, with annual volumes of ~1.8mn tons by 2033, vs. current 1.3mn tons.

Brazil's lower cattle costs and extensive land availability support cattle supply growth, enhancing production and increasing export potential. On poultry and pork, Brazil's self-sufficiency in feed grains is another competitive advantage, as its production requires high amounts of soybean meal and corn. For poultry, it takes 3.7 bushels of corn to produce 100 lbs of boneless skinless meat. For pork, it takes 8.0 bushels to produce 100 lbs of meat.

Sanitary control has also been an advantage for Brazil versus peers recently, especially after the Bird Flu outbreak around the world that started in the second half of 2022, which supported record high export volumes from Brazil. In early 2023, isolated cases of bird flu were identified in Brazil, but the country suffered temporary regional bans, which did not affect the country's total exports. In our view, high sanitary standards are required to keep Brazil as a leading protein supplier globally and there are still key importing markets closed to Brazilian proteins.

Weaknesses
Productivity is still a key theme for cattle and beef supply in Brazil, as Brazil's slaughtering rate is at 11% of the herd, below other large producers' rates (US at 36% and Australia at 22%) and the global average (23%).

Also, Brazil protein exports are concentrated in a few markets, increasing dependency on such countries. The top five beef importers account for 76% of Brazil's exports. China and Hong Kong account for 45% of Brazil's pork exports. China, Japan, UAE and Saudi Arabia account for 40% of Brazil's poultry exports.

Opportunities
Brazil remains one of the best places to produce beef globally, and productivity gains represent the main opportunity in the sector, despite the increase in yields in recent years. In our view, higher productivity should be driven by the increase in cattle supply from feedlots, as cattle from feedlots account for only 25% of the heads slaughtered, versus 70% in the US. Increases in artificial insemination are another driver.

In 2022, Bird flu disrupted the poultry market on a global basis. Along with the trade down process, Brazil accelerated poultry export, reaching a new record, which led international and domestic prices to react during the year. As of November 2023, Brazil remained as an important trading partner for China when it comes to proteins, representing 16%, 42% and 52% of the country's imports of pork, beef and chicken.

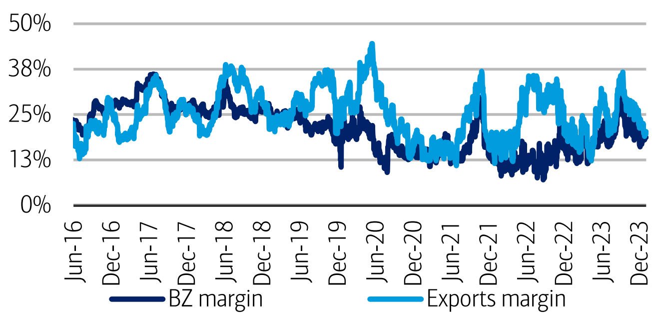
Finally, Brazil cattle availability should improve after years of cow retention and high slaughter to fulfill the Chinese demand. The high levels of retentions should now yield a positive momentum ahead with downside risk to cattle prices and growing volumes.

Risks
Beef, poultry, and pork are all subject to contamination by disease-producing pathogens, which can be introduced by handling during processing or at the consumer level. Even with companies focused on prevention, the occurrence of any disease could pose a risk to the opening of new markets and foster bans on protein exports from Brazil.

US cattle cycle should reach a critical point in 2024. USDA estimates beef production in the US to reduce by 6% YoY in the next year (-11% vs. the recent peak in 2022), given lower availability of animals that started in 2023. Beef prices have been somewhat resilient in the US, but there is downside risk as consumption decelerates, while there is increased competition with Brazil and Australia in the international trade.

On the poultry side, the risk is on pricing side. Grain prices sold off in 2023, bringing a significant cost relief, but part of that has been passed through to chicken prices, mainly in the international market. In this scenario, margins of poultry producers might sequentially recover, however potential nominal gross profit could be curbed.

Exhibit 115: Brazilian beef packer margin
Margins have been recently driven by lower cattle costs



Source: Bloomberg, BofA Global Research

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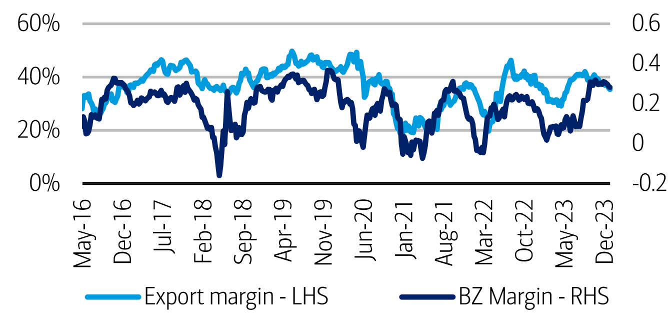
Exhibit 116: Brazilian chicken producer margin
Margins have been recently driven by lower grain costs



Source: Bloomberg, BofA Global Research

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4.4 Soft drinks: looking for growth

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Brazil is the second largest soft drinks market in the LatAm, with annual volume of 27mn liters (25% volume share in the region after Mexico with 30% share). Carbonated soft drinks (CSDs) are the largest segment, accounting for 54% of the total soft drinks market in Brazil.

Per capita consumption (PCC) in Brazil had a 2% CAGR in 2018-2023, according to Euromonitor, above the LatAm and the global averages of 1.5%. CSDs, juices and energy drinks have been the growth drivers. On CSDs, the market declined 17% between 2010 and 2017, mainly given weak macro conditions and higher taxes. As a result, the market size in 2022 is back to 2013 levels. For other categories, as energy and sports drinks as well as juices and ready to drink teas, we understand aspects as health and convenience are drivers of demand growth.

In Brazil, Coca-Cola is the leader with a 36% volume share in the soft drink market and a ~61% share in CSDs. AmBev is Coca-Cola's main competitor, being a PepsiCo bottler in Brazil. AmBev also produces its own soft drinks, including Guarana, and accounts for 5% of the soft drink market and 9% of CSDs in the country.

Tubainas, which refer to several local and regional brands of inexpensive soft drinks, are also relevant competitors for Coca-Cola. Many of them do not pay taxes. Combined, these brands have 26% share of Brazil's carbonated beverage market.

5 years from now: per capita consumption to accelerate

According to Euromonitor, Brazil should remain the second largest soft drinks and CSDs market in Latin America in the next 5 years, only behind Mexico. Brazil's soft drink PCC growth (CAGR 2023-2028E) at 2.7% will be slightly ahead of the global average. Brazil's growth should be driven by Energy (+13%) and Sport (+12%) drinks.

Upside risks to these estimates are possible, as soft drinks' per capita consumption in Brazil is 18% below the average of LatAm. On the other hand, health concerns will be a risk mainly to CSD volumes going forward.

Strengths

The Brazilian soft drink industry is concentrated in few players, which makes more difficult the entry of new players. At the same time, this concentration gives them more power. In CSDs, the three largest companies (Coca-Cola, AmBev and Heineken) account for 69% of the total market.

Weaknesses

In the short-term, higher sugar prices are partially limiting the cost relief from packaging Moreover, the increased awareness and consumption trends favoring healthy products among young consumers will pose a challenge to CSDs' volume growth in the future. This will be a key driver for sport/energy drinks, RTD tea/coffee and bottled water, despite CSDs' strong representativeness for the soft drinks industry in Brazil.

Opportunities

Bottlers are exploring the opportunity to distribute other products outside non-alcoholic beverages, as spirits, candies, health/personal care, taking advantage of the strength of their distribution network. The analytic tools they have developed should help them attract consumer companies.

The digitalization of the business will favor bottlers' operating growth allowing them to be closer to consumers. Investments on technology have accelerated making more efficient the supply chain of companies. The use of social media has also helped bottlers to increase its market penetration.

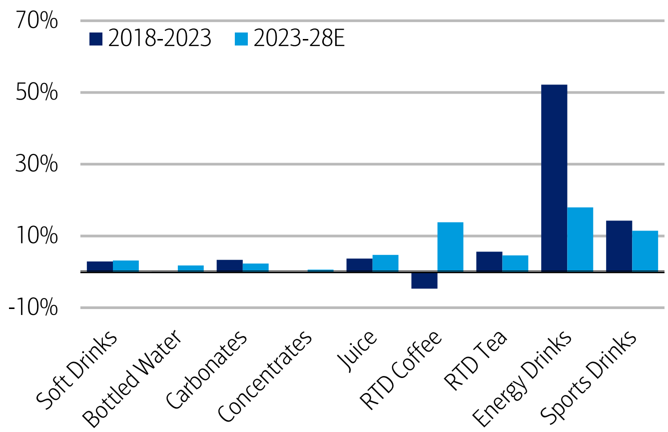
Innovation will be key to maintain sustainable earnings growth in the soft drinks industry. The focus should be on new product categories like flavored/functional waters, juices, ready-to-drink tea, sports and energy drinks. Also packaging (returnable presentations) will play an important role on sales growth favoring affordability.

Brazil remains one of the countries with strong consolidation opportunities in Latin America. The bottling system remains fragmented compared to other countries, as there are eight independent KO bottlers in the country, the most in the region.

Risks

Government intervention in the soft drink industry remains a risk. In recent years, soft drink producers located on the Free Economic Zone of Manaus (ZFM) have struggled with the IPI tax on concentrate. Since 2019, such tax credit has fluctuated between 4% and 12%, reducing bottlers visibility. From February 2021 onwards, the tax has remained at 8%, but discussions about reducing the tax have not stopped.

Exhibit 117: Soft drinks growth per category in Brazil (vol. CAGR)
Demand growth in 2023-28 to be driven by energy/sport drinks



Source: BofA Global Research, Euromonitor

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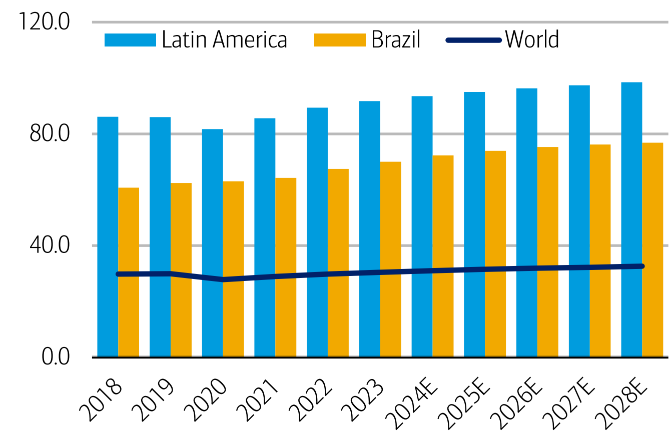
Exhibit 118: Per capita consumption (liters per year) of carbonated soft drinks
Per capital in Brazil has been recovering but growth should decelerate



Source: BofA Global Research, Euromonitor

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4.5 Capital Goods: Continuing on a bumpy recovery

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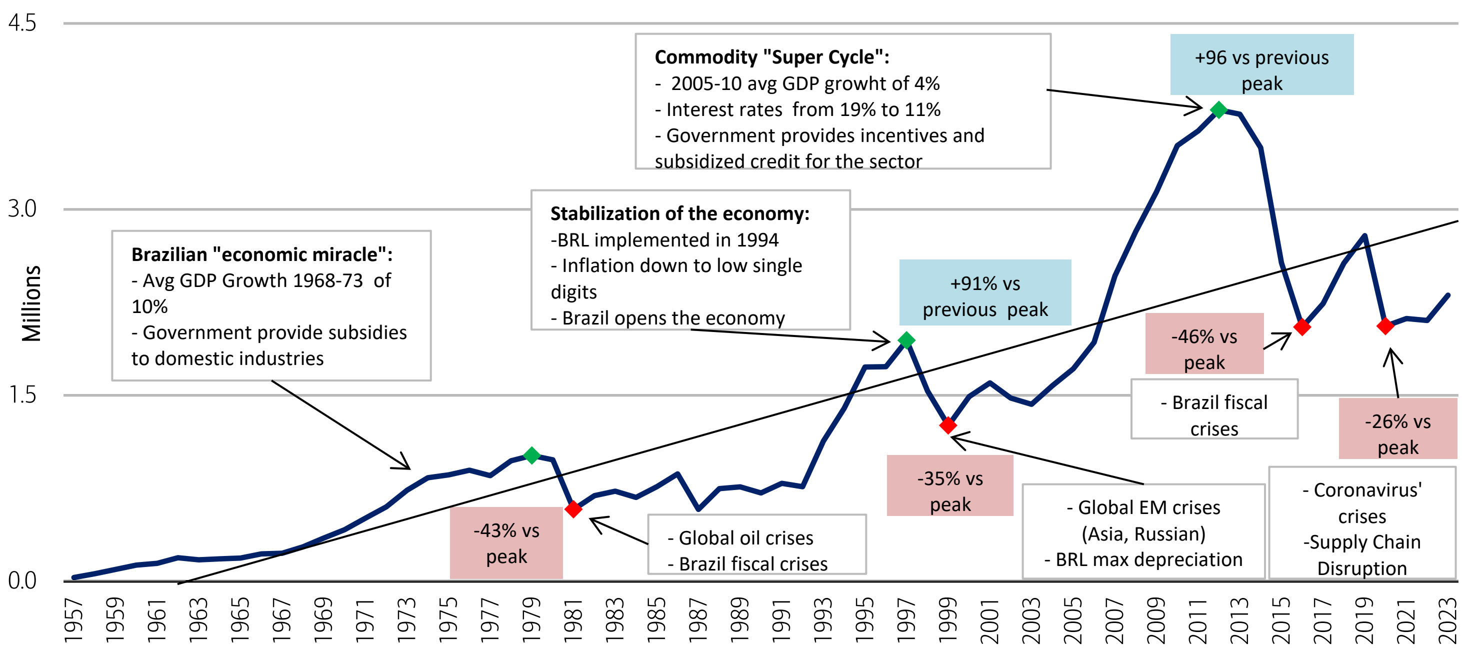
Apart from WEGE3, the majority of publicly traded companies in Brazil's Capital Goods sector have their business closely linked to the automotive industry. Given its importance to Brazil's industrial sector, the auto sector was at the center of a counter-cyclical macroeconomic policy that boosted sales and production rates from 2010-2013. Among the mechanisms the government used to support auto sales, we highlight tax rebates, purchasing programs and subsidized funding conditions.

The sector in a nutshell: a journey of ups and downs

The combination of abundant incentives and a good macro boosted auto sales in Brazil over the past two decades and volumes reached record highs in 2012-13, doubling from the previous decade levels (Exhibit 119). That scenario changed abruptly in 2014, when the deterioration in the economic scenario combined with a tighter fiscal policy (and phase out of incentives) led auto sales to decline 46% from 2013 until 2016. Since that major correction, volumes entered into a recovery cycle from 2017 onwards, growing 35% from bottom levels. That upward movement was interrupted by the COVID pandemic in 2020 and the supply chain disruptions in 2021 and 2022, when Brazilian auto sales remained below the 2.0mn vehicles threshold. In 2023, sales surpassed that level for the first time since 2019, due to government incentives to households purchases and car rentals fleet renewal.

Exhibit 119: Brazil vehicles sales evolution –(millions)
BZ auto sector is highly cyclical and is frequently supported by public incentives



Source: Anfavea, BofA Global Research

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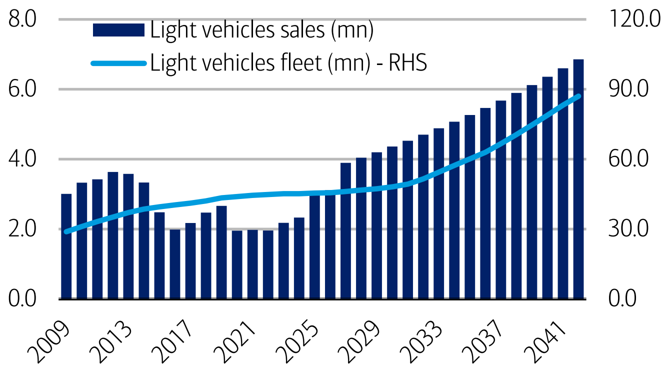
Brazil auto sector: a long-term positive outlook

As in other parts of the globe, Brazil auto sector has been highly affected by supply chain disruptions in the past few years. Notably, light vehicles sales in Brazil came in below 2.0mn units in for the last three years (vs our estimate of a sustainable sales level of ~3.0mn cars/year). We also note that the fourth year in a role of depressed sales level has created an undersupply of around 4.0mn light vehicles, part of which we expect to recover by 2027 through a pent-up demand. In the long run, we also think that the ageing of vehicles and a higher scrap rate (due to a strong sales level in 2009-14) should drive light vehicle sales up, above the 4m car threshold (in order for the country's light vehicle fleet to grow in line with historical levels, at 1.7x GDP).

Exhibit 120: We estimate LV sales to return to 3.0mn levels in 2025 – (Mn units)
We expect pent-up demand to support sales in the next 3 years



Source: Anfavea, BofA Global Research Estimates

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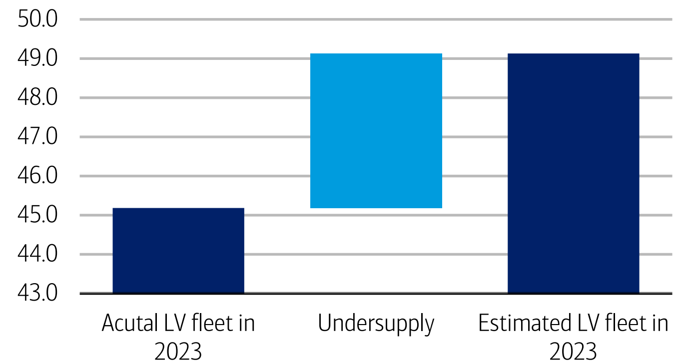
Exhibit 121: We estimate an undersupply of 1.6mn LVs in Brazil – (Mn units)
Lower sales and production volumes held fleet at 45.2mn units



Source: Anfavea, BofA Global Research Estimates

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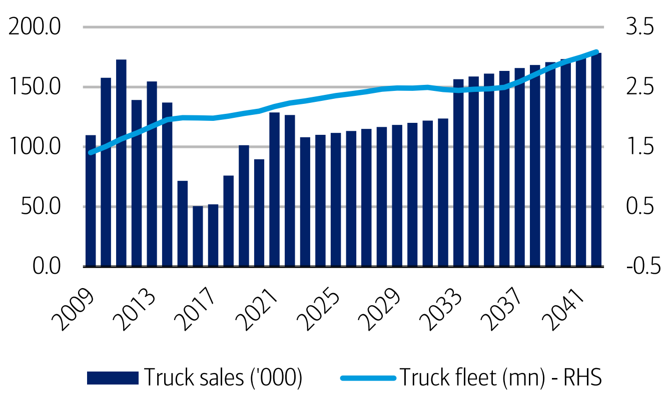
On Brazil's truck segment, we estimate that the truck market has experienced an oversupply of around 300k units in 2009-2015 due to high truck sales amid cheap government financing through BNDES PSI financing line (130k avg sales from 2009-2015).

After robust sales in 2021-22 (129k and 127k truck sales level, respectively), market contracted -15% YoY in 2023 due to Euro VI shift in regulation, causing truck prices to increase ~ 15-20%, restrictive credit conditions for auto loans and some pre-buy movement in the previous years. We expect a more modest sales growth in 2024, due to our conservative crop expectations for the year.

As we expect the excess of trucks sold in the past decade to be washed out gradually in the next decade, we calculate a sustainable truck sales level between 90k and 130k for upcoming years, depending on the oversupply scenario assumed. Our base case scenario considers the mid-point, at 110k units.

Exhibit 122: We see a long term positive outlook for trucks in Brazil
Truck sales should pick-up in 2030s to wash out excess trucks sold in 2010s



Source: Anfavea, BofA Global Research Estimates

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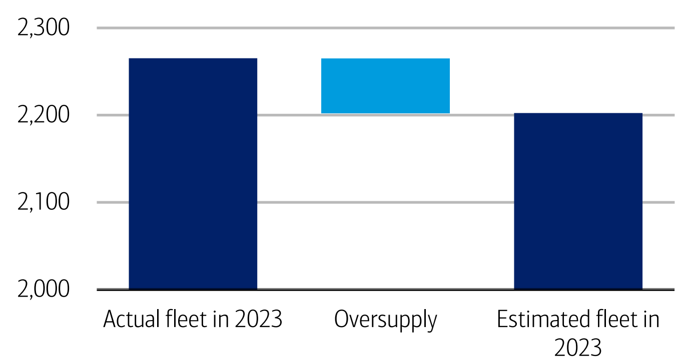
Exhibit 123: We see a mild oversupply of trucks sold between 2020-2023 – ('000)
We calculate that around 63k trucks were sold in excess in 2020-2023



Source: Anfavea, BofA Global Research Estimates

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4.6 Transportation: Tailwinds to remain; Airlines depending on macro

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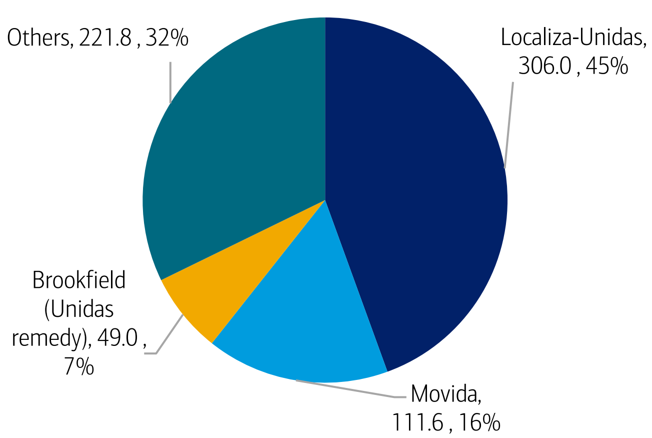
Car rental: Growth and consolidation to continue ahead

Brazil's car rental sector has been posting robust growth, with revenue and fleet growing at a CAGR of 15% and 10% in the past 10 years, respectively. The sector benefited from a series of tailwinds, including the development of a sizable ride-hailing market, higher penetration of rent a car (RaC) for leisure and tourism and higher share of corporates outsourcing their vehicle fleet. We highlight that competitive advantages driven by a large scale have been driving large players to gain market share in both the car rental and fleet rental divisions in Brazil, which we expect to remain (see Exhibit 124).

Going forward, while we expect a more moderate RaC expansion, we also think the fleet rental division will present strong growth in upcoming years, coming from subscription services (1-4 years contracts for individuals) due to its advantage vs vehicles' ownership costs. According to our estimates, for consumers that buy new vehicles through financing and sell them after 1-4 years (1.3m Brazilians, on our estimates, or 2.9% of BZ light vehicle fleet), rent vehicles is overall better when compared to total ownership costs, especially in the first years (see Exhibit 128-Exhibit 129).

Exhibit 124: 2022 Brazilian car rental sector market share ('000 cars, % of market share)
Localiza-Unidas has roughly 45% of market share in Brazil's car rental segment



Source: ABLA, BofA Global Research Estimates

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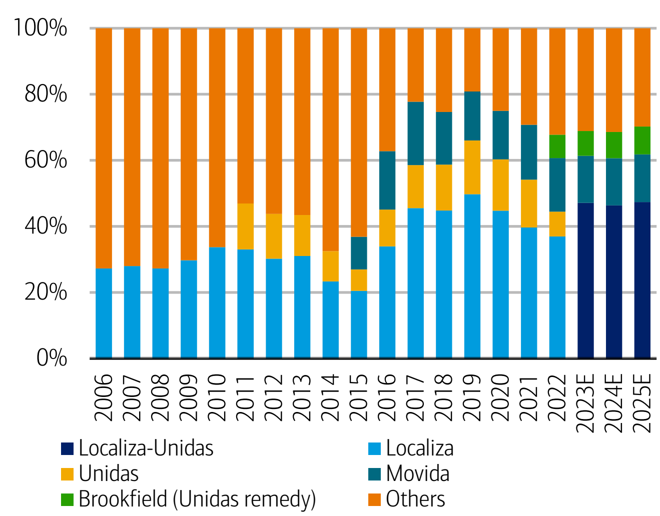
Exhibit 125: Brazilian car rental sector market share (% of market share)
We estimate Localiza-Unidas could reach a ~47% market share in 2025 vs ~44% in 2022



Source: ABLA, BofA Global Research Estimates

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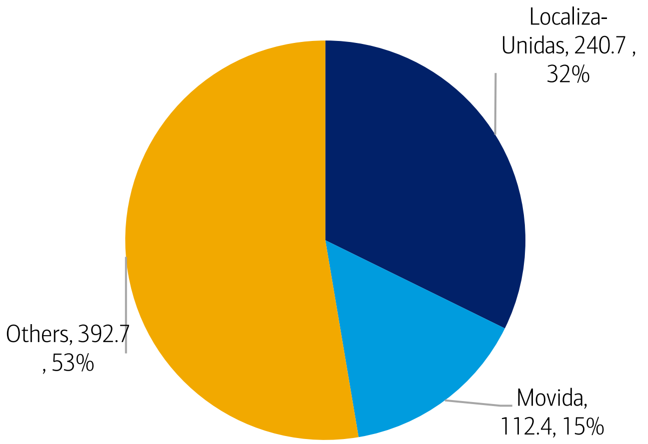
Exhibit 126: 2022 Brazilian fleet rental sector market share ('000 cars, % of market share)
Localiza-Unidas has a ~37% market share in Brazil's fleet rental division



Source: ABLA, BofA Global Research Estimates

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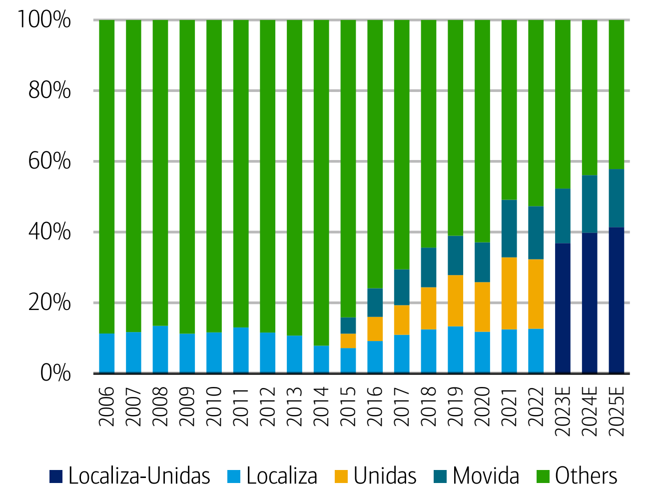
Exhibit 127: Brazilian fleet rental sector market share (% of market share)
Localiza could reach ~41% of car rental sector market share in 2025 vs ~32% in 2022



Source: ABLA, BofA Global Research Estimates

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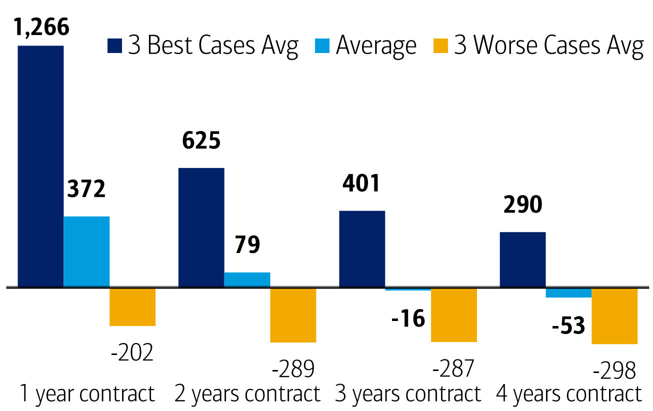
Exhibit 128: Average monthly cost advantage of renting vs buying a car (R$ per month)
We see renting as a superior option for individuals that buy new vehicles through financing and sell them after 1, 2, 3 or 4 years



Source: Brazil's Central Bank, FIPE, Movida (car price at January 8th), BofA Global Research Estimates

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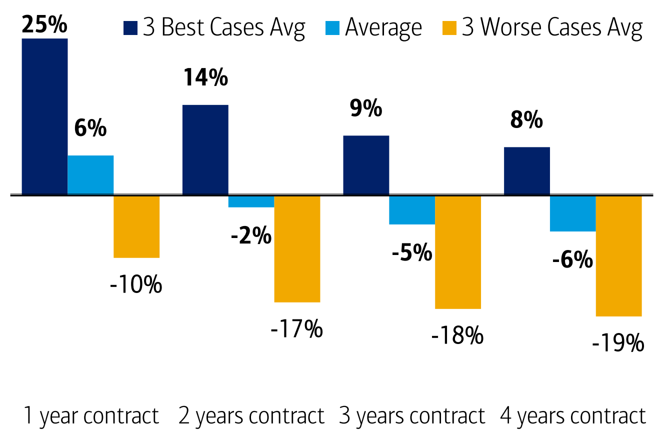
Exhibit 129: Average monthly cost advantage of renting vs buying a car (% per month)
Renting is better for consumers, especially in the first years



Source: Brazil's Central Bank, FIPE, Movida (car price at January 8th), BofA Global Research Estimates

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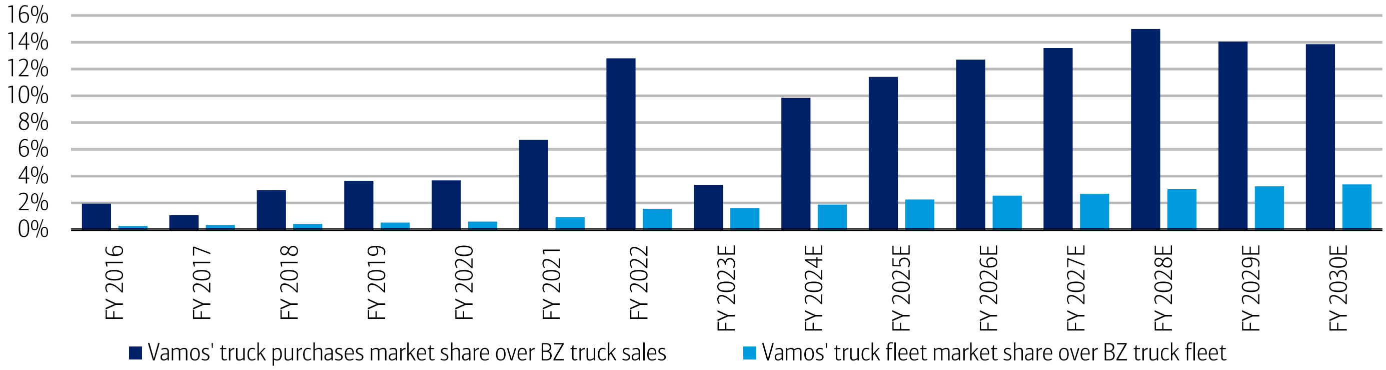
Truck rental: Vamos positioned to consolidate the market

Vamos (VAMO3) has been leading the consolidation of Brazil`s incipient truck rental market, which could lead to superior truck purchase/sale price spread and superior cash generation vs peers in the foreseeable future. With a fleet of 45.2k trucks and machinery in 3Q23, Vamos is 3-fold larger than the 2nd largest player (Unidas, controlled by Brookfield). With an already-high percentage of Brazil's truck sales being rented (10-15%), we expect the fleet penetration of rented trucks to keep increasing in upcoming years (see Exhibit 7).

Exhibit 130: Vamos' truck purchase/fleet market share in Brazil – (%)
We see Vamos stabilizing at 14% of truck sales and 3% of truck fleet in the long-term



Source: Vamos, Anfavea, BofA Global Research Estimates

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On competition, we believe the main risk to Vamos would be OEMs or other companies becoming aggressive and starting to dispute the sector leadership. In the past several months, Volkswagen, Volvo and Scania announced that they will start renting trucks in Brazil, while Randon (RAPT4) and Gerdau (GGBR4) created a joint venture with the same goal. Meanwhile, Mercedez-Benz and Iveco affirmed that they are also evaluating the possibility of renting trucks. As happened in the car rental market, we believe that OEMs could enter the truck rental market with aggressive prices, but become niche players thereafter, with a premium brand/price for companies that want to close contracts and do maintenance directly with the original brands (the main reason is their relationship with truck dealerships, which also needs to profit from the truck rental business).

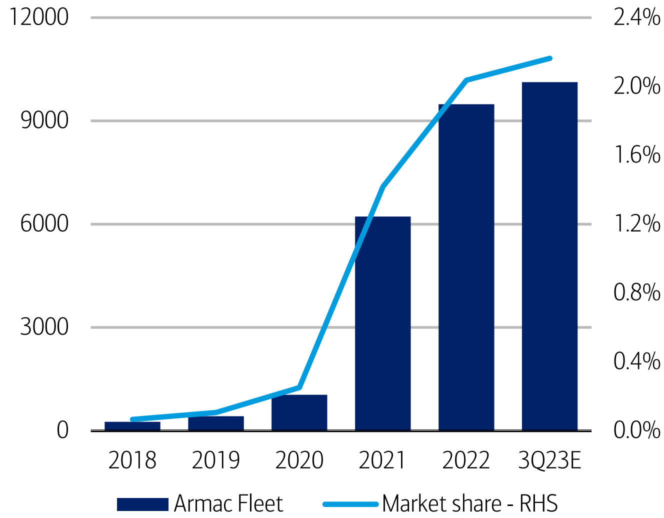
Equipment rental: consolidation opportunity

The expansion in Brazil's construction, agribusiness and mining sectors has driven yellow-line equipment sales to 29% CAGR from 2019 to 2022. Rental penetration has also gained share of sales, rising to 26% from 18% in the period. We remain optimistic with the growth opportunities embedded in the expansion of Brazil's yellow line equipment rental penetration, as well as market consolidation.

The two listed yellow-line equipment players are Armac (ARML3) and Mills (MILS3). Armac is Brazil's largest yellow line rental player (owning 2.2% of fleet), expanding its fleet to 10k units in 3Q23 from 1k machines in 4Q20. The company has established a unique competitive advantage, focusing on extending the lifespan of its vehicle fleet through a robust in-house maintenance system, also supported by a proactive role in sourcing auto parts directly from producers – bypassing intermediaries in the supply chain.

Mills entered the segment in 3Q22 through the acquisition of a competitor and now has 0.1% share. Mills targets premium brands, buys auto parts mostly from OEMs and holds a shorter cycle (six years). Mills' current main business is the rental of MEWP equipment (79% of 2022's revenue), with a 29% market share. MEWP usage is expected to keep growing in Brazil.

Exhibit 131: Armac currently owns just 2% of yellow line's fleet
Armac's fleet market share increased following its IPO in 2020



Source: Armac, Sobratema, Anfir, Bofa Global Research Estimates
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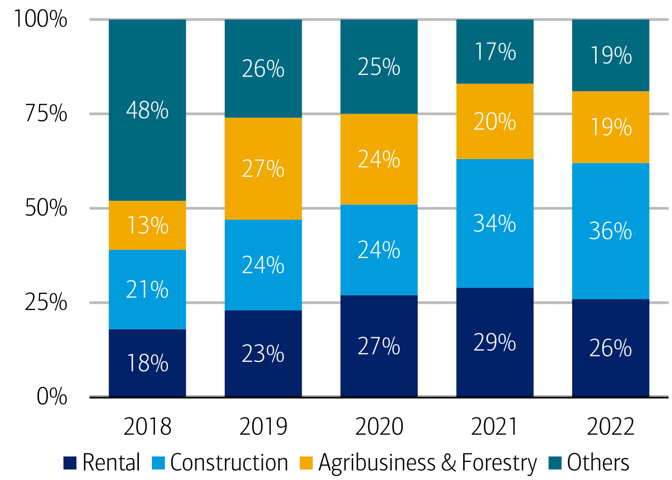
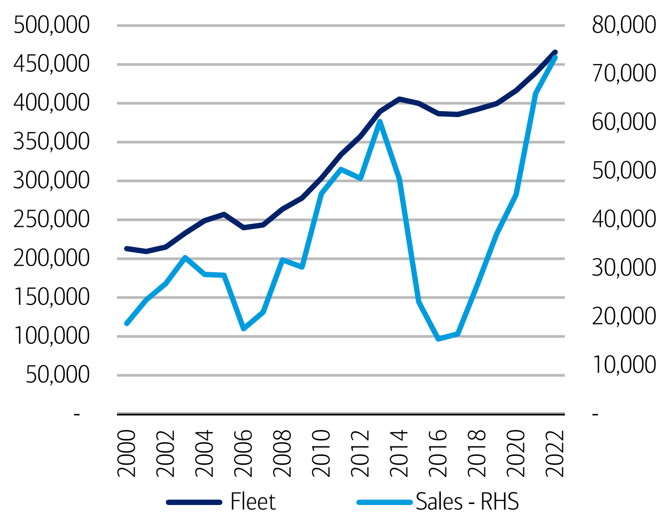
Exhibit 132: Yellow line sales breakdown by end-market
Rental companies represented a higher share of sales in recent years



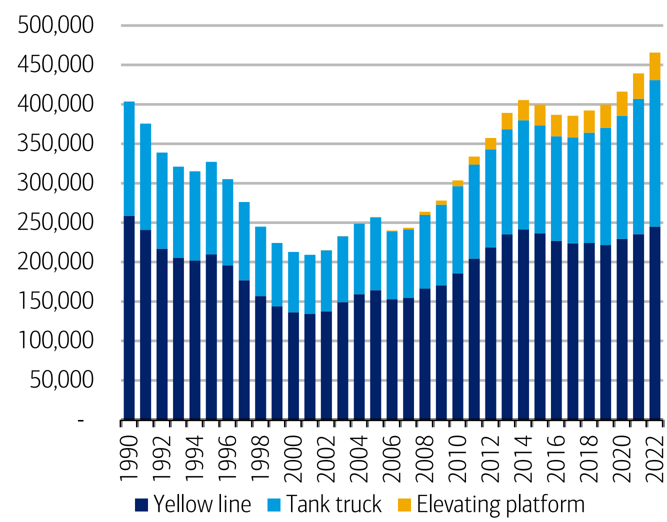
Source: Sobratema
BofA GLOBAL RESEARCH

Exhibit 133: Yellow line equipment sales breakdown - '000 Units
Yellow line sales recovered from 2015-2016 bottom levels



Source: Sales data prior to 2008 is estimated using Fenabrave's Machinery sales evolution
Source: Sobratema, BofA Global Research
BofA GLOBAL RESEARCH

Exhibit 134: Yellow line fleet breakdown – '000 Units
We see Brazil's yellow line fleet size at 465k units in 2022



Source: Sales data prior to 2008 is estimated using Fenabrave's Machinery sales evolution
Source: Sobratema, BofA Global Research
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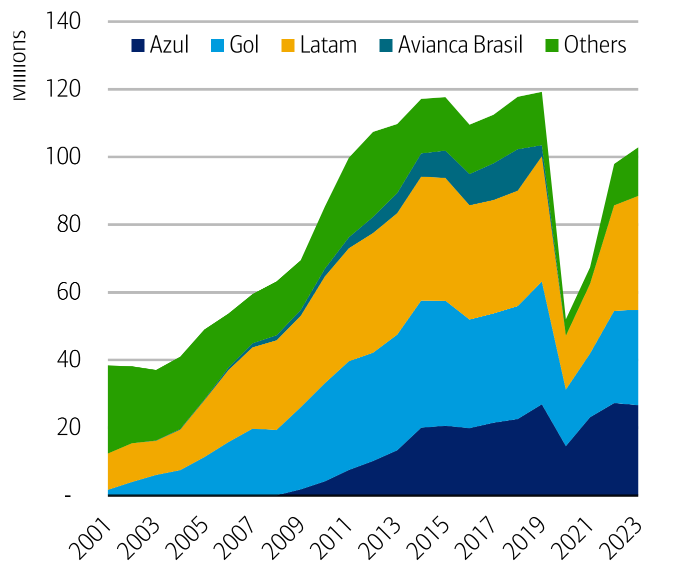
Airlines: bumpy recovery following two shocks in a row

Brazilian aviation market is split between three airlines companies: Latam, GOL (GOLL4) and AZUL (AZUL4), all of which owing approximately 30% of transported passengers' market share. Despite the relevant growth rate in transported passengers' volume from 2005 to 2015 (9% CAGR in the period), the number of transported passengers was affected by Brazilian 2015-2016's economic crisis, falling 7% YoY in 2016 and just returning to pre-crisis levels in 2018. In 2020, aviation market was hit by COVID-19 pandemic shock, falling -57%. The complete elimination of mobility restrictions took place in 2022, but transported passengers' volume YTD is still 14% below 2019 levels as GOL is facing issues to deploy incremental capacity due to engine maintenance backlog and delayed delivery of aircrafts.

Airlines companies' financial situation were severely hit by COVID-19, FX depreciation, higher oil prices and the cash burn since 2020. We estimate that AZUL's adj. net debt increased to R$39.5bn in 3Q23 (R$15bn pre COVID), while we estimate that working capital lines deteriorated by -R$6.7bn. GOL's adj. net debt (considering 7.0x rent as a proxy for operating lease' NPV) increased to R$33.2 bn in 3Q23 (from R$17bn pre COVID), while we calculate working capital lines deteriorated by R$5.7bn. As a results, we don't expect transported passengers' to grow substantially in the next years as the three airlines should prioritize profitability over capacity expansion (see Exhibit 135).

Exhibit 135: Brazil transported passengers - millions
Brazilian aviation market still not fully recovered from COVID



Source: ANAC, BofA Global Research Estimates (*) 2023 data is only updated until November
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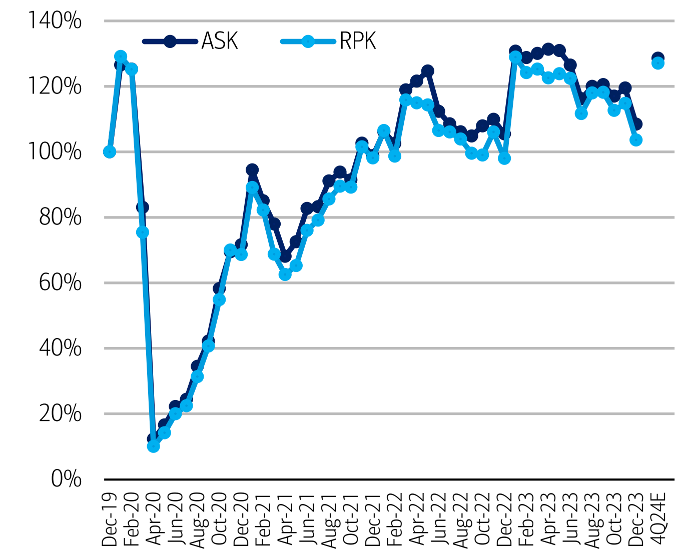
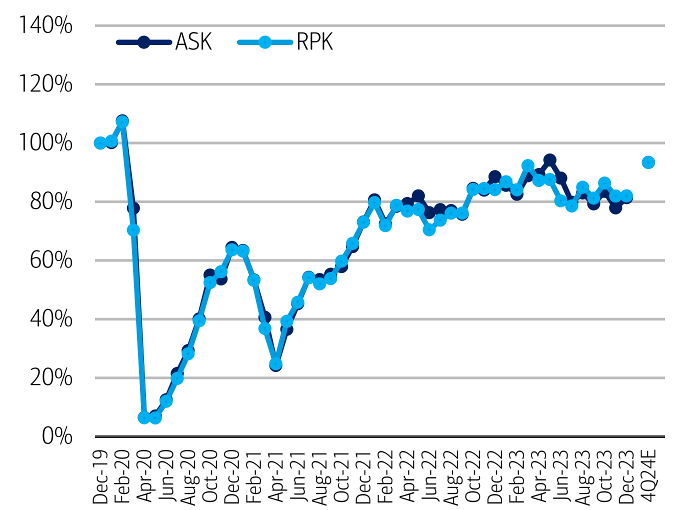
Exhibit 136: Azul's ASK and RPK vs 2019 levels – (%)
Azul's ASK and RPK are up 8.4% and 3.6% vs 2019 levels



Source: Azul, BofA Global Research Estimates
BofA GLOBAL RESEARCH

Exhibit 137: GOL's ASK and RPK vs 2019 levels – (%)
GOL's ASK and RPK are down 18.6% and 18.0% vs 2019 levels



Source: GOL, BofA Global Research Estimates
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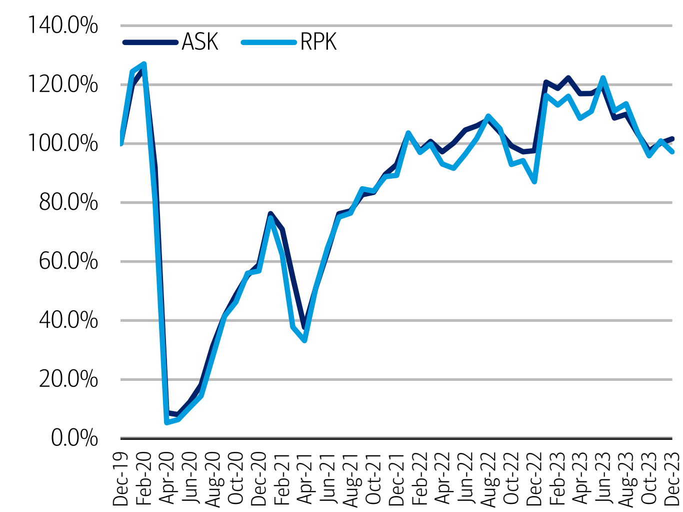
Exhibit 138: Latam's domestic BZ ASK and RPK vs 2019 levels – (%)
Latam's domestic BZ ASK is up 0.2% and RPK is down 2.8% vs 2019 levels



Source: Latam, BofA Global Research Estimates
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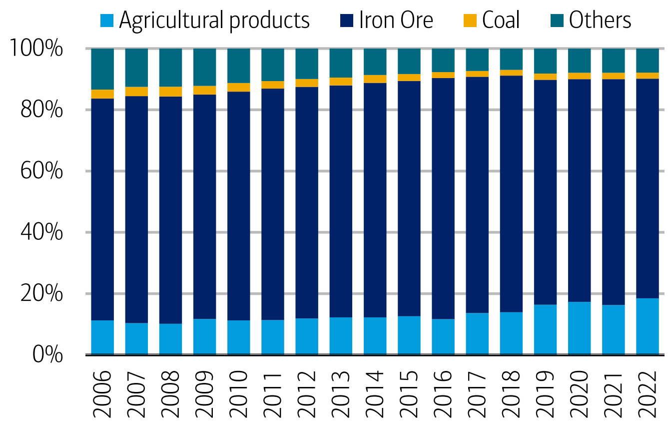
Railways: better regulation to improve capex spending

The bulk of railways in Brazil are focused on the transport of iron ore, which represented 74% of total volumes transported in 2021, with agricultural products being the second most transported products by the rail haulage (16% of 2021 volumes). We note that 15 railways has been auctioned in Brazil since 1989, 11 of which in the second half of the 1990s, with mining companies and Rumo (RAIL3, former ALL) winning 6 and 5 of them, respectively (Exhibit 142).

We highlight recent improvements in railway legislation are expected to increase investments in the sector. For instance, the rebidding law (Law 13.448/2017) allows the anticipation of railway concession renewals in exchange for more capex to be deployed by the concessionaire. We note that concessionaires adhered to this new legislation as Rumo already anticipatedly renewed Malha Paulista concession in 2020 until 2058 (original termination in 2028) in exchange for a concession fee of R$2.9bn and additional investments of R$6.1bn. MRS also renewed Malha Sudeste in July 2022 until 2056 (original termination in 2026) in exchange for a concession fee of R$14mn and R$11bn capex.

Additionally, Railways Law (Law 14.273/2021) established the authorization regime, which allows the private sector to build its own railways without going through the auction process carried on by the public sector. According to ANTT (Brazilian National Transport Agency) website, until October 2022, there were 95 authorization railway requirements and 27 new contracts signed, amounting R$150bn capex and 11,000 Km. Despite those impressive numbers, we note that the only authorization railway that already got started was Rumo's Lucas do Rio Verde expansion project (which actually is a project carried on under Mato Grosso state government legislation), while other projects have no firm commitment to be implemented (and several of them has no feasibility, according to our industry sources).

Exhibit 139: BZ railways transported volumes – (Ton – thousands)
Iron ore represented and agricultural products represented 72% and 18% of BZ railways' transported volumes in 2022, respectively



Source: ANTT, BofA Global Research Estimates

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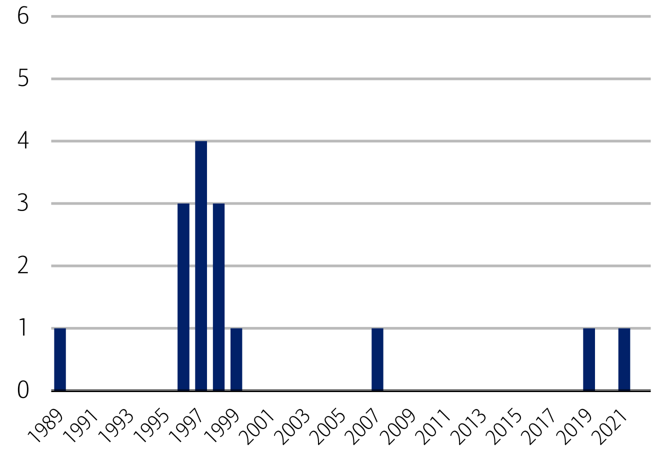
Exhibit 140: Number of railways auctions in Brazil
Railways auctions were concentrated in the end of 1990s



Source: ANTT, BofA Global Research

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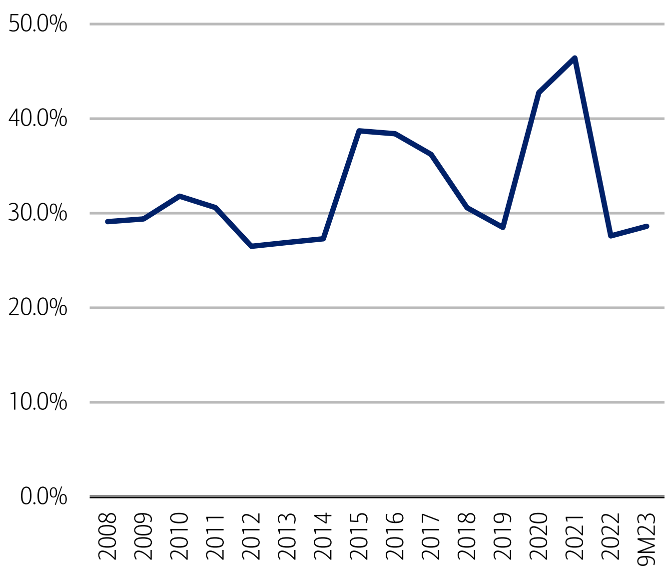
Exhibit 141: Rumo Capex/Revenues ratio evolution – (%)
Rumo capex/revenues ratio spiked in 2020-2021



Source: Rumo, BofA Global Research Estimates

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Exhibit 142: BZ railways auctions since 1989
Brazil auctioned 15 railways since 1989, with Rumo winning five of them

Grantor	Name	Region/State	Controller	Extension (km)	Concession start	Term (years)	Antecipated renewal (Years)	Concession Expiry
Federal Government	Rumo Malha Norte	MT-MS-SP	Rumo	755.3	May-89	90		May-79
Federal Government	Rumo Malha Oeste	MS-SP	Rumo	1,973.1	July-96	30		Jun-26
Federal Government	Ferrovia Centro-Atlântica	MG-SE-GO-ES-DF-RJ-BA-SP	VLI Logística	7,856.8	August-96	30		Aug-26
Federal Government	MRS Logística (Malha Sudeste)	SP-RJ-MG	CSN, Usiminas, Vale, Gerdau	1,821.3	December-96	30	30	Nov-56
Federal Government	VALE-Estrada de Ferro Carajás	PA-MA	Vale	996.7	January-97	30	30	Jan-57
Federal Government	VALE-Estrada de Ferro Vitória a Minas	ES-MG	Vale	894.2	January-97	30	30	Jan-57
Federal Government	Ferrovia Tereza Cristina	SC	Santa Lúcia Concessões públicas LTDA, Administração e Empreendimentos Vasone LTDA and Apply Comérico Empreendimentos LTDA	164.0	January-97	30		Jan-27
Federal Government	Rumo Malha Sul	RS-SC-PR-SP	Rumo	7,223.4	March-97	30		Feb-27
Federal Government	Ferrovia Transnordestina Logística	MA-PI-CE-RN-PB-PE-AL	Compnahia Siderurgica Nacional (CSN)	4,295.1	January-98	30		Dec-27
Federal Government	Transnordestina Logística*	PI-CE-PE	VALEC, CSN	1,753.0	December-97	30		Dec-57
Federal Government	Estrada de Ferro Paraná Oeste	Paraná	Parana state government	248.1	October-98	90		Oct-88
Federal Government	Rumo Malha Paulista	SP-MG	Rumo	2,118.0	January-99	30	30	Dec-58
Federal Government	Ferrovia Norte Sul Tramo Norte	MA-TO	VLI Logística	744.5	December-07	30		Dec-37
Federal Government	Ferrovia Norte Sul Tramo Central	GO-TO	Rumo	1,544.0	July-19	30		May-49

Exhibit 142: BZ railways auctions since 1989
Brazil auctioned 15 railways since 1989, with Rumo winning five of them

Grantor	Name	Region/State	Controller	Extension (km)	Concession start	Term (years)	Antecipated renewal (Years)	Concession Expiry
Private-Authorization	Lucas do Rio Verde	MT	Rumo	600.0	September-21	45		Aug-66
Federal Government	Ferrovia de Integração Oeste-Leste (FIOL)-Trecho 1	BA	Bahia Mineração (Bamin)	537.0	September-21	35		Sep-56

Source: ANTT, BofA Global Research (*) Renewed by 30 years in 2014

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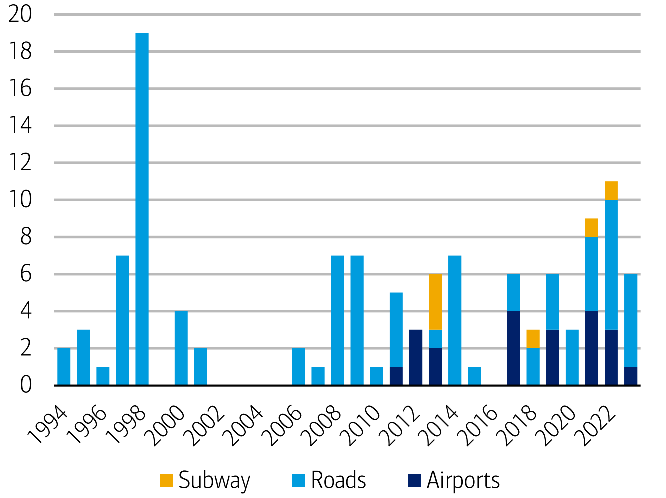
Toll Roads: decent auctions pipeline to continue in 2024

Since the start of federal government's toll roads auctions in 1994, Brazil already auctioned more than 100 roads and airports, with an estimated capex requirement of R$400bn (Dec 2023 nominal terms). Auctions have gone through ups and downs in the last 30 years, with notable peaks in 1998 (19 auctions – R$31bn capex), 2008-2009 (14 auctions - R$70bn capex), 2011-2014 (17 auctions – R$151bn capex). Since 2017, Brazil has been auctioning a decent pipeline of roads and airports, mainly due to the lack of government's investment capacity and necessity of infrastructure investment in the country (see Exhibit 144).

While some investors are concerned that Brazil's recent government change could cause modifications in auctions and concessions' framework, we highlight that concessions legislation is established and enforced by country's courts, therefore, we would not expect relevant changes in auctions or concessions' legislation in upcoming years. Notably, we see a decent pipeline of new assets to be auctioned ahead, coming especially from expiring assets (see Exhibit 143).

Historically, CCR (CCRO3) has won about 17.7% of concession auctions in Brazil (20.7% in 2019-22), while ECOR (ECOR3) has won 10.5% (13.0% in 2020-22), considering total amount of investments. Going forward, we expect enough bidders to limit future auctions IRRs to reasonable levels. They are: 1) Patria (private equity, an arm of Blackstone in Brazil); 2) GLP (a major global player in the real state and infrastructure sectors, managing over US$120bn of assets globally); 3) Perfin, a local private equity firm; 4) Sacyr Spanish group; 5) Vinci, which recently purchased a road stake from Patria; 6) Starboard Partners (Brazilian investment firm) and 7) China Construction Company. In addition, the Spanish group Acciona, who have won two road concessions in Brazil in the past, has been active on studying some road auctions in the country. Meanwhile, relevant local players who have been inactive on recent auctions could have interest at some point, being the most relevant players: 1) Arteris (former OHL Brasil); and 2) AB Concessoes, owned by the Italian group Atlantia and the local player Bertin. As for airport concessions, major global players have been present and active in Brazil: Vinci, Zurich, Fraport, Aena, besides CCR and Patria, potentially limiting future auction IRRs (such as Viracopos & Galeao re-bidding & Santos Dumont).

Exhibit 143: Number of auctions in Brazil – (# of auctions)
Federal and state concessions picked up after 2015-2016 crisis



Source: ANTT, PPI, local news wire, BofA Global Research Estimates

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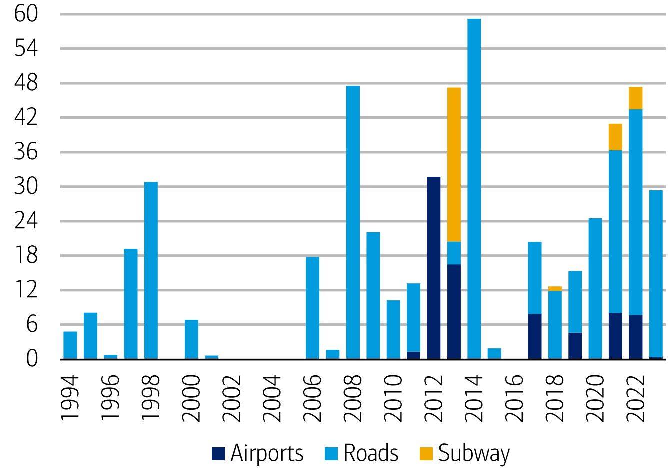
Exhibit 144: Amount of investments required in Brazilian concession auctions (R$bn, Dec/2023 terms)
The amount of capex required started a strong upward trend in 2018



Source: ANTT, PPI, local news wire, BofA Global Research Estimates

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Exhibit 145: Upcoming concession auctions in Brazil & potential NPV/sh to CCR, ECOR

We see CCR with firepower to bid for almost any of the expected future auctions in Brazil, while we see balance sheet restrictions for some of them on Ecorodovias

							CCR			ECOR		
Type	Expected date	Federal/ State	Auction	Extension (km)	Term	Capex (BRL mn)	Firepower?	NPV/sh (10% IRR)	NPV/sh (12% IRR)	Firepower?	NPV/sh (10% IRR)	NPV/sh (12% IRR)
Road	1Q24	Federal	BR-040 - (BH-JF)	231	30 years	5,000	Yes	0.5	0.8	No	0.6	1.3
Road	04/16/24	SP	São Paulo´s Coast	213	30 years	4,300	Yes	0.4	0.7	No	0.5	1.1
Road	2Q24	Federal	BR-040/GO/MG Rota dos Cristais	594	30 years	6,300	Yes	0.6	1.0	No	0.7	1.6
Road	2Q24	Federal	BR -040/495/MG/RJ (JF-RJ)	n.a.	30 years	n.a.	-	0.0	0.0	-	0.0	0.0
Road	3Q24	Federal	BR-153/262/GO/MG	523	30 years	5,700	Yes	0.6	0.9	No	0.7	1.4
Road	3Q24	Federal	BR-262/MG - Rota do Zebu	440	30 years	4,500	Yes	0.4	0.7	No	0.5	1.1
Road	11/24/2023	Federal	BR-381/MG	304	30 years	6,000	Yes	0.6	1.0	No	0.7	1.5
Road	4Q24	Federal	Center-North highways	2,570	30 years	13,600	Yes	1.3	2.2	No	1.6	3.4
Road	4Q24	Federal	Parana highways - Block 3	569	30 years	8,100	Yes	0.8	1.3	No	0.9	2.0
Road	4Q24	Federal	Parana highways - Block 6	646	30 years	8,500	Yes	0.8	1.4	No	1.0	2.1
Road	1Q25	Federal	BR-163/MS - Rota do Pantanal	380	30 years	4,300	Yes	0.4	0.7	No	0.5	1.1
Road	1Q25	Federal	Parana highways - Block 4	628	30 years	8,300	Yes	0.8	1.3	No	1.0	2.1
Road	1Q25	Federal	Parana highways - Block 5	430	30 years	5,500	Yes	0.5	0.9	No	0.6	1.4
Road	2Q25	Federal	Rio Grande do Sul highways	674	30 years	5,100	Yes	0.5	0.8	No	0.6	1.3
Road	2Q25	Federal	BR-163/267/MS - Rota do Tuiuiu	714	30 years	6,800	Yes	0.7	1.1	No	0.8	1.7
Road	3Q25	RS	Rio Grande do Sul highways - Block 2	415	30 years	4,112	Yes	0.4	0.7	No	0.5	1.0
Road	4Q25	RS	Rio Grande do Sul highways - Block 1	445	30 years	4,447	Yes	0.4	0.7	No	0.5	1.1
Road	2025	SP	ViaOeste rebid (block 1)	-	-	-	-	-	-	-	-	-
Road	2025	SP	ViaOeste rebid (block 2)	-	-	-	-	-	-	-	-	-
Road	2025	SP	ViaOeste rebid (block 3)	-	-	-	-	-	-	-	-	-
Road	2025	SP	Renovias rebid (block 1)	-	-	-	-	-	-	-	-	-
Road	2025	SP	Renovias rebid (block 2)	-	-	-	-	-	-	-	-	-
Road	2025	SP	Santos-Guarujá tunnel	-	-	-	-	-	-	-	-	-
Road	n.a.	Federal	BR-060/153/040/GO/DF	315	30 years	n.a.	-	-	-	-	-	-
Road	n.a.	Federal	BR-101/RJ	320	30 years	n.a.	-	-	-	-	-	-
Road	n.a.	Federal	Northeast highways - Block 1 (BR-235)	339	30 years	2,850	Yes	0.3	0.5	No	0.3	0.7
Road	n.a.	Federal	Northeast highways - Block 2 (BR-101)	482	30 years	4,280	Yes	0.4	0.7	No	0.5	1.1
Road	n.a.	Federal	Northeast highways - Block 3 (BR-232)	508	30 years	4,880	Yes	0.5	0.8	No	0.6	1.2
Road	n.a.	Federal	Northeast highways - Block 4 (BR-230/101)	410	30 years	4,700	Yes	0.5	0.8	No	0.5	1.2
Road	n.a.	Federal	Northeast highways - Block 5 (BR-116/304/101)	732	30 years	4,730	Yes	0.5	0.8	No	0.5	1.2
Road	n.a.	Federal	Santa Catarina Highways	3,153	30 years	30,000	No	2.9	4.8	No	3.5	7.5
Road	n.a.	Federal	BR-158/155/MT/PA	1,135	30 years	n.a.	-	-	-	-	-	-
Road	n.a.	Federal	BR-135/316/MA	438	30 years	n.a.	-	-	-	-	-	-
Road	n.a.	MG	Block 7 - Ouro Preto	190	30 years	2,360	Yes	0.2	0.4	No	0.3	0.6
Road	n.a.	PE	PE - 050, PE - 060, PE - 090	235	30 years	1,131	Yes	0.1	0.2	No	0.1	0.3
Roads				**17,566**		**149,359**		**14.6**	**24.0**		**17.3**	**37.4**
Subway	02/29/24	SP	Intercity Train - Campinas/São Paulo + CPTM Line 7	202	30 years	13,559	Yes	1.3	2.2	No	1.6	3.4
Subway	2024	SP	CPTM lines 11, 12, 13	-	-	7,600	Yes	0.7	1.2	No	0.9	1.9
Subway	2025	SP	CPTM lines 10 and 14	-	-	-	-	-	-	-	-	-
Subway	2025	SP	Intercity Train - Sorocaba/São Paulo	-	-	-	-	-	-	-	-	-
Subway	1Q26	PE	Recife subway	72	30 years	2,133	Yes	0.2	0.3	No	0.2	0.5
Subway	n.a.	SP	CPTM line 19 or 20	-	-	-	-	-	-	-	-	-
Subway	n.a.	RJ	Metro-Rio (Line 3)	-	-	-	-	-	-	-	-	-
Subway	n.a.	BA	South extension (Line 1)	-	-	-	-	-	-	-	-	-
Subway	n.a.	BA	Lauro de Freitas extension (Line 2)	-	-	-	-	-	-	-	-	-
Subway	n.a.	DF	Federal district subways and W3 VLT	-	-	-	-	-	-	-	-	-
Subway	n.a.	RS	Trensurb	44	30 years	1,247	Yes	0.1	0.2	No	0.1	0.3
Subway				**318**		**24,539**		**2.4**	**3.9**		**2.8**	**6.1**
Airport	n.a.	Federal	Viracopos (SP) airport rebidding	-	30 years	n.a.	-	-	-	-	-	-
Airport	n.a.	Federal	Santos Dumont and Galeao airports (RJ)	-	30 years	-	-	-	-	-	-	-
Airport	n.a.	RS	Passo Fundo and Santo Ângelo	-	-	85	Yes	0.0	0.0	No	0.0	0.0
Airports				**-**		**85**		**0.0**	**0.0**		**0.0**	**0.0**

Source: ANTT, PPI, local news wire, BofA Global Research Estimates. *CCR and ECOR's assumed IRR is in real terms, unlevered (*) All five blocks combined

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4.7 Education: A long cycle sector

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The education sector is divided into three main subsectors: 1) K-12 education, encompassing students in basic and secondary education; 2) post-secondary education and technical courses; and 3) language courses and complimentary courses.

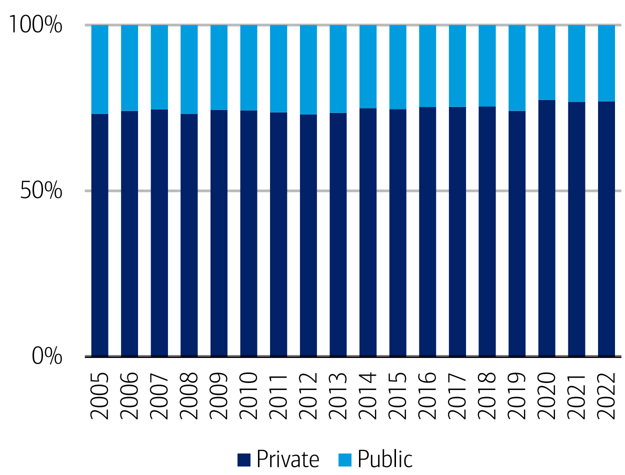
K-12: It's all about private schools

In K-12, c.80% of the students attend government-sponsored public schools for free, but the quality of these schools tends to be very low. On top of that, we note that the public segment is going through a movement of representativeness reduction (from 86% in 2010 to 81% in 2022). We believe this is mainly driven by increasing value creation from private schools, which have developed new learning systems and digital solutions, in a quality-driven market.

Resilience of the segment makes it the jewel in the crown

Among the main advantages about K-12, we highlight: i) longer student lifetime, ii) lower drop-out rates, iii) high margin business, iv) 5x larger student base in comparison to post-secondary segment, v) opportunity of market consolidation given the actual highly fragmented environment. Furthermore, the subsector is more resilient, due to its top priority in family spending and compulsory frequency laws.

Exhibit 146: Most of students rely on private studies in the post-sec education, with 23% of them studying at public institutions. This ratio has declined considerably during the pandemic
Share of post-sec students in Brazil by administrative sphere (2022)



Source: BofA Global Research, INEP

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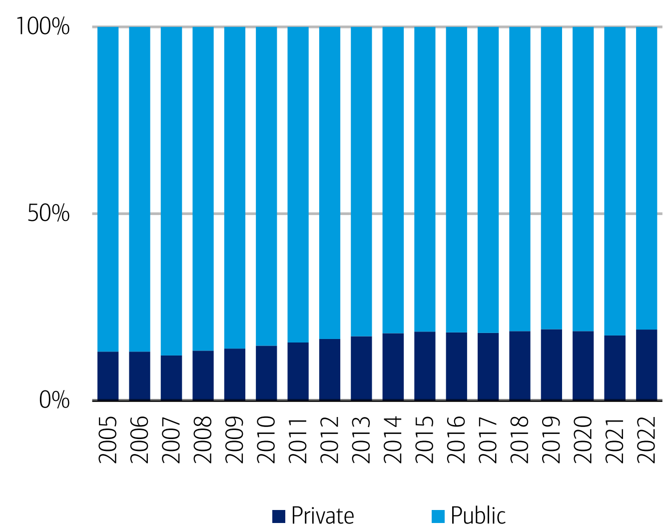
Exhibit 147: On the other hand in the basic educ. Most of students are in public schools that represent 81% of total students
Share of K-12 students in Brazil by administrative sphere (2022)



Source: BofA Global Research, INEP

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Public investments should grow but lag to private schools is likely to continue

Overall, private schools complement the lack of public investment by offering better quality services in K-12. In 2020, the Brazilian government renewed the FUNDEB (national fund for maintenance and development of K-12 education) and agreed to gradually increase the contribution of the federal government to the Fund. According to the new rules, federal investments will total 23% of the Fund by 2026 (from the current 15%). That said, the federal contribution could raise from R$15.8 billion to R$36.3 billion, annually.

Post-secondary: Public investments are key to demand

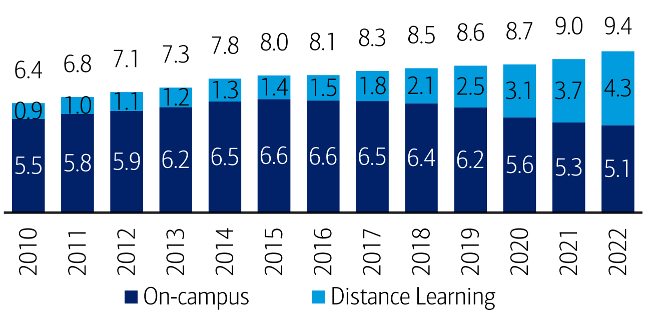
Public universities are top quality, however account for only 23% of enrollments (as of 2022). Brazil is still in the early stages of a long process towards reaching education penetration levels close to those of developed countries. According to the United Nations Educational, Scientific and Cultural Organization (UNESCO), the gross enrollment ratio of post-secondary education in Brazil stands at 55%. This figure has grown from roughly 17% in 2005 and 20% in 2007, but it is still well below other countries in LatAm such as Argentina and Chile (90% and 99%).

Sector expansion relies on key long-term triggers

The low level of penetration is the main opportunity supporting sector's growth. However, we see student's perception about the advantages of post-secondary education on wages as other key factor. According to OECD, Brazil has one of the highest household income differences between complete vs incomplete post-secondary education degree. Thus, we expect it to continue growing at single digit levels.

Exhibit 148: Total number of undergrad students reached 9.4mn in 2022, being 46% of it from DL

Total BZ Undergrad Students - public and private (mn)



Source: BofA Global Research, INEP

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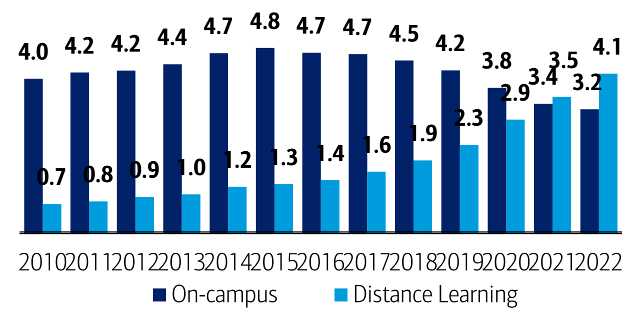
Exhibit 149: Total BZ Private Undergrad Students (mn)

Total undergraduation students on DL overpassed on-campus students at 4.1mn vs. 3.2mn from on-campus



Source: BofA Global Research, INEP

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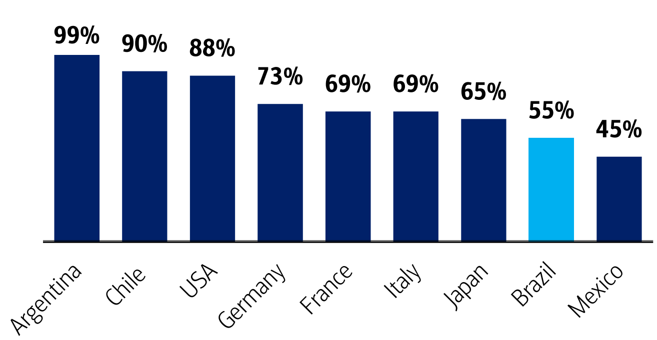
Private institutions benefit from dynamics of both education segments

The benefits for private institutions lean on both subsectors: i) K-12, with a more competitive educational quality in comparison to public precarious structure and the higher odds to get admissions in better universities, ii) post-secondary, as public sector is not able to attend all students' demand given its structural constrains.

Exhibit 150: Brazil ratio is still low at 55% vs. developed countries such as USA at 87%. It is also lower than other LatAm countries such as Chile and Argentina

Gross enrolment ratio of post-secondary education in Brazil still low (latest available – 2020)



Source: BofA Global Research, OECD

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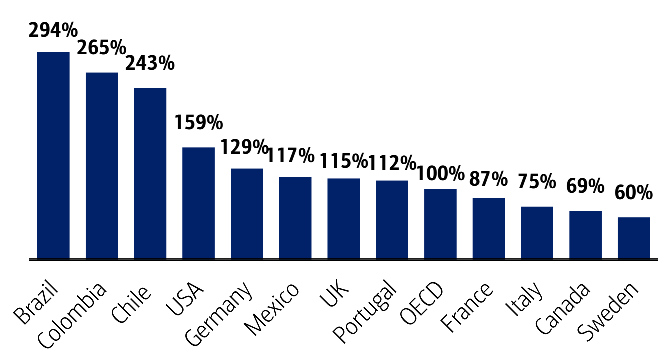
Exhibit 151: In Brazil having a post-sec education could imply earnings 3x higher vs. someone who did not complete

Relative earnings differences between who completed the post-secondary education and who did not (2022)



Source: BofA Global Research, OECD

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Also, given the dominance of private universities in the post-secondary segment, the government offers various social programs to financially support students, being the main one FIES and Prouni. The first one was implemented in the early 2000's providing government-financed student loans at low and partially subsidized interest rates. The second one, Prouni, was created in 2005 and is the national program that grants scholarships to students by giving tax benefits to universities. Due to that, higher education companies pay little to no income tax. These incentives have been determinant on post-secondary players performance, helping on operational leverage and bottom-line results.

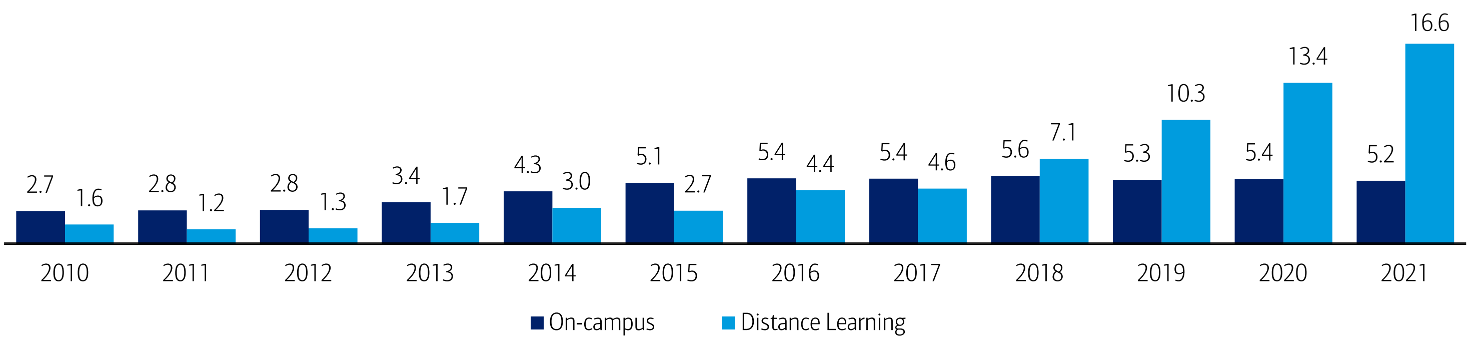
K-12 perspectives: opportunity for listed players

We believe in market consolidation for K-12 in the upcoming years on behalf of the public education's low quality standards. Brazil counts with 41k private schools, which captured only 19% of the total enrolled students in 2022. These companies usually lack costs efficiency and scalability potential, which is a key opportunity for players such as Vasta, that offers digital solutions at attractive prices. We believe schools adopting learning systems are at a significant advantage versus textbook adopters given the advance of digital solutions in all aspects of life. We also believe supplemental programs, despite more cyclical, will gain more relevance in the mid-term giving the growing demand for interdisciplinary workers.

Post secondary: Distance learning to remain dominant

Distance learning (DL) is the fastest growing segment in the post-secondary segment. In 2021, DL intakes overtook on-campus' for the first time and by 2022 DL already represented 45% of higher education enrollments. The accelerated growth dragged candidate/seat down and significantly impacted prices and quality of courses offered. As an alternative to DL, hybrid offers (part of activities done on-campus) continue to gain traction as companies develop alternatives to the traditional on-campus.

Exhibit 152: Number of seats offered in Distance Learning went from 1.6mn in 2010 to 16mn in 2021
Total places offered on BZ higher education (mn) – by modality



Source: BofA Global Research, INEP

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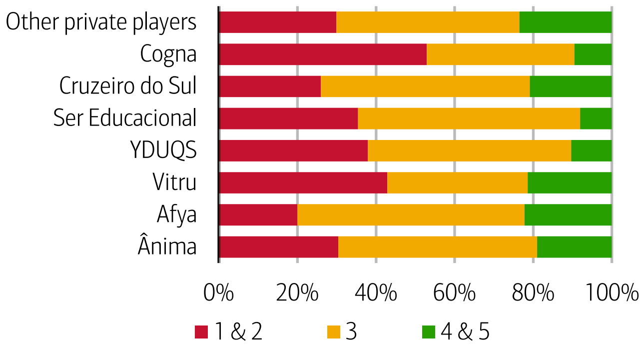
Despite the structural challenges, we believe DL should remain dominant given its (i) high margins, (ii) higher penetration vs. on-campus and (iii) consumption trends towards more dynamic/flexible education. However, we expect regulatory changes in the ST targeting to improve quality, especially of health-related courses in DL. This could significantly change the mix of courses offered and cause some rebound on on-campus.

Exhibit 153: Among listed players Cruzeiro do Sul has the best performance. ENADE is a national exam done by graduating students to measure quality of courses. Grades range from 1 to 5 and 3 is the minimum necessary for the course to not undergo restrictions
ENADE for OC courses per listed company



Source: BofA Global Research, INEP

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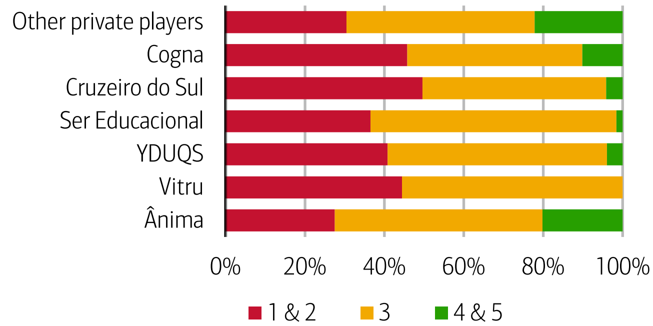
Exhibit 154: DL courses receive on average worse grades on ENADE, even for players which tend to perform well, such as Cruzeiro do Sul. ENADE is a national exam done by graduating students to measure quality of courses. Grades range from 1 to 5 and 3 is the minimum necessary for the course to not undergo restrictions
ENADE for DL courses per listed company



Source: BofA Global Research, INEP

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Strengths

We expect long-term sustainable growth for the sector driven by the under penetration of post-secondary education in Brazil and how transformative it is for a student to have such diploma. We believe that investments in quality of products will be key for the resilience of on-campus courses going forward, while we expect the distance learning modality to keep leading the private post-sec market expansion due to reduced issues in affordability and flexibility. That said, these two modalities could largely contribute to an increase in post-sec penetration in the upcoming years.

Weaknesses

In our view, the sector's main weakness is the combination of students´ expectations of income after graduating with the current level of employability in the industry, once most of the students must work in order to comply with monthly fees. Although we believe that the current scenario brings encouraging perspectives for the sector, a slower macro recovery and low confidence levels combined with credit scarcity are relevant risks to be monitored.

Opportunities

The educational sector in Brazil is still considerably fragmented. With a more benign economic scenario, the return of inorganic growth to accommodate the demand expansion should allow a faster growth on companies' student bases. In addition, as players also turn to K-12 segment, we expect M&A operations to boost the sector consolidation in the mid-term. Distance learning should continue to outpace on-campus growth, boosted by hybrid courses and digital integration content.

Risks

Currently, the main threat to the education sector lays on regulation changes. We see risks of stricter rules for DL while on the medicine space, regulation could allow a higher-than-expected supply expansion. Also, governments' incentives could vary according to public budget which is uncertain. We also highlight that the still high exposure to private financing alternatives is a mid-term risk for players, given the default potential.

4.8 Financials - banks: lower rates are +'ve for growth and NPLs, but –'ve for NIMs

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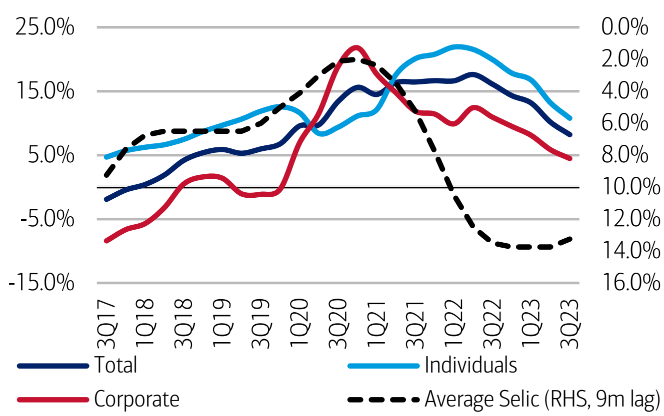
Brazilian banks are sensitive to changes in interest rates. Given the expected cuts in ´24, we expect strong loan growth (particularly on non-earmarked loans), lower delinquency rates, and lower indebtedness levels, which should translate into lower provisions charges. On the flip side, spreads (NIMs) should trend lower in an easing cycle.

Loan growth should accelerate

Lower interest rates boosted loan book growth in previous easing cycles. This is likely explained by improving asset quality and lower lending rates in a low-rate environment, which are supportive for both supply and demand. Private banks loan portfolio growth had stronger correlation to changes in interest rates than Banco do Brasil (BBAS3) in the previous Selic cycles. This is likely explained by BBAS3 exposure to rural loans, while private peers have a more diversified portfolio, making it more correlated to movements in Selic.

Exhibit 155: Loan growth vs Selic (RHS, reverse axis)
Loan portfolio growth is negatively correlated to the Selic rate



Source: BofA Global Research, BCB

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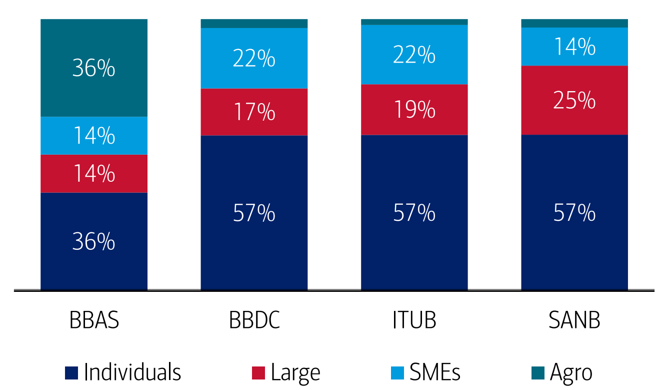
Exhibit 156: Loan portfolio breakdown by bank
BBAS is more exposed to rural loans; peers are more diversified



Source: BofA Global Research, companies

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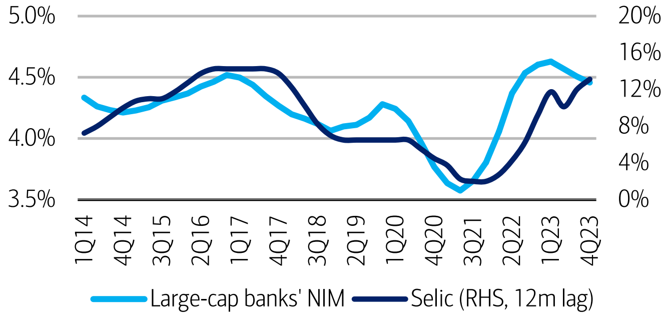
NIM should trend lower; mixed trends on market NII

Lending rates of new loans instantly reflect movements in interest rates, as observed in previous easing and hiking cycles. Funding costs are also repriced, but at a slower pace. Thus, the faster movement in lending rates than in funding costs makes spreads on new loans positively correlated to Selic (new loans with lower spreads in an easing cycle). While this is negative for net interest margins (NIM), stronger loan growth should compensate this effect.

Market NII should have mixed trends in an easing cycle, as per our NII deep-dive. ITUB4's consolidated NII is protected from changes in Selic, while BBDC4 and SANB11 tend to benefit on an easing cycle. BBAS3 is more exposed to floating rates, with lower market NII in the mid/long term (previous easing cycles shows that it tends to be resilient in the short-term).

Exhibit 157: NIM (ex-treasury) vs Selic

While spreads of new loans instantly reflects changes in the Selic rate, banks' NIMs' movements have a 12m lag, reflecting the loan book duration



Source: BofA Global Research, Companies

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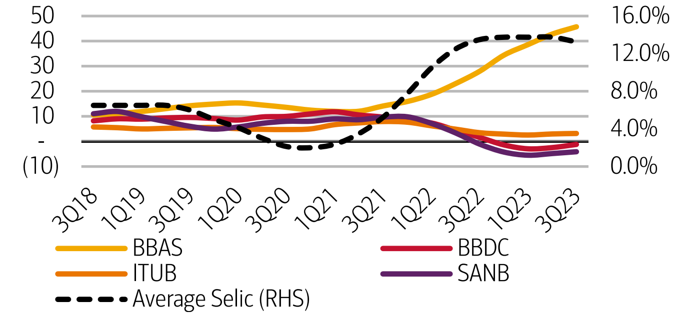
Exhibit 158: NII with market vs Selic

Private banks' NII with markets are negatively correlated to interest rates; BBAS market NII is positively correlated to rates



Source: BofA Global Research, Companies

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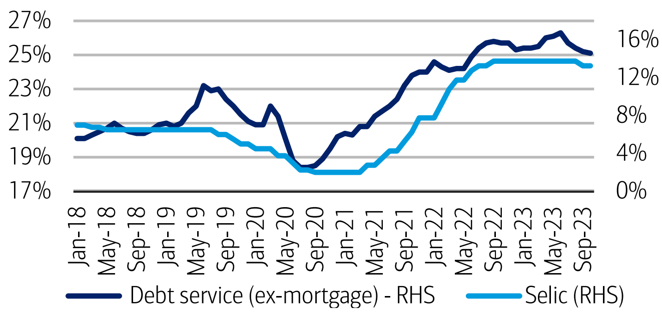
Indebtedness and cost of risk should benefit from lower rates

Lower consumer expenditures with debt make Selic correlated to delinquency rates (and with cost of risk, meaning lower provision charges). We believe that lower rates should support the normalization of NPL ratios following a likely peak in 2H23. Importantly, indebtedness is a key metric on banks' risk assessment, which could spark greater lending appetite in the months following Selic cuts.

Exhibit 159: Household debt service* vs Selic

High rates pressured expenses with debt...



Source: BofA Global Research, BCB. * Interest expense as a percentage of income.

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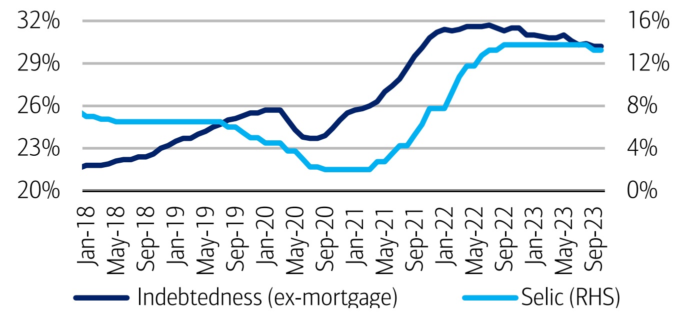
Exhibit 160: Household indebtedness* vs Selic

... and indebtedness levels



Source: BofA Global Research, BCB. * Debt balance as a percentage of LTM income.

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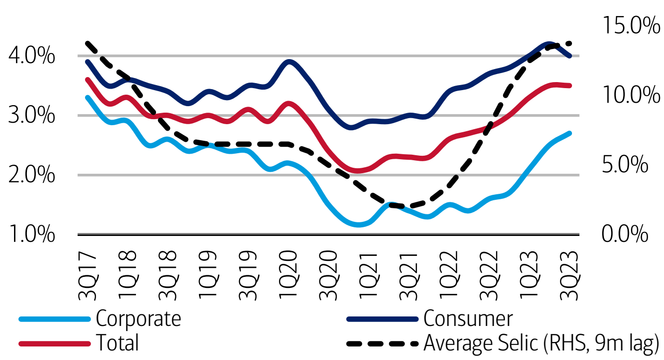
Exhibit 161: Industry NPL ratio vs Selic

Higher cost of debt pressured delinquency ratios



Source: BofA Global Research, BCB

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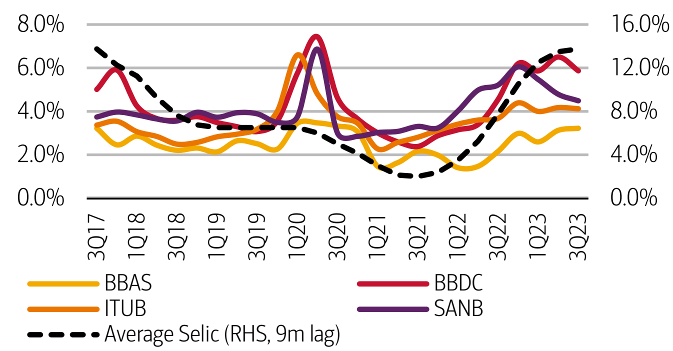
Exhibit 162: Cost of risk by bank vs Selic (9m lag)

Provisioning levels are positively correlated to Selic rate (1H20 impacted by COVID)



Source: BofA Global Research, Companies

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4.9 Financials - non-banks: exposed to interest rates and macro backdrop

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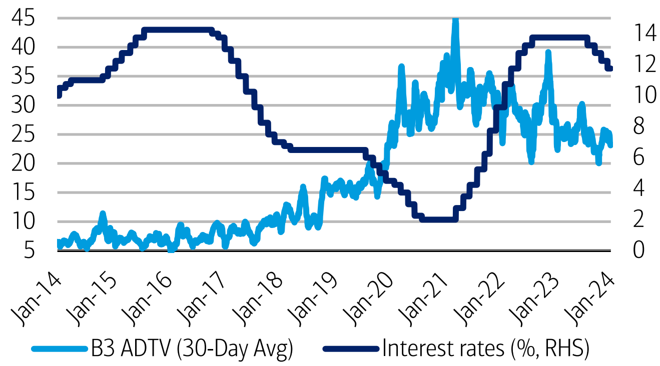
Higher capital markets activities in an easing cycle

Companies that are exposed to capital markets and trading are clear beneficiaries of an easing cycle. Equity trading volumes volume on B3 (B3SA3) (ADTV), the sole equities exchange in Brazil, is directly correlated to interest rates levels. ADTV jumped from c.R$5bn to c.R$30bn during the last two hiking cycles. We remind that each 10% increase in cash equities ADTV adds 4% to B3's EPS.

Brokers such as XP and BPAC11 would also benefit from an easing cycle, as c.70% of revenues are indexed to trading and capital markets (trading and DCM/ECM fees). ECM deals are particularly correlated to Selic, supporting issuer services mix.

Exhibit 163: B3 equity ADTV and interest rates
We expect ADTV to increase during the easing cycle



Source: BofA Global Research, Bloomberg
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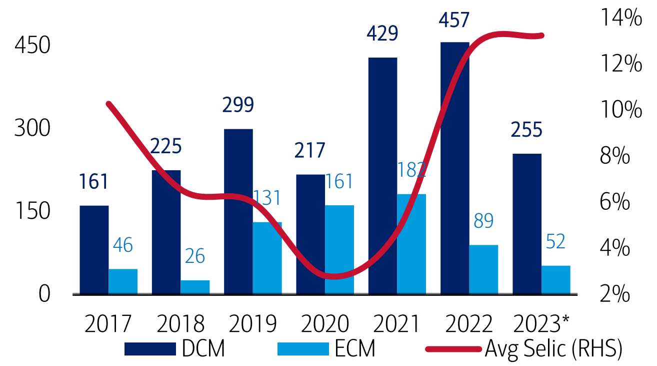
Exhibit 164: Exhibit 30: DCM and ECM volumes over the last years
We expect higher ECM and DCM volumes in an easing cycle



Source: BofA Global Research, ANBIMA *Annualized 2H23
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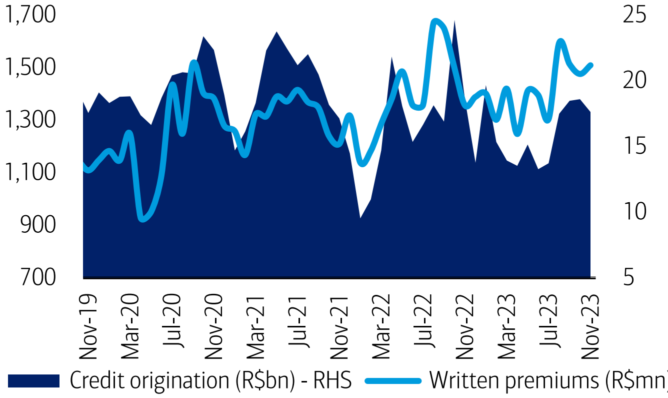
Stroger premium growth backed by credit, but weaker financial income

Insurance premiums are highly correlated with credit origination. We expect robust performance of credit life, life and mortgage insurance, which are correlated to payroll and mortgage credit (and stronger in easing cycles, due to lower lending rates).

Exhibit 165: Payroll loan origination vs credit life premiums
Stronger credit origination could support credit life premiums....



Source: SUSEP, BCB

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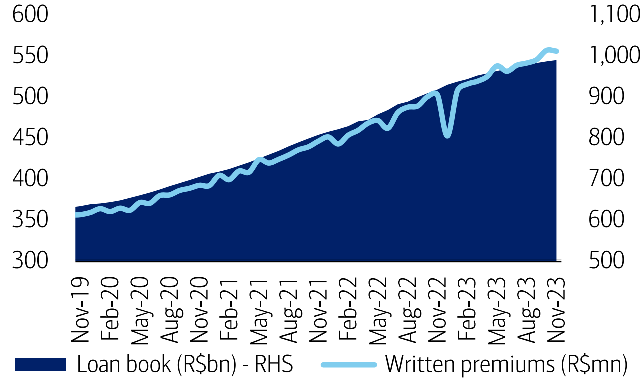
Exhibit 166: Mortgage loan book vs mortgage premiums
...and mortgage premiums



Source: SUSEP, BCB

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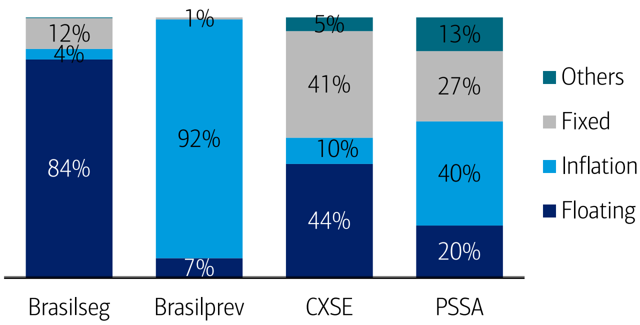
On the other hand, financial results (which represent c.20% of insurer's net income) should trend down, negatively impacted by insurers' exposure to floating rates bonds.

Exhibit 167: Breakdown of investment portfolio
BB Seguridade is the most exposed to floating rates



Source: BofA Global Research, companies

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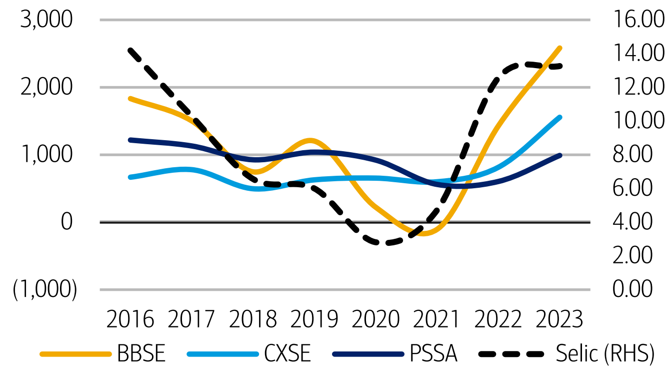
Exhibit 168: Insurance companies' financial results (RHS)
We expect financial results to trend down



Source: BofA Global Research

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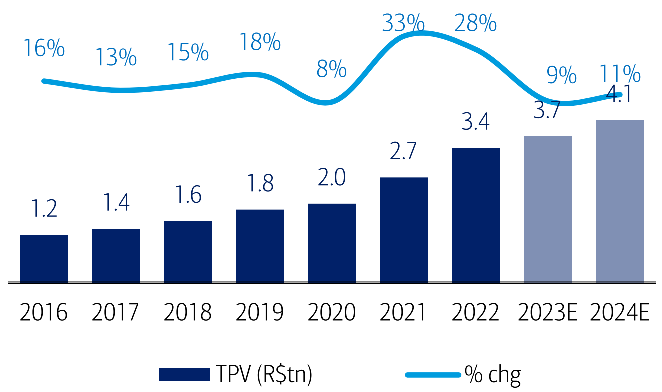
Payment companies should benefit from lower funding costs

We believe that lower rates could represent a positive surprise for card volume growth in '24. TPV could be boosted by lower household indebtedness, softer inflation, and stronger credit origination – leading to growth at low double digits. On top of this, the payments sector should benefit from lower financial income, as lower rates should benefit funding costs (related to the prepayment activities).

The prepayment business gained significant relevance on payment companies' bottom-line, as acquiring profitability shrunk following tougher competition. Payment companies do not rely on retail funding as incumbent banks, leading to alternative (and expensive) sources of funding during a higher rate environment. Looking forward, lower Selic should relief financial expenses, supporting net margin improvement.

Exhibit 169: Card industry TPV (R$tn)

We expect TPV acceleration boosted by lower indebtedness, lower inflation and greater credit offering



Source: ABECS , BofA Global Research

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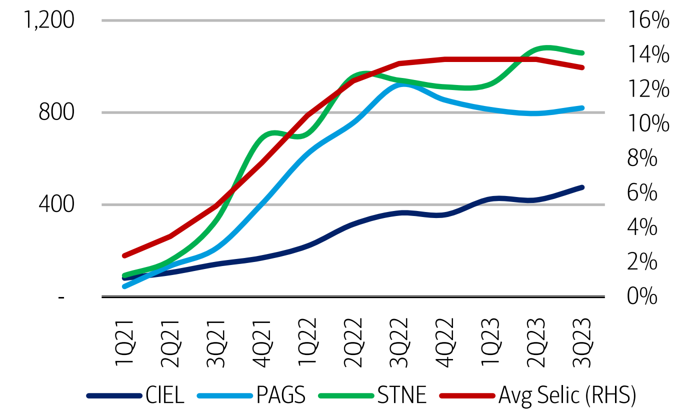
Exhibit 170: Financials expenses (R$mn) vs Selic rate

Financial expenses are positively correlated to Selic



Source: Companies, BofA Global Research

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4.10 Healthcare: Brazil is aging fast

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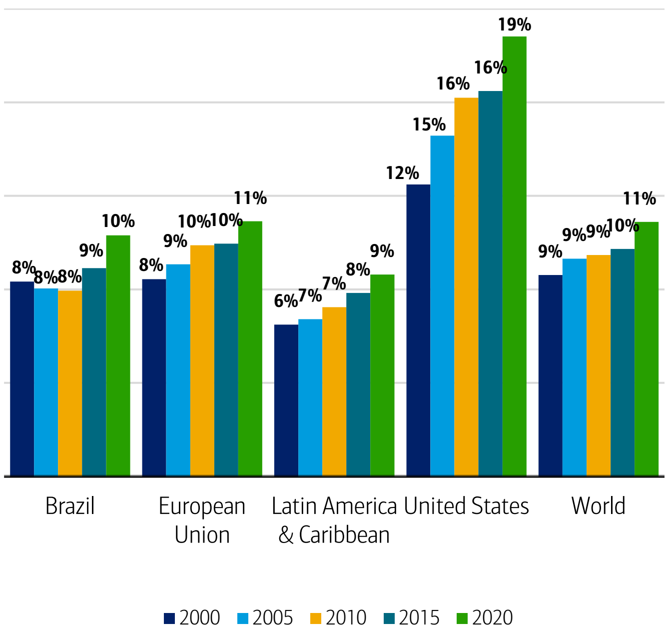
The healthcare sector represents 10.3% of Brazil´s GDP, from which 44.8% comes from public investment. Average expenditure on healthcare as a percentage of GDP on developed markets (European Union and United States) holds ~12%, and Brazil could reach a similar level in the upcoming years. The HC segment is composed by Payors (c, Hospitals (~50% of total expenses) and Labs (20/25% of expenses), we divide them into payers and providers.

Exhibit 171: United States has the highest % of Healthcare expenditure in relation to its GDP with ~19%, Brazil is close to the world metric with 10% vs 11%
Healthcare Expenditure as a % of GDP



Source: BofA Global Research, World Bank

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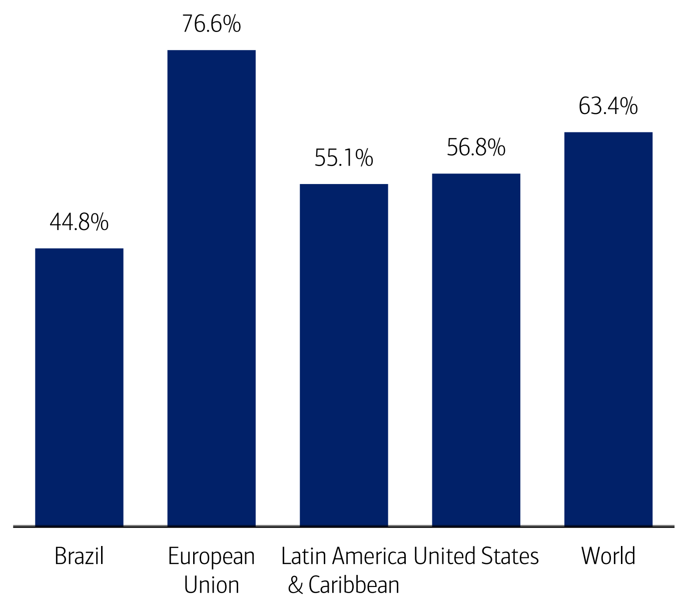
Exhibit 172: Brazil has lower % of Government Health Expenditure with 45% than Latin America & Caribbean countries with 55%
Brazil has lower % of Government Health Expenditure with 44.8% than Latin America & Caribbean countries with 55.1%



Source: BofA Global Research, World Bank

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The sector 10 years from now

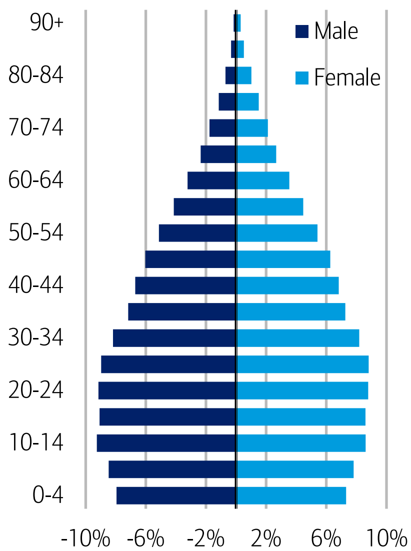
We expect sustainable growth from the healthcare sector in the next 10 years behind positive demographic and sector consolidation trends, including 1) fast population aging and increase in working age population; 2) private health penetration due to public healthcare being underfunded; 3) Intense M&A actions for sector consolidation, 4) private investments to accelerate driven by the recovery of formal employment post COVID-19 and 5) continue price readjustments leading to a more sustainable MLR.

Strengths

The healthcare sector should be considered defensive on a long-term perspective, behind population growth and aging as main drivers. Brazil has a median age of 35, relatively low compared to US with ~39 and European countries such as France with ~42.

The aging process is also happening faster than other countries. According to OCDE data, in 2000 the Brazilian population in the Old (65+) category was only 5%. In 2022, this number increased to 10%. By 2050, this population is expected to reach 23%, surpassing developed countries such as United States and Australia. Thus, population is not only getting older, but the process is also faster than other countries.

Exhibit 173: Population concentration in ages below 40 - 2010
Brazil aging profile 2010



Source: BofA Global Research, IBGE
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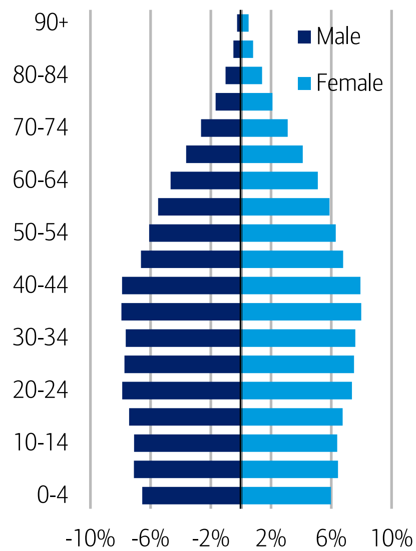
Exhibit 174: Population concentration in ages below 40 - 2022
Brazil aging profile 2022



Source: BofA Global Research, IBGE
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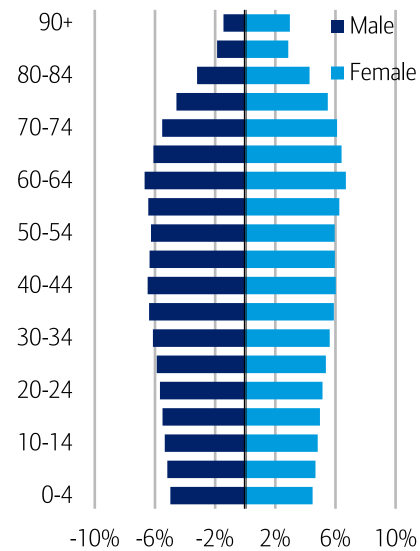
Exhibit 175: Population concentration in ages below 40 - 2060
Brazil aging profile 2060



Source: BofA Global Research, IBGE
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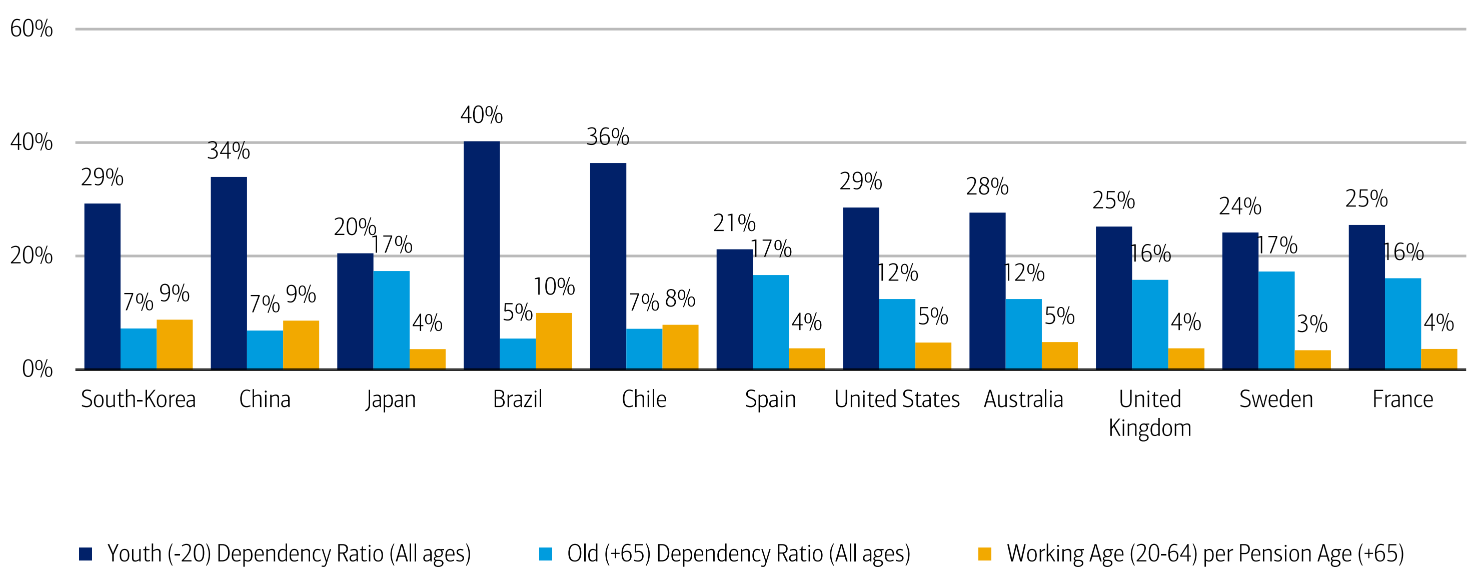
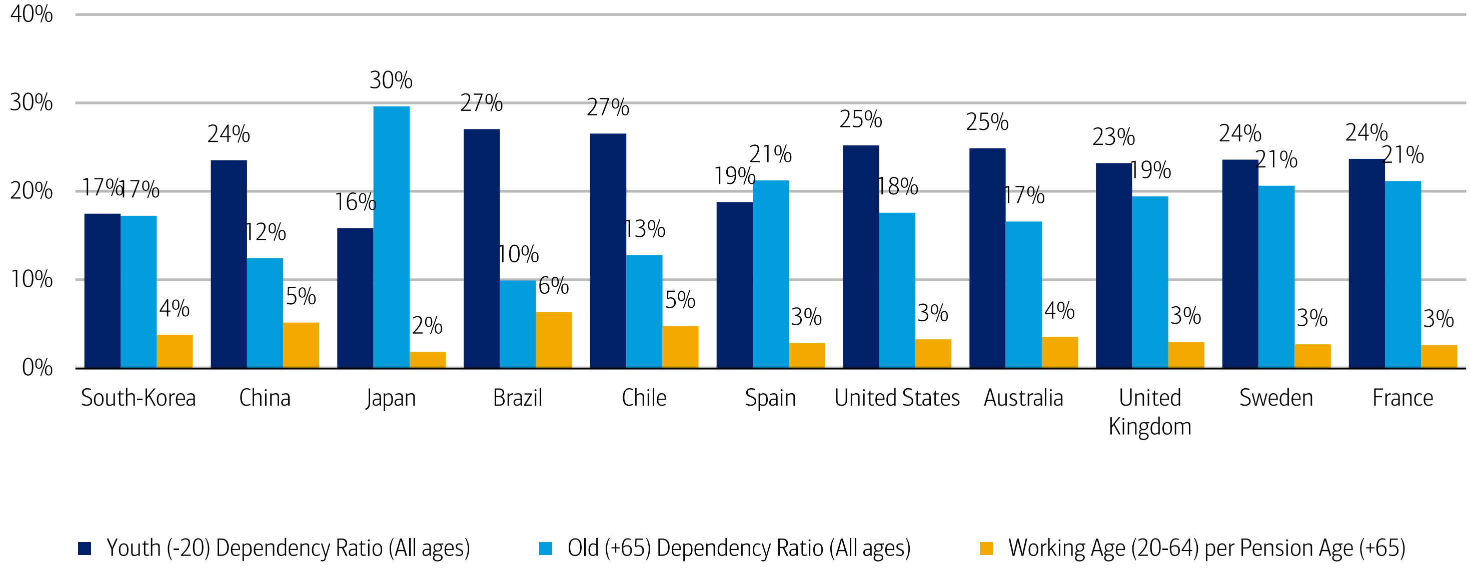
Exhibit 176: Brazil had only 5% of its population in the elderly segment (+65) in 2000
Population segmentation OCDE - 2000



Source: BofA Global Research, OCDE
BofA GLOBAL RESEARCH

Exhibit 177: Brazil had 10% of its population in the elderly segment (+65) in 2022
Population segmentation OCDE - 2022



Source: BofA Global Research, OCDE

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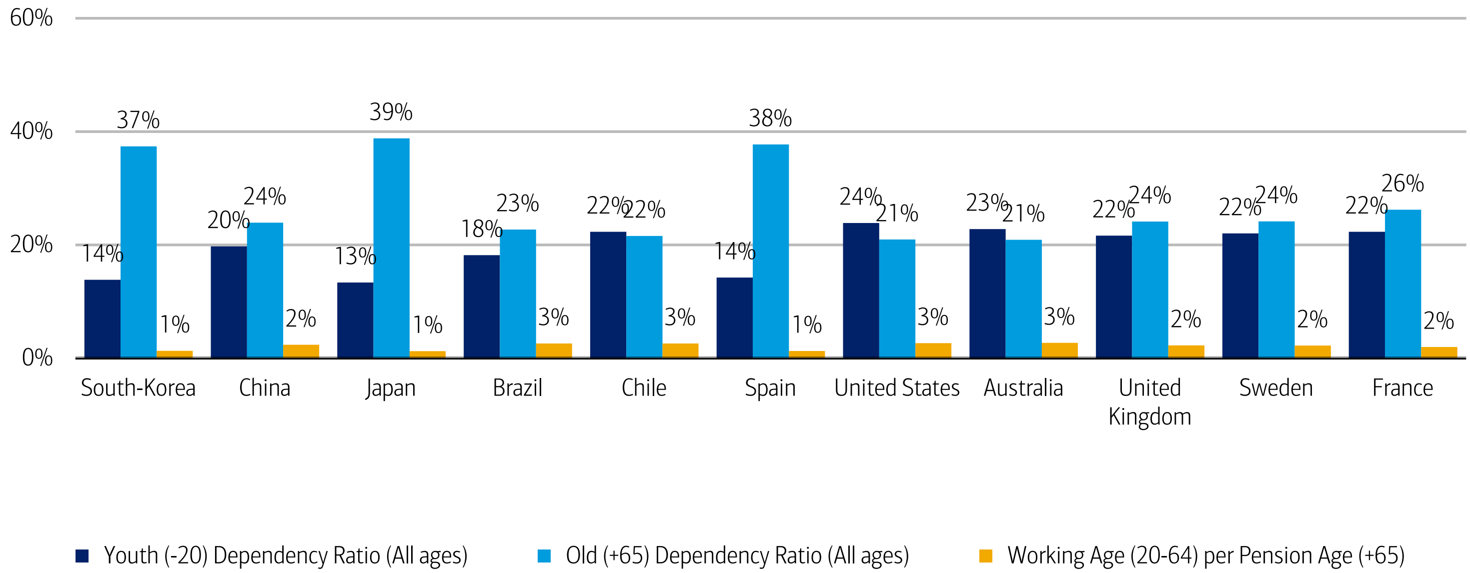
Exhibit 178: Brazil is expected to have 23% of its population in the elderly segment (+65) by 2050
Population segmentation OCDE - 2050



Source: BofA Global Research, OCDE

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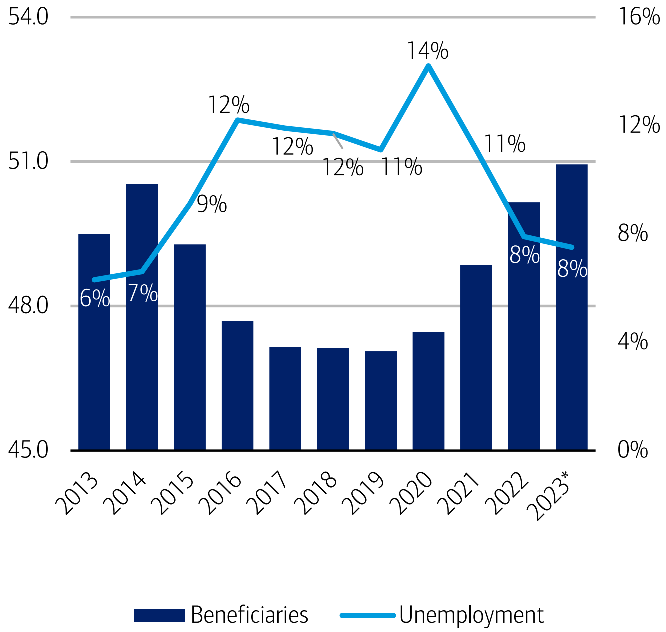
Exhibit 179: Health beneficiaries returned to 2014 levels just in 2022, despite high price increases

Total number of health beneficiaries since 2013 and unemployment rate



Source: BofA Global Research, IBGE, ANS

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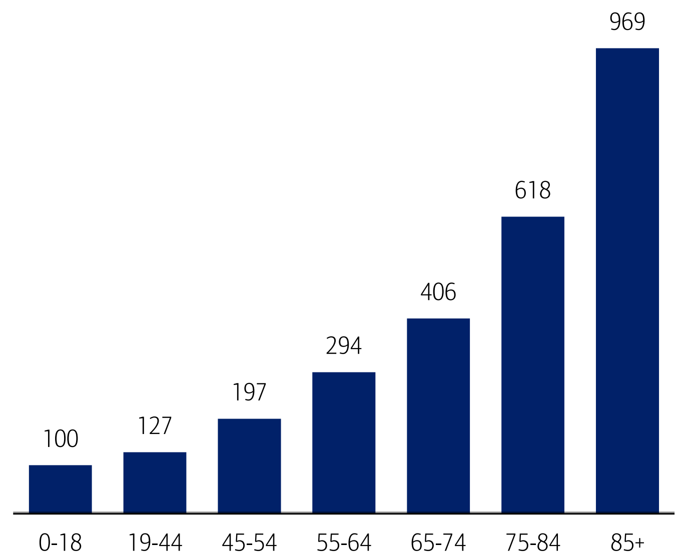
Exhibit 180: People over 85 years old spend on average 9x more than someone up to 18 years old

Expenditures in healthcare per aging group (100 basis: as of 2010)



Source: BofA Global Research, IBGE, ANS

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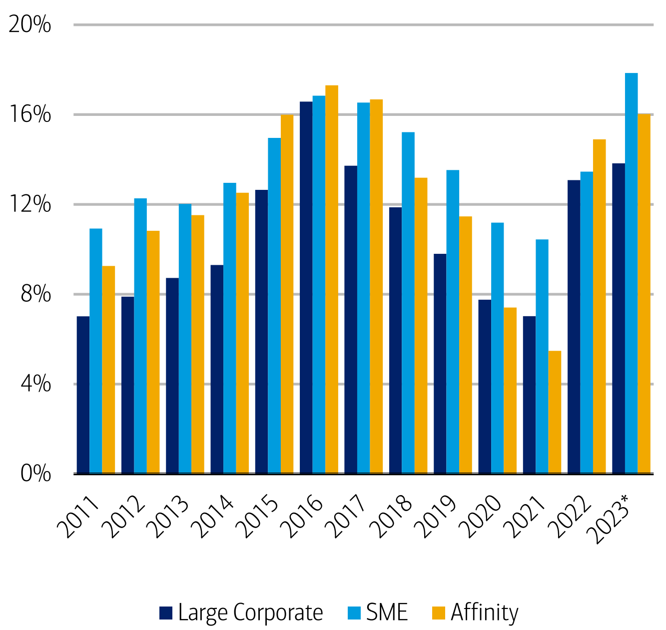
Exhibit 181: In 2023, price readj. increased for all types of contracts

Corporate Health Plans Readj. by contract type



Source: BofA Global Research and ANS

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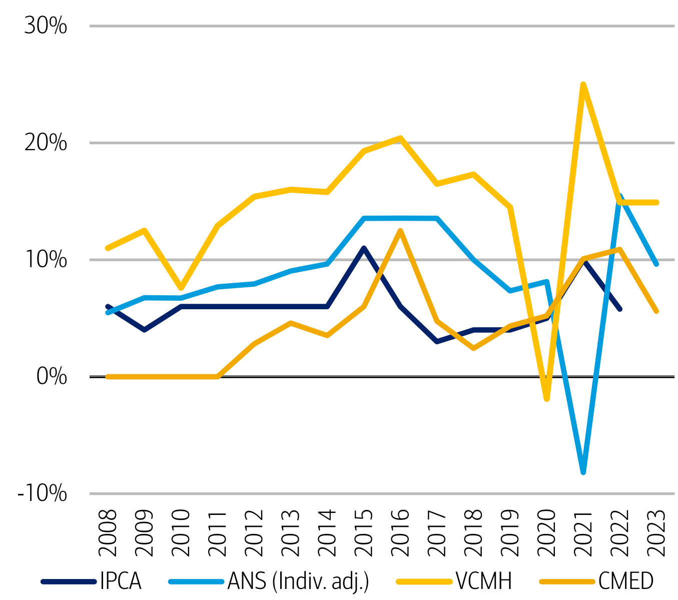
Exhibit 182: Historically ANS sets a maximum annual increase below medical cost inflation (VCMH) in most of the years

IPCA, ANS, VCMH and CMED



Source: VCMH (hospital-medical cost variation) and BofA Global Research

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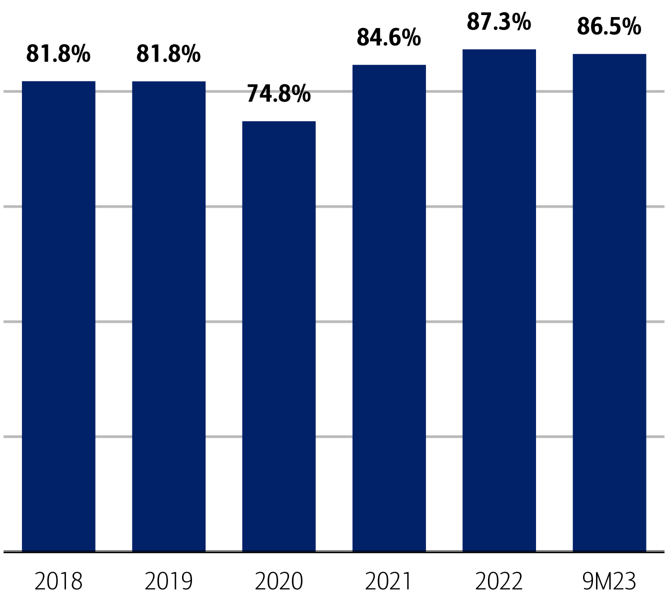
Exhibit 183: MLR is 500bps higher than historical, reflecting COVID impact and escalate in the competition in last years…
Brazilian healthcare sector's MLR since 2018



Source: BofA Global Research and ANS

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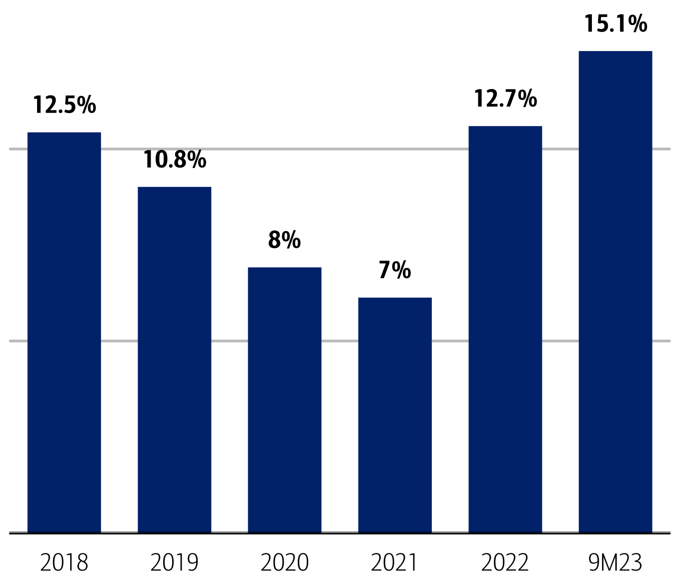
Exhibit 184: Price readjustment is picking up to restore sector return…
Corporate price readjustment



Source: BofA Global Research and ANS

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Moreover, National Agency for Supplementary Health (ANS) information shows that an individual with more than 85 years olds is expected to spend on average 9x more than someone with up to 18 years old. Therefore, we believe that fast aging accompanied by higher spending levels in older ages should boost expenditures on the upcoming years.

Weakness

Growth for the healthcare industry is not straightforward as providers depend on partnerships with payers to grow in new markets, and vice versa. Therefore, companies might not enter some markets if there is a lack of possible partnerships with other players, even when there is an increase demand for healthcare services supply.

Additionally, medical inflation has been a challenge for companies. The Brazilian private healthcare agency (ANS) regulates the maximum annual price increase for individual plans, which historically has been below medical inflation, leading to pressures in companies´ cost base and margins. COVID had a significant impact on the index for readjustments but start to normalize from 2022 forward.

Opportunities

The healthcare sector in Brazil despite the consolidation process in place since early 2000´s, stills being fragmented compared to developed economies. Therefore, we continue seeing a consolidation trend among players and providers that should increase competitiveness and bargaining power for main consolidators. Health insurance covered just 26% of the Brazilian population in Nov/23: such penetration is still below developed countries such as Canada, the US and the UK, where coverage reached 68%, 61% and 53%, respectively. To close this gap, we believe it should come from the following sides: i) macroeconomic recovery and net jobs creation while the pace of vaccination evolves, and the economy starts showing a recover; ii) market share of vertically-integrated players increasing which could lead to more affordable prices; iii) easing regulation for individual plans.

Risks

Main risks for the healthcare sector are: i) regulation-especially for individual plans; ii) Higher unemployment rate, iii) higher competition for assets, implying higher multiples and lower IRR. Although changes have been sporadic and less harsh than those of developed economies, the risk remain a possibility and payers could be more exposed to regulation than provides, especially the HMOs.

In the short term the sector depends on formal job creation and unemployment rates as most plans are corporate, the economic recovery rhythm from the pandemic should reflect on the sector outcome.

4.11 Homebuilders: short-lived cycles

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Brazil's housing market has experienced short-lived growth cycles thwarted by high interest rates. Structurally, the sector modernized substantially in the last 20 years with alternative market-based funding, stronger collaterals, a national low-income housing program and new mortgage lines. Yet again, deteriorating affordability amid higher mortgage rates point to a cyclical accommodation after a three-year growth spree. That said, Brazil homebuilders are now more prepared compared to the severe downturn seen in 2014-16 with low inventory, controlled cancellations and robust balance sheets.

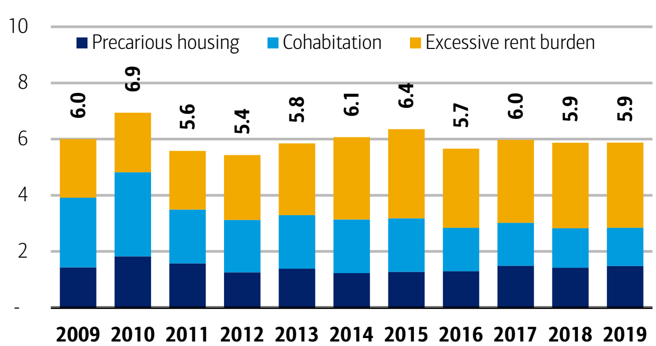
Funding for housing in Brazil comes from savings deposits (SBPE) and the worker's severance fund (FGTS). Mid and high-income housing is mainly financed by the SBPE while the FGTS finances low-income buyers. Regulation requires the FGTS to earmark 60% of its budget to housing and banks to earmark 65% of savings deposits. Mortgage rates are freely set by banks within SBPE (capped at 12% annually) while FGTS-funded mortgages are fixed at more affordable levels. The government-owned bank, Caixa, is the main mortgage lender (~70% market share) with a focus on low income housing.

The sector 10 years from now

Brazil has a large and underserved addressable market of low-income families unable to buy a home with a 6mn deficit (9% of current households). At the same time, the program provides stable fixed interest rates maintaining affordability throughout cycles. Facing a constant resilient demand, the supply side defines the size of the market (see our MCMV primer). The low income housing program, Minha Casa, Minha Vida, aims to deliver a total of 2mln homes until 2026.

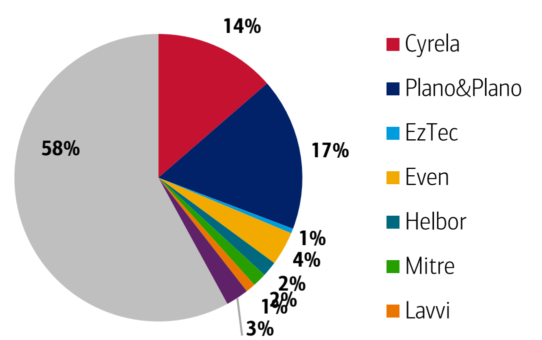
Mid/high-income demand, on the other hand, is more cyclical and dependent on affordability and interest rates level. Affordability outside the housing program is quite sensitive to the Selic rate (funding cost) and long-term rates (banks' opportunity cost). The prolonged recession of 2014-16 aggravated the housing deficit with Selic as high as 13.75% and banks pulling back on lending.

Exhibit 185: Brazil has a ~6mln housing deficit, about 9% of total homes
Brazilian housing deficit by component



Source: Fundação João Pinheiro
BofA GLOBAL RESEARCH

Exhibit 186: High competition in key markets pose challenges
Market share in São Paulo metropolitan region (9M23)



Source: Secovi-SP, Company filings
BofA GLOBAL RESEARCH

Strengths

Overall, the sector should benefit from the large housing deficit in Brazil as well as favorable demographics with close to 1.5 million new households formed every year. The low-income segment especially benefits from a stable, less cyclical and more affordable funding from FGTS. Larger, publicly listed homebuilders are well-capitalized, have a robust land bank to launch where demand is highest and have high exposure to Sao Paulo, the largest and most dynamic market. These players also have scale which translates into better bargaining power and faster production chain, as well as a lower cost of capital and more efficiency in terms of construction and cost management.

Weaknesses

With low entry barriers, any capitalized player is a potential competitor. Rising competition especially in large metropolitan areas make it harder for listed builders to find quality land plots. The local nature of the market and diverse municipal regulations pose challenges for geographical expansion. Also, with a 2-4 year lag between buying a plot of land and delivery, as well as accounting that fails to match variations of assets and liabilities, the stocks are much more volatile than their fundamentals suggests. As a quite high-ticket sector, homebuilding is highly dependent on the mortgage and, therefore, on the macro and interest rate environment.

Opportunities

Low-income homebuilders currently face on of the best moments in history for MCMV, with peak budget and boosted affordability. At the same time, smaller competition has been suppressed in the past 3 years amid cost inflation and balance sheet challenges, leaving listed players on a higher market share and stronger balance sheets to enjoy this growth cycle. More efficient low-income homebuilders could continue to capture market share from smaller players unable to sustain viable margins.

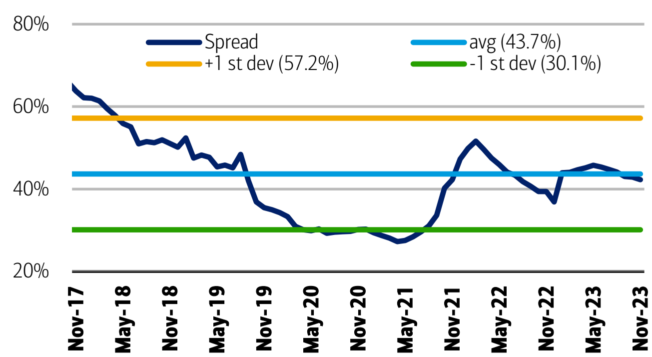
Threats

Deteriorating affordability on higher rates and home prices could shift buyers to renting. We continue to see a difficult scenario as mid/high-income builders accumulate a hard to sell inventory under construction and should face peak deliveries amid challenging affordability. This could lead to discounting policies, putting additional pressure to margins. Capitalized players now exploring the underpenetrated multifamily market also increase optionality for renters.

The FGTS has been facing pressure amid a new yield rule to match savings accounts under review, increasing FGTS' cost of funding (), and past authorized emergency withdrawals added to low new deposits amid high unemployment. As a key source of funding for the low income housing program (Minha Casa, Minha Vida), further pressures on FGTS balance could mean tighter lending conditions and lower subsidies. Higher delinquency of FGTS-funded mortgages is another risk. A weak economic recovery could prompt withdrawals from savings accounts thus pressuring the SBPE funding which has been a key driver for mortgage concessions.

Exhibit 187: Affordability still looks highly deteriorated

Own vs rent spread in Brazil



Source: BofA Global Research

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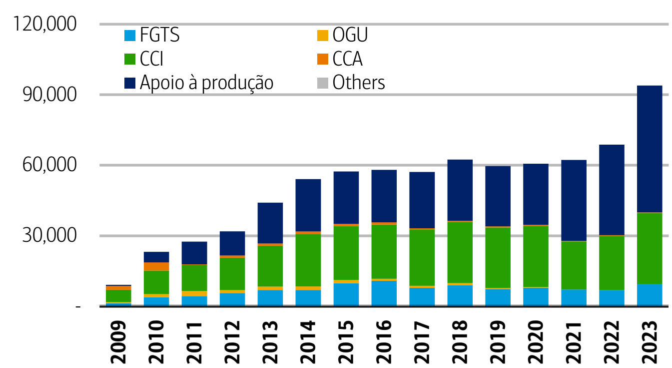
Exhibit 188: Largest budget program in history

Discount and mortgage budget for MCMV



Source: BofA Global Research, FGTS

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4.12 Malls: surviving through secular trends

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Brazil's shopping mall industry is fragmented, underpenetrated and prepared to face e-commerce headwinds. We see the focus of the store mix on consumer experience (food, services) as a unique pillar of strength to face the e-commerce threat intensified by COVID-19, although our latest survey indicates online shopping habits acquired during the pandemic were not that sticky The top five mall players in Brazil hold less than 30% share of gross leasable area (GLA) making it ripe for consolidation. Given the challenging situation of the Brazilian consumer, mall operators are more cautious compared to the growth spree in 2010-13 when GLA grew at double-digit rates. Brazil malls have multiple opportunities to spur earnings growth in the coming years, but some habits adopted during the pandemic may stick (higher e-commerce penetration, less frequent trips to the malls). Opportunities include a retail cyclical recovery, market consolidation, growing media revenues and omnichannel solutions (consumer data, marketplaces, last-mile).

The sector 10 years from now

Brazil's shopping malls encompass a wide range of experiences (eating, spending time, attending events, going to the gym), rather than just a purchase experience. We believe this focus makes them more resilient to secular trends. According to our latest survey, only 22% of consumers go to malls to actually make a purchase. Instead, many go to eat, window shop or just spend free time. Brazil mall operators have already adapted their mix to meet these needs (See Exhibit 189).

We expect a more consolidated market in the coming years with fewer, more capitalized players. New legislation requires local pension funds to divest direct stakes in real estate meaning some non-controlling stakes should come to the market over the coming years. We also expect more rational space growth. Annual growth in GLA for shopping malls fell from 13% in 2013 right before the recession hit to 1.6% today. The lower expansion is in response to slowing revenue growth which reached its lowest levels in ten years in 2016, which suggests the market has become more rational. The pandemic put greenfield activity on hold while expansion plans gradually resume at dominant malls.

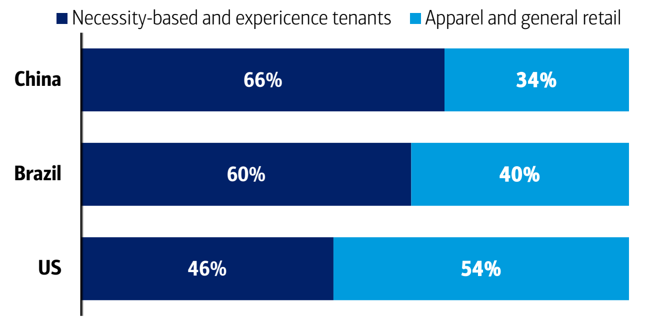
Strengths

In our view, the shopping mall industry is a compelling long-term story based on the strength and appeal of malls in Brazil as culturally significant social hubs. Malls are mostly located at dense urban areas with several at mixed-use properties (office, medical centers, residential) ensuring a resilient foot traffic. Mall space per inhabitant is a fraction of other countries' and demographics support a rising consumer base. Rents at Brazil's malls are adjusted annually by inflation with additional upside if store sales rise above a certain minimum. We see the e-commerce threat as real but more manageable than in other countries as tenant mix is already skewed to experiences.

Weaknesses

Real estate projects are long term, with the decision to develop a project to the actual delivery taking years. During that time, the market could shift reducing the expected return on an investment. A number of shopping malls were inaugurated just as the 2014-16 recession in Brazil began, which resulted in higher than expected vacancy rates, lower rents and a longer-than-expected maturation process. Mall developers are now more cautious waiting for clearer signs of consumer strength to expand footprint. While we believe the e-commerce threat is manageable in Brazil, underperforming malls are more vulnerable and will likely require sizable investments to remain competitive.

Exhibit 189: Brazil malls' pillar of strength: experience-focused mix
Tenant mix as a % of GLA



Source: BofA Global Research, CoStar

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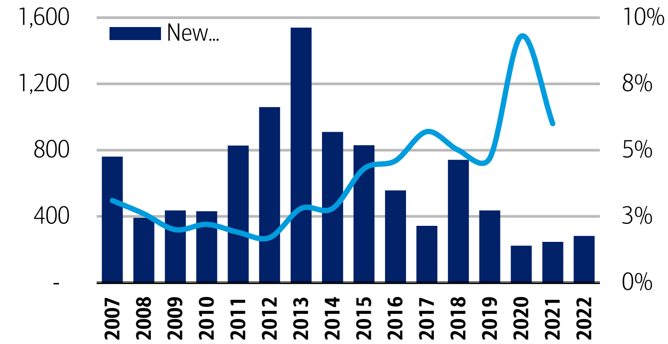
Exhibit 190: Largest GLA deliveries preceded a long uptrend in vacancy
Net mall GLA additions ('000 sqm) vs year-end vacancy



Source: Abrasce

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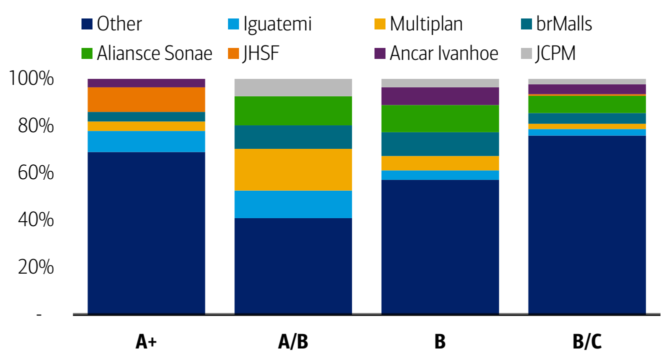
Opportunities

We see opportunities for consolidation as the top five mall operators hold less than 30% share in a market which is still considerably underpenetrated (~half the mall space per inhabitant of Mexico). Demand for space by capitalized retailers and digital natives looking for physical footprint amid limited new supply should improve bargaining power, esp. for dominant malls. Smaller anchor stores focusing on consumer experience open space for more satellite stores which pay higher rent/sqm. Mall operators continue to invest in omnichannel strategies (consumer data, apps/marketplaces, last-mile) increasing the appeal of malls vs. street stores. Media could support revenue growth with abundant consumer data and a large customer base drawing more advertisers.

Threats

Oversupply is a continuous threat given the long-term nature of the business, but the pipeline of new projects is limited. As economic activity has yet to recover, developers remain cautious. E-commerce penetration accelerated during the pandemic and we expect some of those shopping habits to stick reducing purchases and trips to the malls. We see dominant malls more prepared to face the e-commerce threat. E-commerce penetration remains low by global standards, but retailers and marketplace operators are investing heavily to speed up delivery and improve consumer experience. Hybrid work models could be especially harmful for malls dependent on office traffic.

Exhibit 191: A fragmented market offers consolidation opportunities
Shopping malls' market structure (% GLA under mgmt.)



Source: Abrasce, BofA Global Research

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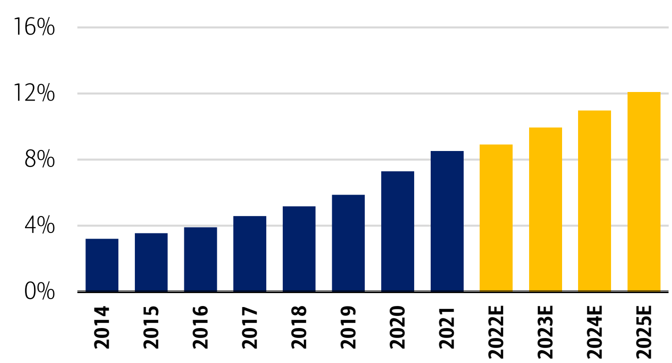
Exhibit 192: Ecommerce: not life-threatening but worth monitoring
E-commerce penetration in Brazil (% of retail sales)



Source: BofA Global Research estimates, Ebit/Nielsen, Euromonitor, company data

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4.13 Mining: iron ore in a decarbonizing world

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Iron ore is the earth's fourth most abundant element and a key ingredient for producing steel, which is the world's most consumed metal. The total market for iron ore is around ~2.3Bt/year, making it among the largest mined metal markets by value. Steel output is the exclusive demand driver for iron ore, and China is the most important region. Vale produced ~313Mt LTM as of 3Q23, below 2018's 385Mt, due to the fallout of its Brumadinho dam tragedy in Jan 2019, which halted up to ~93Mt of annualized output. In 2022, Rio Tinto produced 331.5Mt and BHP produced 281Mt.

China the largest consumer, but some signs of peaking production

Chinese steel production has been the key engine of steel demand growth, rising from 130Mt in 2000 to 1,019Mt in 2023. Strong demand led benchmark iron ore prices to rise from US$20/t in the early 2000s to almost US$200/t in 2011, leading to new capacity announcements.

However, weaker Chinese steel demand led to an oversupply earlier this decade that pushed prices down as low as US$38/t in early 2016. That year the Chinese government responded with stimulus that boosted Chinese activity, putting aside fears of a hard landing and sustaining iron ore prices. In addition, the government embarked on a program to eliminate inefficient steel capacity. Separately it began mandating winter curtailments to address pollution. Curtailments resulted in greater mill profits per ton, which led to higher premium prices.

Vale's disaster, additional weather-related supply disruption in H1 and China's surprisingly strong steel demand drove the sharp price rise over the last several years, with spot as high as >$170/t in late 2020 and a peak above $200/t in May-2021. In the second half of 2021 the Chinese government cracked down on steel output on a combination of carbon emission targets and an energy crisis in the country. Coupled with that, a tightening on credit availability led to a slower property market, a major driver of steel demand, bringing prices back to ~$90/t.

Despite the sharp decline in the property sector, iron ore prices averaged $119.7/t, as prices started the year around $120/t, after the strong rally on Chinese reopening by the end of 2022. Prices peaked around $130-135/t, but held firm throughout 2023, as other components from steel demand, especially infra and high steel exports, helped offset the decline in property demand and sustain the higher prices.

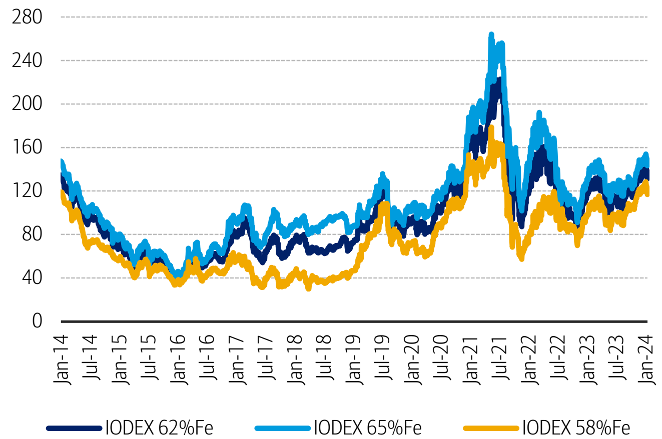
Decarbonization trends should eventually favor higher grade ore

Historically Chinese steel mills preferred higher-grade iron ore as it improved their yield, maximizing profits. Flight to quality created three different iron ore markets, segmented according to iron content by: 58%, 62%, and 65% grades. The 58%-65% price delta decreased to $28/t in 2023, after having decreased to $45/t on avg in 2022 from $65/t on avg in 2021 vs $31/t in 2020. As of early 2024 the spread had decreased to $26/t. The main reason for the lower spread in the recent years were lower Chinese steel margins. In the coming years we expect that the trend towards decarbonization could be supportive for iron ore premiums as high grade ore helps reduce carbon emissions.

Iron ore restocking could drive prices up into 1Q24

Against perennial expectations of persistent iron ore surpluses, fundamentals have again supported prices well above the cost curve. With iron ore inventories at China's mills low and the economy stabilising, steel producers may ultimately come back to the market. If that is accompanied by the usual seasonal disruptions on the seaborne iron ore market, there is scope for prices to rally in 1Q24. Yet, we are concerned that rising supply will push iron ore back below $90/t by 2025.

Exhibit 193: Historical iron ore prices (US$/Mt)
Prices have remained higher since 2020



Source: BofA Global Research, Platts

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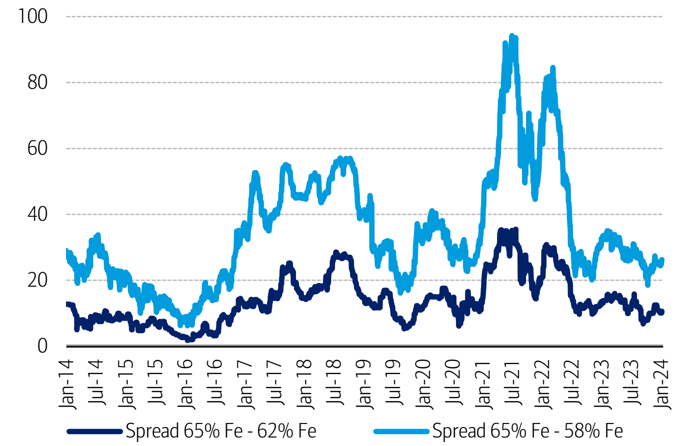
Exhibit 194: Iron ore high-quality premiums (US$/t)
Premia has corrected to levels closer to the historical average



Source: BofA Global Research, Platts

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The sector 10 years from now

Over the next 10 years, the iron ore market can change substantially, depending on the fortunes of the Chinese market, but also on India's growth and broader global electric arc furnace (EAF) adoption. We expect the sector to continue its evolution from growth to steady returns in an environment of concentrated supply and maturing Chinese industrial and construction activity. As China shifts its economy towards more consumer goods and with infrastructure development, steel consumption per capita can normalize at a lower level. In our view, iron ore demand should stabilize and gradually decline over time.

Given that Brazilian producers have been at the low end of the first quartile for costs, they should remain key suppliers to China, so volumes would seem relatively shielded. Vale in particular spent heavily on capex last decade and should be able to sustain strong FCF on our forecast of longer-term $90/t iron ore prices in real terms. Indian demand should also grow over the next 10 years, but that market may be supplied internally, depending on the pace of growth in its domestic iron ore and steel mill production.

Over the next decade marginal Chinese demand can be met by EAFs, which use scrap steel instead of iron ore to produce finished steel. To date the Chinese scrap market has been challenged, but collection and processing can improve over the next 10 years. This can also temper global demand for iron ore.

Strengths

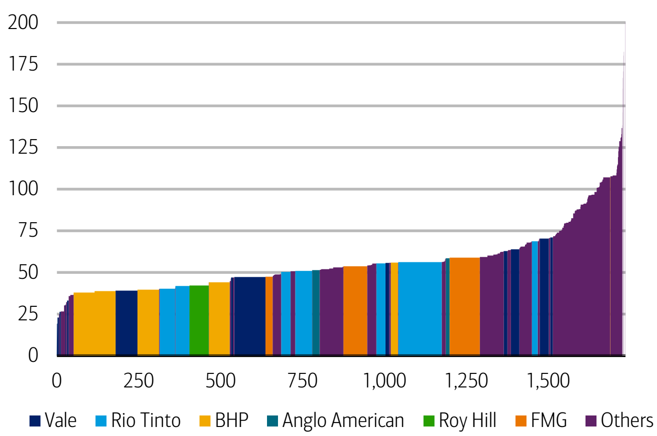
Brazilian iron ore miners benefit from world-class assets such as Vale (VALE3)'s Carajas operations and CSN (CMIN3)'s Casa de Pedra mine. With high iron content and lower impurities than peers, such operations are at the low end of the cost curve. Also, Latin American players benefit from integrated logistics that enable efficient operations and growth. An example is the Minas Gerais region, which has railroad systems (MRS, FCA) connecting the mining region to several ports that give them access to main consumer markets.

Weaknesses
Among large suppliers, Brazil is farthest from iron ore's main customer, China, resulting in higher freight costs and delivery times than for peers. The market depends greatly on China, as it represents ~60% of global iron ore demand and about 2/3 seaborne demand.

Opportunities
Given Brazil's positioning as a key low-cost region, its main opportunity is to continue to gain global market share as smaller/higher-cost producers are displaced. Tension between China and Australia could benefit Brazilian producers as well.

Risks
China not being able to deliver a soft landing in the housing sector, as well as other components of Chinese steel demand not offsetting the weaker property sector are some of the main risks. The new Chinese setup to centralize iron ore purchases may also cap potential iron ore price upsides going forward. Potential government intervention in Brazil is a minor risk, in our view, but could occur either directly (e.g., through stakes in companies, such as Vale) or indirectly (e.g., not granting environmental licenses for growth, higher taxation, etc). Brazil may be more prone to tailings dam issues given its topography and weather, yet we think miners have been hyper-sensitive to this after Vale's Brumadinho tragedy.

Exhibit 195: Iron ore cost curve (US$/Mt)
(y =CFR North China cash cost (62% Fe fines equivalent), x = volume)



Source: BofA Global Research, WoodMackenzie

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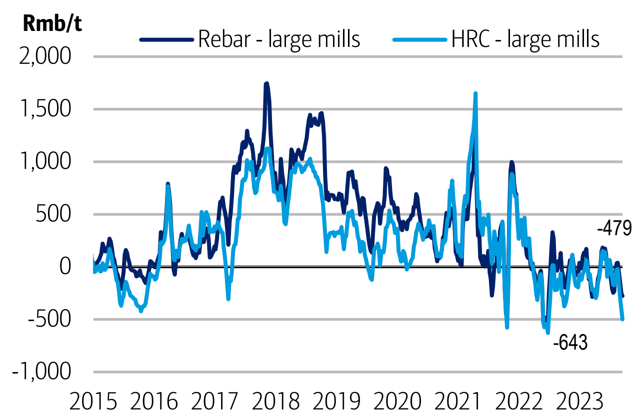
Exhibit 196: Cash margins at large mills (inventory lag)
Rebar cash margin at large mills -RMB70/t to -RMB479/t, and HRC cash margin at those mills -RMB85/t to -RMB643/t



Source: Wind, BofA Global Research

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4.14 Steel: battling against imports

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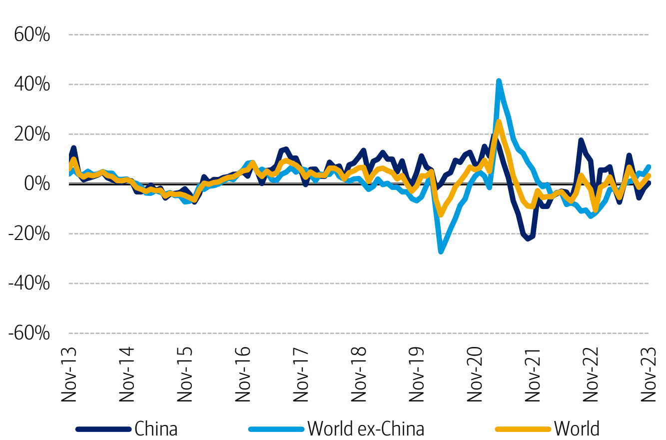
The global steel market's size is roughly 1.8Bt/year, with China representing over half of supply and demand. Carbon steel is the main type of steel and there are two broad product types: 1) flat steel, used to manufacture cars and white or yellow goods; and 2) long steel, which includes beams, bars, and rails, and are generally used for construction and infrastructure. The global steel industry is highly fragmented as most producers represent less than 1% of total capacity.

China and raw materials dictate prices

Steel prices can be set regionally on a short-term basis. However, in the long-run, regional premiums incentivize imports and therefore any outsized move usually does not last for long. Trade protectionism (tariffs and quotas) is also a key theme, and any change in Brazilian import tariffs can influence domestic prices. While other regions, specifically the U.S. and Europe, have moved toward greater protectionism, the Bolsonaro administration displayed a relative preference for reducing trade barriers. So far we have not seen the Lula administration revert to protectionism in the steel sector, despite pressure from Brazilian steelmakers.

Due to its dominance of the global market, small changes in China's import and export flows can influence global prices. Therefore, global trends can mirror China throughout the cycle. Chinese prices often depend on key raw materials, specifically the price for iron ore and metallurgical coal. Chinese policy is also a main driver, with the government keen on reducing its emissions and enforcing the shared prosperity agenda, which ultimately seem to curb steel demand and supply.

Exhibit 197: Global and Chinese steel production y/y % growth
China Crude Steel production was at 76.1Mt in November, almost flat y/y



Source: BofA Global Research, Worldsteel

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Exhibit 198: Export HRC price in China (US$/t)
Prices dropped from the peak and remained capped close to $600/t

Source: BofA Global Research, Platts

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Import pressure the main headwind into 2024

In Brazil, the largest steel consumer in LatAm, apparent consumption was up 1.5% in 2023: up 4.0% for flat steel but down 2.1% for long steel. Despite the increase in apparent consumption, steel domestic sales in Brazil dropped 4.7% y/y (-3.3% for flat and -6.6% long steel), due to the higher imports taking demand from domestic products. Steel imports were up sharply in 2023, up 40.1% for flat steels and 35.3% for long steels. Most of these volumes are coming from China and has led Brazilian steelmakers to demand tariffs on Chinese steel.

Looking towards 2024, we do not expect a major increase in steel demand. Autos demand will be the main highlight as BofA's LatAm transportation team expects light vehicles production to increase 11% in 2024 and trucks production should increase 20%. The improvement in auto production should also be beneficial for specialty steel demand. Long steel demand was more impacted by the macro headwinds, especially the monetary tightening hindering construction demand. The lower interest rates in 2024 and potential infra investments from the Brazilian government could be tailwinds for long steels.

The main challenges Brazilian steelmakers will face will be competing with the lower priced steel imports. Steelmakers will have the double challenge of trying to increase volumes and margins while competing with lossmaking steel from China. While they have been vocal on getting steel import tariffs to increase from 10.8% currently to 25%, we find that unlikely. In our view, the current administration is seeking to improve commercial relations with China and is also sensitive to inflation and higher autos and real estate prices, consequences of higher steel prices. That should disincentivize the government from increase steel import tariffs.

Main players exposed to flat steels are Usiminas (USIM5), CSN, ArcelorMittal, and Ternium while the main long steel producers are Gerdau and ArcelorMittal.

The sector 10 years from now

Falling iron ore prices can support global steel margins or drive lower steel prices. The global steel market will depend heavily on Chinese supply and demand, with plenty of reasons for demand to slow but with upside risk from government stimulus. At the same time the Chinese government's focus on decarbonization should drive lower pig iron production going forward and a shift from production of steel via blast furnaces (which use iron ore and scrap as inputs) to electric arc furnaces (which use scrap).

Specific to the Brazilian market, consolidation can help support margins, with four key acquisitions over the last years: Ternium's acquisition of slab-producer CSA in 2017, ArcelorMittal's acquisition of Votorantim Siderurgia in 2018, Gerdau's acquisition of long products maker Silat, completed in 2020 and ArcelorMittal's acquisition of slab-producer CSP in 2022. Brazil's demand seems on track to resume its pre-recession strength, so may outperform global growth and attract imports, hence trade protection can also be critical for prices.

Strengths

Strengths include vertical integration into raw materials, mainly iron ore, as well as high barriers to entry from protected domestic markets and logistical integration.

Weaknesses

We identify higher taxation across the chain than in other regions, high labor costs and low labor productivity. Additionally, any potential increase on imports, primarily from China and Turkiye, is a long-term risk.

Opportunities

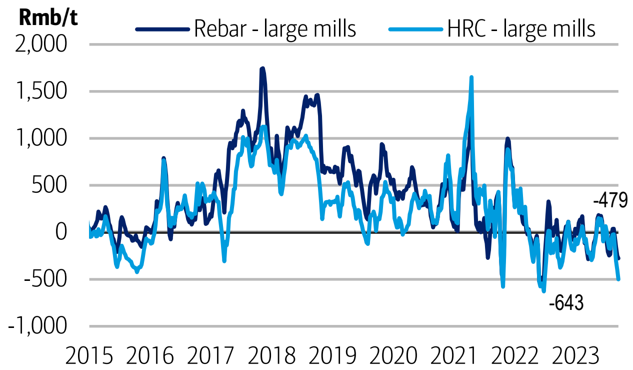
We believe steelmakers can benefit from Latin America's still-developing infrastructure, positioned to support the region's growth either through export to smaller countries or sales to domestic clients. Brazilian demand still has room to recover relative to globally more stagnant demand. Brazilian energy grid, which is more exposed to renewables, could help reduce average carbon footprint for steel produced in Brazil, especially EAF based. That could be a cost advantage in a world that taxes or charges for carbon.

Risks

Potential risks include BRL appreciation; potential government intervention such as reducing import tariffs; low pricing power; and trade wars.

Exhibit 199: China cash margins at large mills (inventory lag)

Rebar cash margin at large mills -RMB70/t to -RMB479/t, and HRC cash margin at those mills -RMB85/t to -RMB643/t



Source: Wind, BofA Global Research

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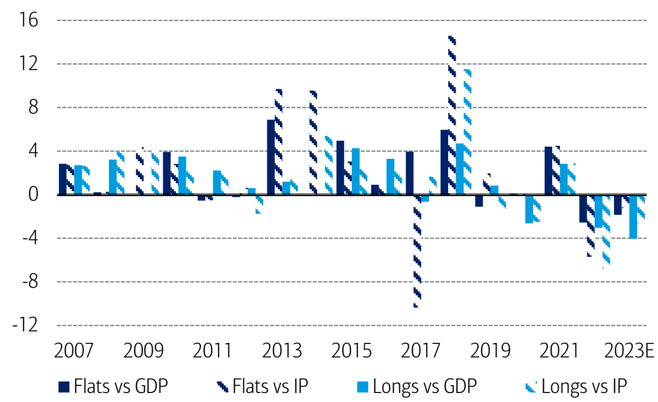
Exhibit 200: Brazilian flats and longs apparent demand

Apparent demand has a ~2x elasticity to GDP growth



Source: BofA Global Research, IABr IBGE

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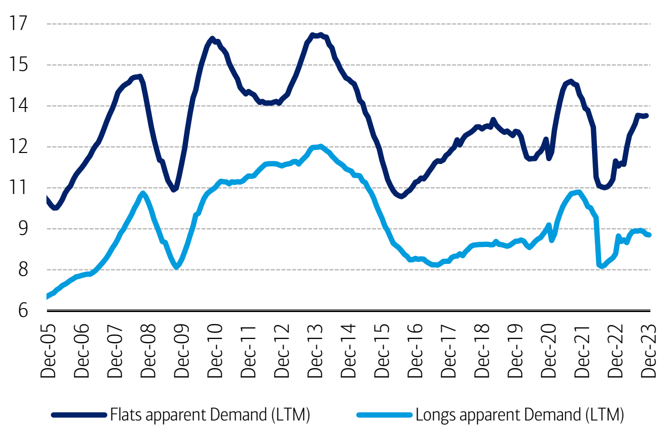
Exhibit 201: Brazil LTM long and flat steel demand (Mt)

Steel demand dropped from 2021's peak at 24.8Mt, as total



Source: BofA Global Research, IABr

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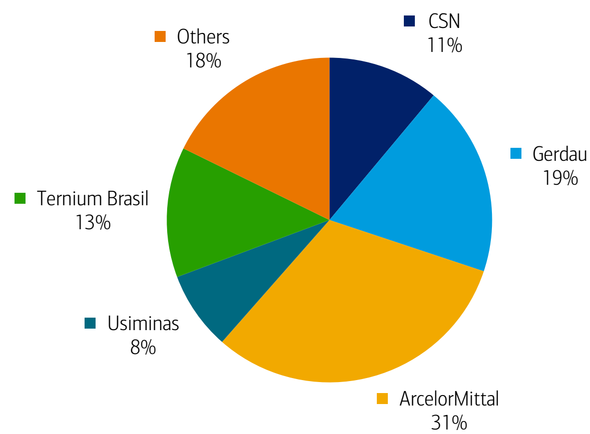
Exhibit 202: Brazil steel market share by company (%)

Production share coming mostly from ArcelorMittal and Gerdau with ~10.7Mt and ~6.5Mt, respectively



Source: BofA Global Research, IABr (as of 2022)

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4.15 Pulp and Paper: solid LT prospects

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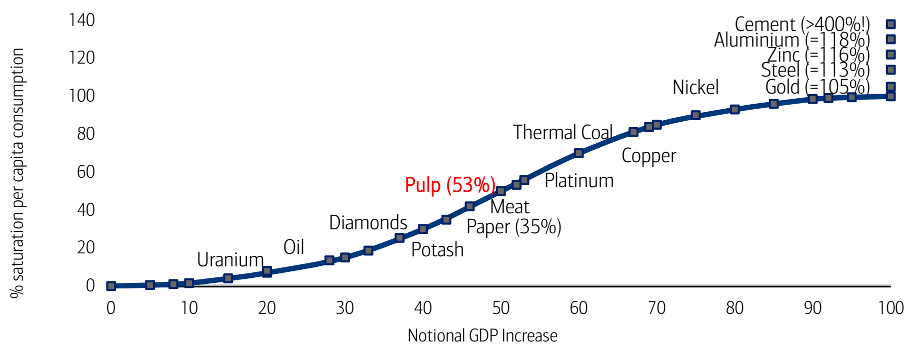
Wood pulp is a globally traded commodity and a major component in the manufacturing of virgin-fiber paper and paperboard. Pulp is generated either from wood chips or from recycled fibers and is then supplied to paper making operations, which can be integrated with the pulp mills. Of the total paper produced, roughly 42% is supplied from virgin-fiber pulp and the remaining 58% from recycled material.

Paper grade pulp is the main type of pulp with a global market of ~170Mt, and market pulp accounts for roughly 1/3 of it. Pulp is usually produced from either hardwood or softwood, which are used for paper production; 41% of market pulp end-use demand comes from tissue, 32% from cartonboard & specialties, 24% from graphic paper and 3% from others.

Exhibit 203: Pulp is a late cycle commodity
Percent saturation of per capita consumption vs. notional GDP increase, by commodity



Source: BofA Global Research

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LatAm the largest producer; China the largest consumer

After the execution of large projects in recent years, Latin America has consolidated itself as the largest market pulp supplier with ~35% share. After its merger with Fibria, Suzano (SUZB3) is now the largest single producer (capacity of ~10.9Mt/year) followed by Arauco and CMPC, with ~5Mt/year (including MAPA net capacity increase) and ~4.4Mt/year, respectively. On demand, China has gained significant share since the early 2000s and increased market share from roughly 10% in early 2000's to ~40% in 2023, making it the largest consumer, followed by Western Europe and other Asia/Africa.

Pulp price rationale

Pulp prices vary according to the region (China, Europe and North America) and according to list prices negotiated in the market set by suppliers. Softwood is usually more expensive than hardwood and list prices are discounted to reach net prices. The difference in such discounts is the main reason explaining the difference in list prices according to the region. Some Chinese customers directly practice net prices and the market is converging to lower discounts in the country.

A cycle has its ups & downs; reaching the end of the supply additions

By the end of 2016, market participants were concerned that pulp prices could remain at low levels if the market was faced with an additional period of oversupply in 2017/18, as supply from new mills reached the market. However, demand improvement helped lift pulp prices in 1H17. Later on, this demand increase combined with supply disruptions and producer discipline, low inventories, healthy paper mill margins, environmental restrictions in China and difficulties accessing forests in Europe. These factors allowed prices in 2018 to reach some of their highest levels on record ($770/t for hardwood [HW] in China).

As uncertainty escalated driven by the China/US trade war and a significant inventory build-up in 2019, and then COVID-19 in 2020, pricing fell sharply and bottomed at ~$440/t in 3Q20 (China HW), when fundamentals improvement and "an expectation of an upcycle" started a price rally. By mid-2021 prices began to fall sharply on a combination of increased supply entering the market and slower China, which brought prices from a high of ~$780/t in May to ~$550/t by November, for China HW. However, a rebound on Chinese papermaking activity, coupled with continued supply disruption unbalanced Chinese markets, which lead to an uptick in prices.

After ~$400/t of hikes since mid-2020, buyers were waiting for new capacity to weigh more heavily on HW pricing. By early 2023 pulp prices dropped from above $800/t to a low of $475/t in four months. These low prices triggered a combination of effects including restocking across the supply chain, integrated producers in China switching to market pulp and market related downtime from pulp producers, including Suzano reducing output by 4%. The combination of these effects led pulp prices to increase from $475/t to $650/t by the end of 2023 after multiple waves of successful price hikes.

2024 is the last year with relevant confirmed supply addition, as Suzano will startup their 2.55Mt/yr Cerrado project. We are now reaching a point with no meaningful capacity additions for at least the next three years, while costs have also trended higher, as evidenced by the amount of downtime when pulp prices were below $500/t. This could lead us to enter a phase of sustainably higher pulp prices for some years.

The sector 10 years from now

Longer term, Chinese paper production and consumption should remain strong, as China still consumes about ~87kg/capita of paper, versus up to ~300kg in developed economies. Pulp is a late cycle commodity, meaning it benefits from China becoming a more consumption-driven economy, raising income per capita. Also, fiber substitution should play a role, as polluting domestic pulp mills (and their capacity) continue to close.

Strengths

Latin America benefits from having world-class assets with low-cost operations as a result of climate and soil conditions, which, along with gene selection and planting techniques, allow for a shorter harvesting cycle. While leading hardwood producers in Brazil are able to harvest trees in about six years, more competitive regions (i.e., Chile) take 8-12 years and less competitive regions (i.e., North America, Europe) up to 40 years. Also, newer industrial facilities allow for lower energy and chemical consumption.

Weaknesses

Medium-to-low entry barriers are a collective weakness. Despite being more diversified than other commodities, China represents around ~35% of mkt pulp demand, meaning LatAm is a long distance from a key customer and highly dependent on that economy.

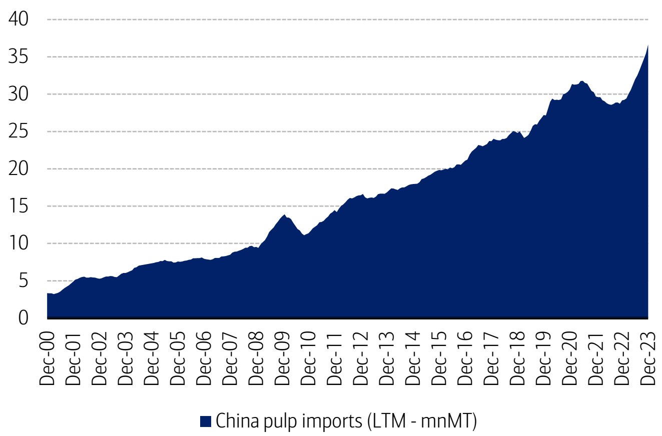
Opportunities

As established players with know-how, Latin American pulp companies should be able to deliver low-cost growth, benefiting from higher Asian demand. Returns need to be above cost-of-capital. Mergers could also be key, as they would support more rational supply accretion over time (e.g., the merger between Suzano and Fibria).

Risks

Deceleration of the Chinese economy could lead to an oversupply of pulp, as companies expect higher demand from China. *Digitalization* leads to lower printing & writing paper consumption in developed nations, yet it can also boost ecommerce and therefore packaging demand. Freight costs is also a key factor for Brazil producers.

Exhibit 204: Chinese pulp imports multiplied by over 10x since 2000
(LTM Chinese pulp imports – Mt)



Source: BofA Global Research, China Customs, Bloomberg

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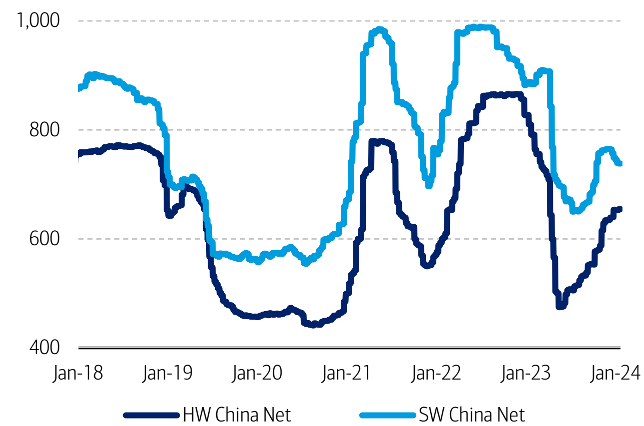
Exhibit 205: Historical China pulp prices
(Net China prices – US$/Mt)



Source: BofA Global Research, Fastmarkets FOEX

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4.16 Oil and Gas: An increasingly more dynamic, open market

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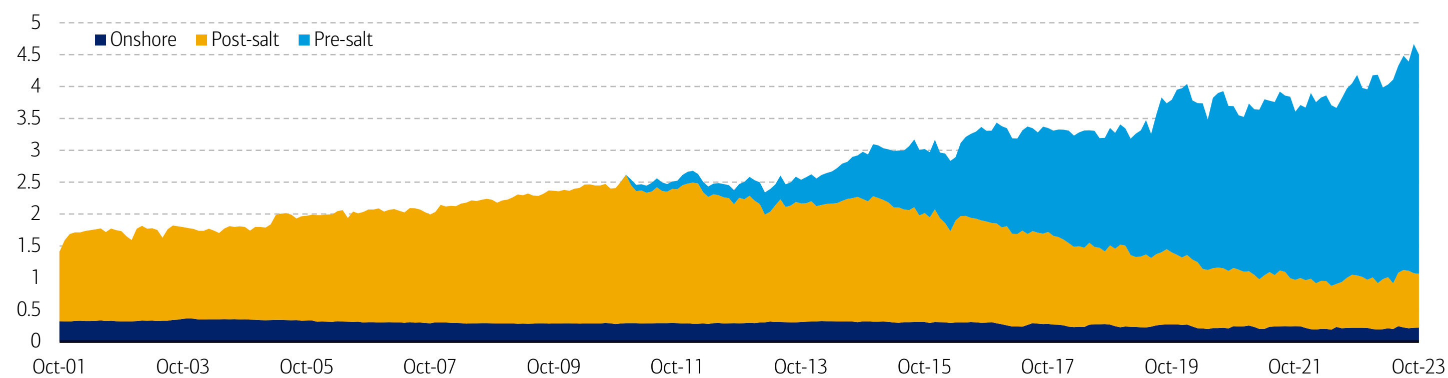
The Brazilian oil and gas sector has grown significantly and undergone major changes over the last 20 years, driven by several factors: **(1)** Major growth in oil and gas output as a result of the development of large, world class oil and gas reserves, especially most recently in pre-salt areas, which has contributed to growth in oil and gas production of 4.17% CAGR in 2000-LTM November 2023; **(2)** Regulatory changes that ended Petrobras monopoly in 1997 and created an attractive environment for domestic and foreign companies to invest in Brazilian oil and gas projects; **(3)** Supportive oil price environment for most of the last 20 years (with some important exceptions, most recently in March 2020, with the combination of the COVID-19 pandemic and Saudi Arabia oil price cuts); and **(4)** Strategic changes made by Petrobras – the Brazilian state-owned company (SOE) – since 2013 to improve free cash flow via reduced capex and asset sales. This change in strategy was critical to help Petrobras reduce its high level of debt, which had risen sharply due to a combination of high and inefficient capex along with refined product prices that were kept well below international prices in 2011-2014.

These strategic changes accelerated over the last few years, with Petrobras's asset sales program leading to a major increase in participation of other companies in many areas of the oil and gas industry where Petrobras had previously been the dominant player (including sales of natural gas pipelines, stakes in onshore/shallow water and deepwater oil and gas fields, and three completed sales of refineries). Together, these changes should contribute to a more open, competitive, and dynamic energy sector.

Exhibit 206: Brazilian oil and gas production (2010 – Oct/2023) – million barrels per day
Crude oil production has been driven by rising output in pre-salt fields



Source: BofA Global Research, ANP

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Petrobras's domination of the industry remains, although it has declined notably

Although Petrobras's monopoly ended in 1997, the sector continues to be dominated by the company. We highlight, however, that its dominance has declined in recent years.

- **Oil & gas output**: Petrobras now accounts for approximately 65% of domestic oil and gas output (as of October 2023) vs. 85% in 2014 and 99% in 2000. Other players accounted for 35% of Brazilian oil and gas output, including international oil companies (such as: Shell, Equinor, Galp, Repsol Sinopec, Total); as well as E&P Junior companies (PRIO3, RRRP3, RECV3, ENAT3).

Notably, we expect Petrobras's participation in the Brazilian upstream to continue declining. Even though we believe that the SOE will continue to be dominant in the country (it is expected to start-up 13 new platforms in the next 5-year horizon), Brazil's production will also be helped by new projects from other companies, such as: 1) Bacalhau 1 & 2 and BM-C-33 by Equinor; 2) Gato do Mato by Shell; 3) Atlanta by Enauta; 4) Maromba by BW Offshore; 5) Neon by Karoon; 6) among others.

- **Refining**. Petrobras is the dominant player in refining and we would not expect that to change. Following the outcome of the 2022 election, Petrobras suspended its divestment program. Although the "new" government managed to stop the sale of new refineries, three of them had already been sold (RLAM, RPCC and REMAN). The sale of these refineries reduced Petrobras capacity to 1,814kbpd from 2,176kbpd, implying a 17% reduction. Going forward, we expect Petrobras to increase its refining capacity as some expansions have already been contemplated in the company's lasts strategic plans. The most notable is the construction of the second train of RNEST refinery that should add around 130kbpd to the SOE's capacity.
- **Distribution**: Petrobras divested its remaining 37.5% stake in its fuel distribution subsidiary now called Vibra Energia (VBBR3) (former Petrobras Distribuidora), which ended the government's direct participation in the distribution segment. However, the company's CEO, Jean Paul Prates, has already stated in the past that the SOE is studying ways to get closer to end customers after selling BR Distribuidora in 2021. On January 10, the firm announced it would not renew the licensing agreement with Vibra regarding the use Petrobras trademarks. Of note, the contract remains in force until 2029.
- **Pipelines**: Additionally, Petrobras has reduced its stakes in key natural gas pipelines over the last few years with the sale of two major natural gas pipelines (TAG and NTS). The company has no stake in oil services (although it remains the dominant user of services).

The energy sector and specifically oil & gas exploration and production segment was opened to the private investment in 1997, with the end of Petrobras's monopoly that had been in place since its creation in 1953. In 2010, a new oil law introduced a production sharing regime in Brazil for new pre-salt contracts, in addition to the concession agreements that had been in place for all areas prior to this (including pre-salt areas). Under the production-sharing agreements that were awarded post 2010 in pre-salt areas, Petrobras was required to have both operatorship and a minimum participation of 30% in any new pre-salt partnerships. These requirements have been largely eliminated, with Petrobras now having a right of first refusal to participate in future pre-salt contracts.

Final fuel prices are a key metric with Petrobras still dominating refining

In Downstream, though fuel prices are officially de-regulated, Petrobras's dominant position gives it essential control of market prices, which has led to political intervention in some periods, especially for gasoline and diesel. Most notably, prices for both gasoline and diesel were kept materially below international prices from 2011-2014. This limited revenues and cash flow at Petrobras and contributed to the sharp rise in the company's debt in that period. The increase in leverage was exacerbated by the high levels of investment that occurred in those years.

Domestic prices for gasoline and diesel were kept well above international prices from 2014 until 3Q16. Between 4Q16 to 3Q17, Petrobras adopted a mechanism that resulted in Petrobras maintaining prices at a premium to international prices, given the inclusion of a profit margin. This was done, in part, to help Petrobras maintain a higher level of cash flow to support its high debt levels. However, this encouraged a higher level of imports by third parties. Petrobras saw a decline in its market share, which contributed to lower levels of utilization at the company´s refineries. Since July 2017, the company has moved to adjust prices frequently, though not with a specific schedule, with a policy to maintain prices in line with international prices.

Notably, there were two periods, in which fuel price increases (most especially diesel) led to a high degree of political pressure. This led to the resignation and replacement of two CEOs: Pedro Parente in Jun-2018 and Roberto Castello Branco in Feb-21.

The "new" pricing policy of the PT government

Following the change in government last year, Petrobras announced its new fuel pricing policy in May 2023. According to the new policy, readjustments will not have a defined periodicity, avoiding passing through the volatility of international prices and of the exchange rate to domestic prices. Also, decisions related to commercial strategy will continue to be subordinated to the Executive Group of Market and Price, composed by the CEO, the Chief Logistics, Commercialization and Markets Officer and the CFO.

More important, the new policy replaced the import parity from Petrobras's commercial strategy for two new references:

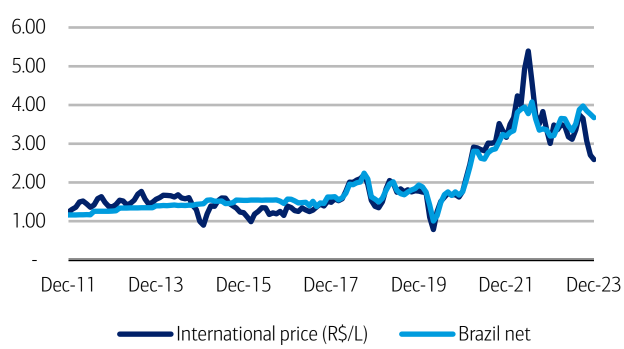
1) the **client's alternative cost** (to be prioritized in Petrobras's pricing strategy), which considers customers' supply alternatives and substitute products. In our view, the client's alternative cost should be very similar to the **import parity** – given that Petrobras's main competitor is the imported product. We highlight that the privatized refineries offer low competition to PBR due to geographic position.

2) the **marginal value for Petrobras**, which is based on the company's opportunity cost given the alternatives that Petrobras has such as: production, imports and exports of the oil-products and/or crude oils to be processed at the refineries. The marginal value for Petrobras should be associated with the **export parity** – as if the company does not sell its products in Brazil, the other option would be to export.

We, therefore, expect Petrobras's diesel and gasoline prices to be in the range between import and export parity – avoiding passing volatility to market. We highlight, however, that we expect faster price adjustments under downward pressure on oil and gasoline/diesel prices.

Exhibit 207: Petrobras gasoline – domestic vs. international prices (BRL/L)

International prices have peaked in 2022, but Petrobras did not follow the increase



Source: BofA Global Research, Bloomberg, Petrobras

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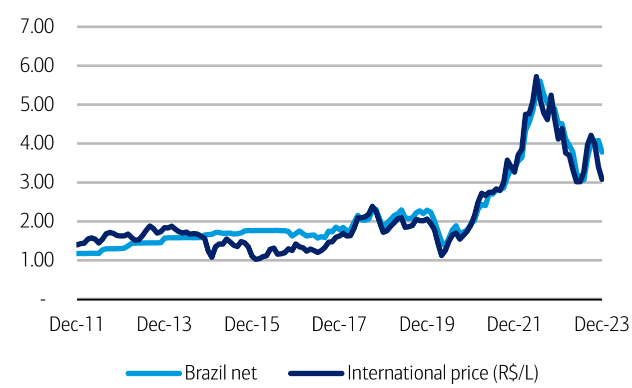
Exhibit 208: Petrobras Diesel – domestic vs. international prices (BRL/L)

Petrobras has been able to follow international prices as of 2016



Source: BofA Global Research, Bloomberg, Petrobras

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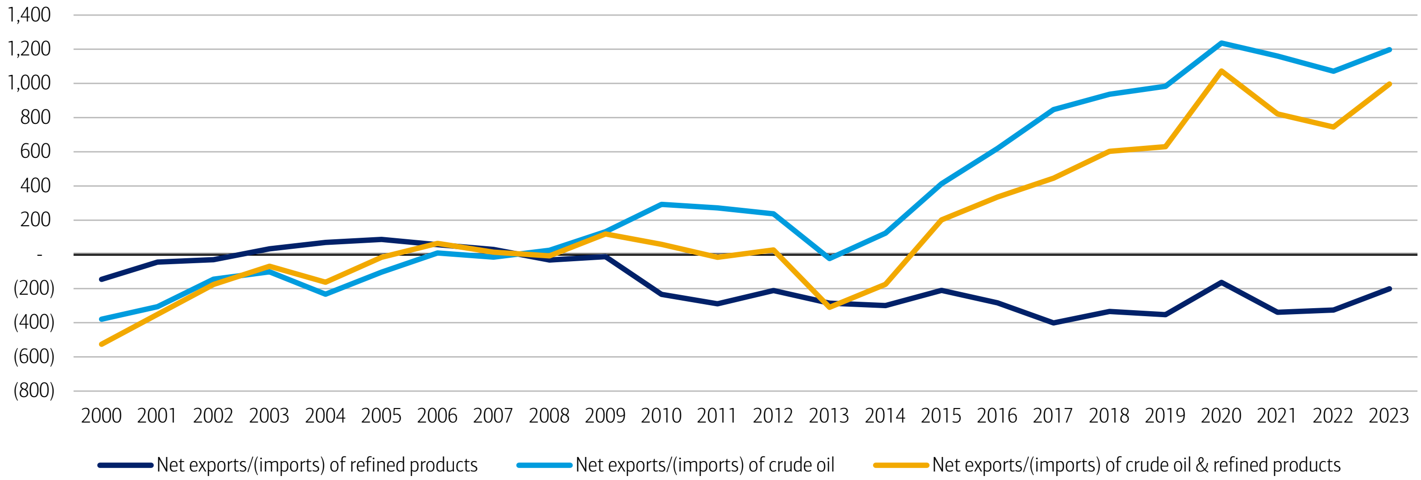
Exhibit 209: Brazil is a net exporter of crude oil/refined products, with crude oil exports offsetting refined products imports (thousand bpd)
Brazil has been a net exporter of crude oil and oil products since 2014



Source: BofA Global Research, ANP

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Structural changes and asset sales changed the market's dynamics

Petrobras's asset sales have contributed to a further opening of the energy sector that began in 1997. Private companies now have a material presence in every segment of the sector – upstream, refining (less advanced than other segments), distribution, and midstream (pipelines).

In April 2019, Petrobras announced plans to sell eight of its refineries – REGAP, REPAR, SIX, REFAP, RNEST, RLAM, REMAN and Lubnor – with an estimated 1,209kbpd of capacity representing ~50% of total Brazilian refining base. However, only three refineries have been sold: RNEST, REMAN and RPCC. With the election of Lula for president in the end of 2022, Petrobras suspended the sale of the other refineries and we would not expect the Petrobras to sell any other refinery at least in the short (until the 2026 presidential elections).

Liberalizing the gas market

Monetizing natural gas output is a key challenge for upstream investors in Brazil. This is mainly a reflection of Petrobras's long-standing monopoly of infrastructure and control of key parts of the final market (important stakes in many distribution companies and thermal plants). In addition, prices have been historically set in many parts of the market by formulas tied to international crude oil prices.

To make the gas market more competitive, the Brazilian government launched an effort ("New Gas Market") in July 2019, which was approved by the Congress and later by the president Jair Bolsonaro on April 2021. The law is composed of two parts: **(1)** an agreement between Petrobras and CADE (the Brazilian anti-trust authority) by which Petrobras will sell many assets related to natural gas (most notably its stakes in regional distribution companies); and **(2)** policies established by the National Energy Policy

Exhibit 12210: Important changes in Brazilian natural gas market
The New Gas Market created a more competitive environment for companies

	Previous Situation	New Gas Market
Supplying and Offloading	Petrobras	Total, 3R, PetroRecôncavo, Shell, ExxonMobil, Equinor
Processing	Petrobras	Open Access, 3R, PetroRecôncavo
Transportation	Petrobras	Private Players
Marketing	Petrobras	Private Players, 3R, PetroRecôncavo
Distribution	Gaspetro, Others	Potigás, Bahiagás, Others, Commit, PBgás, Cegás

Source: BofA Global Research, PetroRecôncavo

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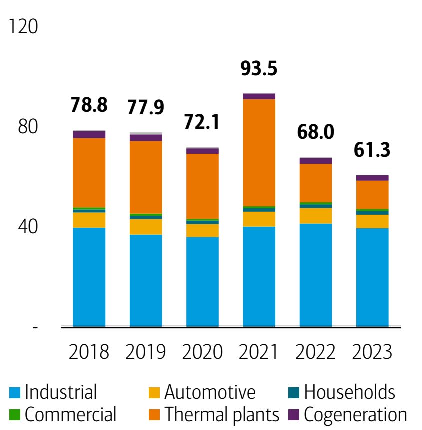
Council (CNPE) focused on increasing price competitiveness and transparency. A more open and competitive market is expected to lead to increased demand from industrial customers, which should help to absorb expected increases in gas production in Brazil. However, the opening process has been uneven, most recently affected by the rise in international gas prices in the period.

Exhibit 211: Brazil natural gas demand by segment (m3/day)
Demand is mostly for industrial use and thermal electricity generation



Source: BofA Global Research, MME

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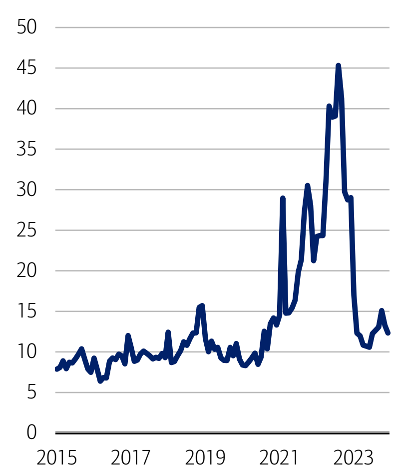
Exhibit 212: Henry Hub prices (R$/MBTU)
Gas prices have corrected in the last years



Source: BofA Global Research, Bloomberg

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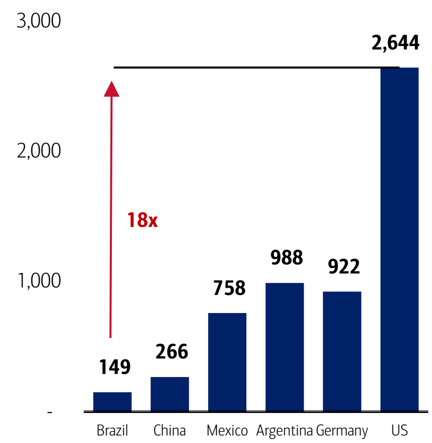
Exhibit 213: Natural Gas demand per capita (m3/person)
Demand is low vs. other countries



Source: BofA Global Research, British Petroleum data

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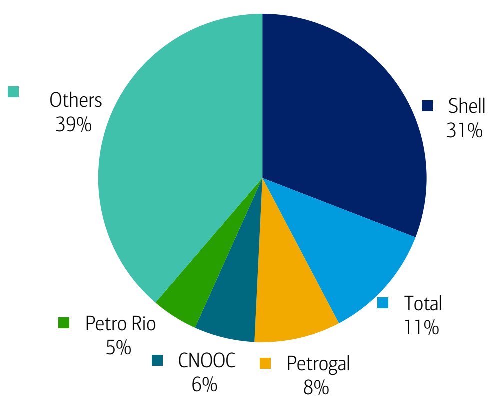
Petrobras and sector capex is key for Brazil's investment

Petrobras has reduced capex levels in recent years, from the very high levels prior to 2014. The drop was result of a combination of efforts to reduce spending due to the company's financial difficulties, a decline in oil services costs post the 2014 drop in oil prices, and some selective slowing in some developments in pre-salt fields. At the same time, the sale of assets by Petrobras and a series of new JVs with international oil companies has increased the participation of companies in key projects.

Total capex for the 2024-2028 plan has increased 30% to US$102bn vs. US$78bn for the 2023-2027 plan. However, as we show below, it remains well below the levels of the strategic plans prior to 2014. E&P continues to get the lion's share of capex at 72% of the total, as in the prior plan. Of this, 67% will be directed towards pre-salt developments in the Southeast basins. Spending is expected to be sufficient to support a 2.7% output CAGR through 2028, according to company's guidance.

Exhibit 214: Brazil Oil & Gas production share
*Ex-Petrobras



Source: BofA Global Research, ANP

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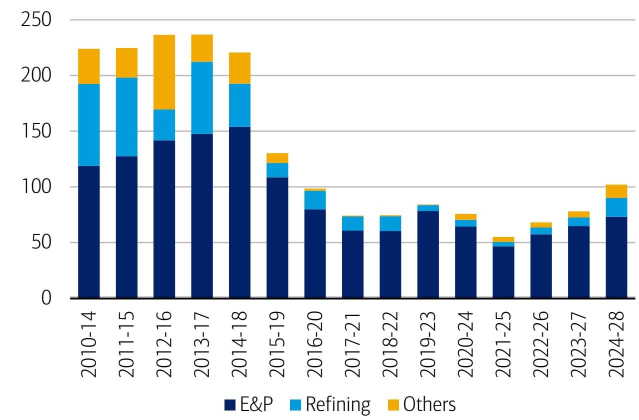
Exhibit 215: Petrobras' capex guidance through business plans
USDbn



Source: BofA Global Research, Petrobras

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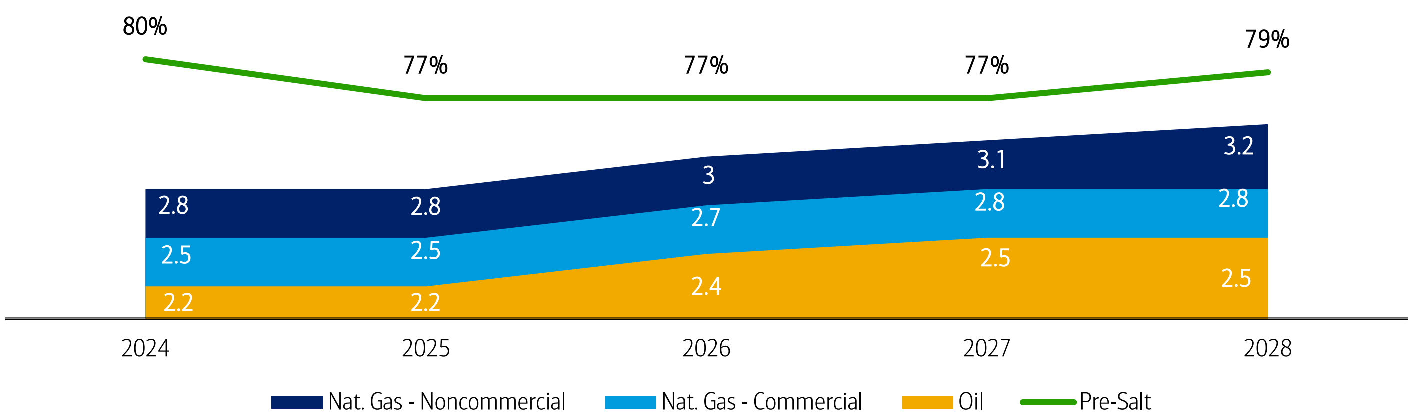
Exhibit 216: Petrobras Oil & Gas production guidance post divestments
Million barrels of oil equivalent per day



Source: BofA Global Research, Petrobras

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Other major players in Brazil's oil and gas exploration sector include (1) international companies that have important levels of output in both conventional and pre-salt areas, including Shell, Galp, Repsol Sinopec, Eneva, Equinor, Petronas, Chevron, ExxonMobil, Karoon, etc., and (2) local players, notably PetroRio, Enauta, 3R Petroleum, and PetroReconcavo. The expected development of pre-salt fields, including excess Transfer of Rights areas, other pre-salt and onshore areas over the next 12-24 months should contribute to sustained capex. The sale by Petrobras of onshore and shallow water fields, plus its stakes in some important deepwater areas such as the Albacora Leste (90%) fields, should also result in higher capex in fields that were not fully exploited by Petrobras in recent years.

2021 hydrocarbon auctions were a success post several difficult years: Auctions of hydrocarbon contracts in 2021 were successful. This followed a very difficult 2019-2020 period.

- **The auctions in 2019 were disappointing, with limited interest from global companies**.
- The 16th concession round saw a record ~320% premium paid over the minimum, but raised a relatively low US$2.2bn. The other two auctions in 2019 saw a much lower level of interest from international companies, although Petrobras´s domination of the bidding enabled the auction to still raise US$18.3bn. The low level of participation from international companies was attributed to (1) very high signature bonuses, (2) lack of operatorship in the ToR areas, and (3) the need to negotiate a further payment to Petrobras as part of the unitization process in ToR areas.
- **Auctions that were expected for 2020 were suspended due to COVID-19 pandemic:** The 7th production sharing round was originally scheduled to take place in 2020 and to include three pre-salt blocks in the Campos and Santos basins.

Sépia and Atapu auctions in 2021 were a success post 2019 failure: In the Dec-21 auction by the ANP, Petrobras was awarded stakes of surplus barrels in the Atapu and Sépia fields that were part of the Transfer of Rights (ToR): (1) A 30% stake in Sépia, via its pre-emptive right, since its failed in its own bid, which was surpassed by the consortium, which included TotalEnergies (28%), Petronas (21%); QP Brasil (21%); and (2) a 52.5% stake in a consortium with Shell Brasil (25%), TotalEnergies (22.5%). Petrobras will receive a net est. US$3.0bn in compensation for prior investments and its delay in near-term output to accommodate the other participants in the fields.

The success of the ANP's auction of surplus barrels in Atapu/Sépia reflects changes made to improve bid conditions and reduce uncertainty. These appear to have been sufficient to increase participation. Changes made include (1) reduced signing bonuses, (2) lower minimum government profit oil, (3) defined volume allocations between the original ToR areas and surplus areas (given differences in taxation), and (4) defined payments to Petrobras to compensate for past investments and the value of oil production that will be deferred to accommodate the new partners in early years.

In 2023 ANP raised R$421.7 million, offering 33 sectors with oil exploration blocks in diverse sedimentary basins across Brazil, in Amazonas, Espirito Santo, Parana, Pelotas, Potiguar, Reconcavo, Santos, Sergipe-Alagoas and Tucano. Petrobras emerged as a key victor, opening a new exploration frontier. These areas are part of the 4th Cycle of the Permanent Offer for Concession (OPC), encompassing both offshore and onshore fields, including a region with the marginal accumulation of Japiim in the Amazon Basin. The auction involved 192 blocks, spanning an extensive 47.1 thousand square kilometers (km²). The concessions will be signed in 2024 and no more auctions are expected for the year.

The sector 10 years from now

Long-term, we see two key drivers for sector performance. Over the next 5-10 years, we believe the prospects for the industry in Brazil are highly promising. However, the sector will be increasingly facing the prospect of the energy transition, which could have important consequences for investment decisions.

The asset sale process in recent years, which is already well-advanced and expected to be largely completed over the next several years, has put many assets into hands of third parties that are expected to focus on maximizing growth and increase efficiencies. This should contribute to both a higher level of investment as well as higher output.

The pace of the development will depend on several important factors: **(1)** oil prices, **(2)** the maintenance of a supportive political and regulatory environment, which we expect, and **(3)** the financial health of Petrobras. The company reached its target of gross debt at US$60bn at the end of 3Q21, and management has indicated that the company expects to maintain debt levels close to this level, which it views as optimal for its capital structure.

Today, Brazil's oil production is up to 3.6 million bbl/d and is expected to continue to rise. Petrobras is still the main producer in the country. The Energy Research Office (EPE), subjected to the Brazilian Ministry of Mines and Energy (MME), estimates that production could reach up to 5.4 million bbl/d by 2029, growing more than 50% from today's level (we expect Petrobras alone to post a 3.2% CAGR for 2022-2028). Growth in production of associated gas should also support gas-based industrial development. ESG should continue to become a greater focus for the industry in coming years, with a growing de-carbonization. We expect targets to become increasingly stringent. Given the general competitiveness of Brazilian crude (light oil with low sulfur content), especially pre-salt, this should enable the industry to continue to see strong performance. After 2029, production is expected to stabilize (or even drop) considering that no new reserves will be discovered.

Strengths

The Brazilian oil and gas sector has natural strengths, including 1) abundant oil/gas reserves that should provide the industry with a natural source of growth potential for at least the next decade; 2) world-class technology related to offshore oil/gas production; 3) proximity of oil and gas output to Brazil's refinery base and economic heartland, which reduces logistics costs; and 4) demand growth driven by the Brazilian economy.

Weaknesses

Petrobras's still dominant presence in key segments of the energy industry in Brazil, especially refining, is a key industry weakness. Although this is expected to change over the next few years, such dominance has reduced competition, which we believe has made the refining segment less healthy and contributed to greater government oversight and regulation. This has been most evident in pricing for gasoline/diesel, which very recently became more transparent. We believe the memory of the heavy government involvement in prices in 2011-2014 and the major losses in refining in those years could still be a factor that may limit the interest of some companies in Petrobras´s asset sales.

Another key weakness is the petrochemical industry's dependence on naphtha as a primary feedstock. The still limited use of natural gas reduces the competitiveness of the Brazilian industry, which has relied on tax breaks and import tariffs to remain competitive. This is especially true until 25 as we expect the petrochemical sector to continue suffering from weak spread. We are still expecting a weaker 2024 for the petrochemical companies, actual spreads fell short of our estimates. Month after month, we published in our Monthly Petrochemical Monitor reports (see the last update) that demand for petrochemicals was still weak and margins below historical averages amid cost inflation pressure.

The rise in global climate concerns, ESG, and the energy transition provide important hurdles to growth over the long-term relative to many other industries in the Brazilian economy.

Opportunities

The most important opportunity for Brazil is the development of its pre-salt resources, both crude oil and natural gas. To the extent that oil prices remain healthy over the medium to long-term, output could increase materially in coming years, which should lead to higher net exports for crude oil and limit future imports of natural gas.

Separately, the Equatorial Margin has become one of the hottest offshore upstream plays around the world. It encompasses Guyana, Suriname and French Guiana and extends along the Brazil's northern coastline. In Brazil, the potential in the Equatorial Margin exists in the Foz do Amazonas, Pará-Maranhão and Barreirinhas basins, and the offshore portion of the Ceará and Potiguar basins. Notably, the Foz do Amazonas is considered the most promising region among the Brazilian basins given its geological characteristics and proximity to Guyana and Suriname. The interest in the region has emerged with the discovery of Liza oil field, located in Guyana, by ExxonMobil and Hess in May 2015. Since then, more than 30 discoveries have been made in Stabroek which total over 11 billion barrels of oil equivalent - approximately 75% of Brazil's total reserves. All the potential showcased by neighbouring countries have raised Brazil's interest in its Northern coast.

Threats

Oil price trends are the clearest risk for the oil and gas sector. In addition, a critical factor to watch is a possible change in energy policy, as the new government has sought ways to increase taxation of the oil and gas industry. An example of this, is the excise tax, also known as "sin tax" included in Brazil's tax reform. The tax falls on goods and services that are said to be damaging to human health and the environment in order to discourage these activities. It includes tax on oil and mineral extraction, even if export related. The tax is capped to 1% of market value and will be implemented from 2027 on.

The ability to price refined products in line with international prices could be challenging in periods if oil prices rise sharply. A longer-term threat could come from a gradual move away from hydrocarbons globally, which could have an effect on the level of long-term prices for crude oil and products.

There is also a challenge for the Equatorial Margin, as the Brazilian Institute of the Environment and Renewable Natural Resources (IBAMA) has been a major deterrent for any drilling activity in the area.

4.17 Fuel Distribution: Facing an era of new opportunities

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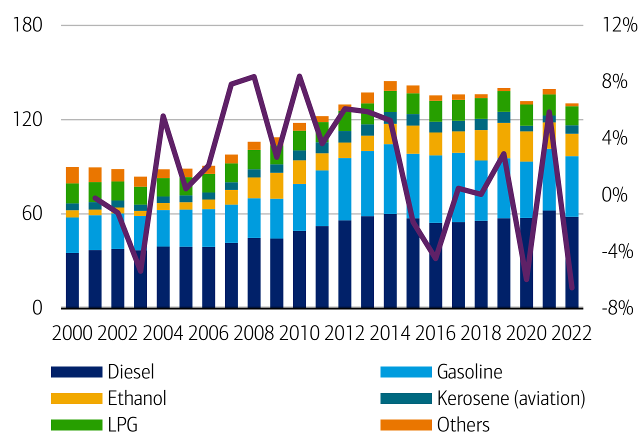
The fuel distribution market in Brazil - for sales of gasoline, ethanol, diesel, fuel oil, jet fuel and natural gas for vehicles (CNG) - is made up of more than 160 distributors and over 40 thousand service stations. Petrobras is currently the major supplier of oil-based fuels with approximately 60% market share. Distributors and service stations are able to source fuel supplies **(1)** directly from Petrobras, **(2)** from other producers, or **(3)** via imports.

The sector should see solid growth in the coming years, supported by economic growth in Brazil. Historically, there is a strong correlation of demand for fuels such as diesel, fuel oil and jet fuel with GDP. Volumes for fuels for light vehicles (gasoline, ethanol and NGV) tend to be driven by the growth of the light vehicle fleet and level of employment.

Exhibit 217: Total fuel sales volumes in Brazil (2000 – LTM Nov. 2023)
Million m^3



Source: BofA Global Research, ANP

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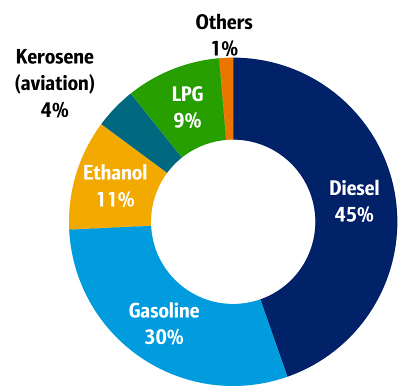
Exhibit 218: Sales volumes breakdown in Brazil by product
Figures of 2023 until November



Source: BofA Global Research, ANP

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Weak Brazilian economy and COVID has hurt fuel demand since 2014

From 2014 to 2017, fuel volumes in Brazil were negatively impacted by a weak Brazilian economy and an increase in unemployment. Over this period, fuel sales in Brazil remained largely flat, according to ANP (National Petroleum Agency), down sharply from a 5% CAGR in 2003-2013. Sales of diesel, aviation and fuel oil combined declined 1.7% per year in 2013-2017, affected by the soft economic trends, while sales of gasoline and ethanol combined increased 2.1% per year.

The industry started to see a sustained recovery in volumes in 2018. Though total fuel volume sales were largely flat, with diesel up 2% YoY, helped by the early stages of recovery of the Brazilian economy mainly boosted by the agribusiness sector. This improvement continued in 2019, with total volumes up 2.9%, led by a 4.1% rise in light vehicle volumes. The COVID-19 pandemic and its consequent social distancing measures negatively affected volumes in 2020, which were down a sharp 6.0%. Light vehicle fuel volumes were slightly better, declining 5.4%

Volumes could drop YoY due to a weaker crop as a result of worse weather conditions

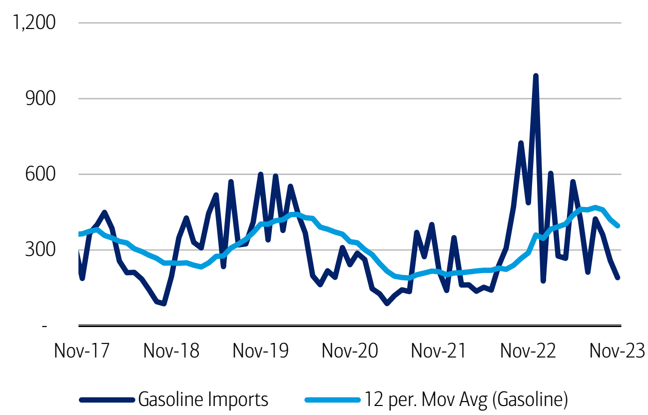
YTD 2023 volumes increased 4.8% for total volumes and +6.7% for light fuels. For 2024, there is still some concerns regarding the volume growth. The fuel distribution business is highly correlated with the broader economy's health: diesel sales are a reflection of economic activity (used in industry, agriculture and logistics), while Otto-cycle fuel sales reflect both household income and business activity.

Regarding economic growth, BofA's macroeconomic team has a lower GDP growth for 2024 of 2.2%. However, a weaker grain crop in Brazil this year could affect the fuel demand in 2024. According to the IBGE (Brazilian Institute of Geography and Statistics), the harvest is expected to be 2.8% lower, or 8.8 million tons less, than this year's estimate of 317 million tons.

With more stable pricing, structural margin expansion could be limited

Petrobras pricing policy since July 2017 has led to lower premiums for gasoline and diesel prices relative to international prices. This has contributed to a reduced flexibility for distribution companies to set prices (especially regionally). This has added volatility (given the more frequent price changes) and has also made it more difficult to profitably import products for re-sale into the domestic market. Nevertheless, imports have remained strong.

Exhibit 219: Gasoline imports
Thousands m^3



Source: BofA Global Research, ANP

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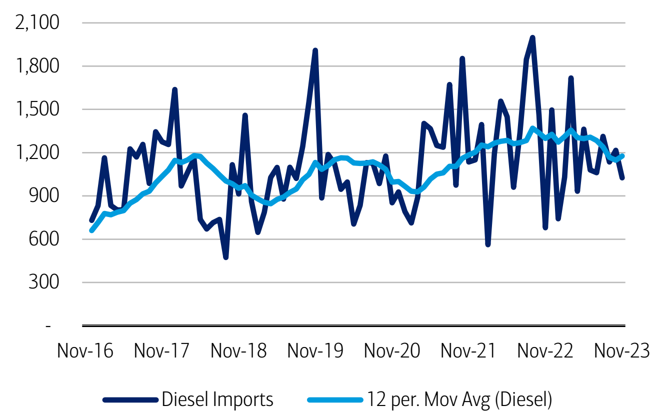
Exhibit 220: Diesel imports
Thousands m^3



Source: BofA Global Research, ANP

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Russian diesel imports flooded Brazil in 2023 – what to expect in 2024?

Russian diesel imports in Brazil skyrocketed last year. In 2023, Russia has been Brazil's main source for diesel, surpassing the United States, which has historically been the largest supplier.

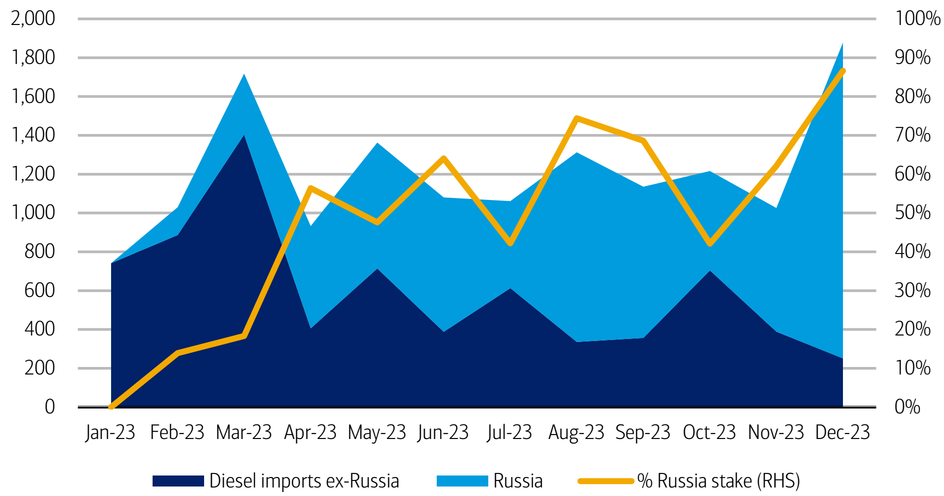
Since the start of the Russian invasion of Ukraine in February 2022, western entities have reacted with a series of economic sanctions packages on Moscow. One of the European Union's responses was to set a gradual curve for stopping imports of oil and oil products from Russia. Since February, the bloc's countries have been prohibited from buying Russian fuel.

Russia then lost its main consumer market (Europe) and began to seek new destinations for its cargoes. In this scenario, the fuel trade dynamics were reshaped: the US has shifted some of its production of oil products to the EU, attracted by the strong demand and the premiums being paid for alternative products.

Amid this change in the fuel market, Russian refiners had to lower their prices, and the discounts being provided on its products started to attract interest from countries such as India, China, and Brazil. According to our calculations, the discount versus Petrobras's diesel prices reached between R$750 and R$1,000 per cubic meter during the first semester.

With very high discount to local prices, the accrued volume of diesel imports in Brazil from Russia reached a record in 2023, and the Russian product so far has represented approximately 45% of all the diesel imported since February 2023. Of note, in December, Russian diesel represented 87% of the volume.

Exhibit 221: Diesel imports in Brazil (000 m3) and the Russian market share
Russia Diesel represented 87% of the imports volume in Brazil in December



Source: BofA Global Research, SECEX

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In this regard, we could enter 2024 with an oversupplied market that could likely impact margins throughout the first half of the year. The main question in our view will be whether there will be more rationality among the importers given that an oversupply situation affects the profitability of the sector as a whole.

Heavy concentration: Top 3 players still with almost 2/3 of the market

The distribution market is dominated by the top three players, with a total of 62% of the market. Vibra Energia is the largest fuel distributor in Brazil, with a 25% market share of the total market (retail, wholesale, large customer) in 2023 (through November), according to Fundação Getúlio Vargas (FGV) data, followed by Raizen (19.8%) and Ipiranga (17.1%).

In the retail segment alone (excluding wholesale and large customers) and if we consider only the three top players, Vibra is the leader with 21.7% of share, followed by Raizen (RAIZ4) (19.9%) and Ipiranga (17.7%). The leadership of Vibra to a great extent reflects its broader product offering and its larger network of gas stations throughout Brazil. Vibra has 8.3 thousand branded service stations, followed by Raizen (under the Shell brand) with 7.3 thousand and Ultrapar (UGPA3, Ipiranga brand) with almost 7.1 thousand.

Organic growth the key driver for established distribution companies

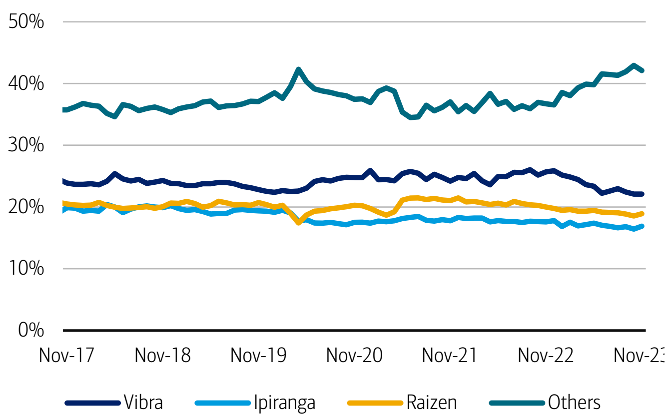
As mentioned, the main three players have close to two-thirds of the total distribution market. This can limit acquisitions as a source of growth, in light of antitrust concerns that have caused the antitrust regulator (CADE) to reject some acquisitions in recent years. This leaves organic growth - via opening new stations, re-branding existing stations, expanding services such as convenience stores, and new businesses such as natural gas/electricity distribution - as the key drivers of growth beyond growth in underlying fuel demand.

But the market is changing…

The fuel distribution market in Brazil is changing to be less concentrated at least since the adoption of a more competitive price policy by Petrobras in 2017, as mentioned above. The top three players started losing market share in 2014, which we attribute to: **(1)** higher mix of ethanol in the sales volumes in recent years; **(2)** higher volumes of direct imports from distributors; **(3)** more dynamic pricing regionally across Brazil; **(4)** more competitive negotiations between the large distribution companies and their franchisees as franchisees seek to improve margins from the compressed margins experienced in the 2014-2016 economic crisis; and (**5**) regulation changes in 2021, which allowed gas stations to purchase ethanol directly from producers. We highlight, however, that since market dynamics change every year, it is hard to know how the top three players' market share will behave going forward.

Apart from all the points mentioned above, tax evasion has also hindered the volume and profitability of Vibra, Ipiranga and Raízen. Within the context of a potential tax reform in Brazil, we believe that new ideas could be implemented to mitigate the tax evasion in the fuel distribution segment. Also, since the government has been seeking new alternatives to increase revenues, we believe that it could seek to eliminate this problem that has been affecting the major fuel distributors in Brazil.

Exhibit 222: Brazilian fuel distributors – Gasoline market share
(2017 – 2023)



Source: BofA Global Research, ANP, FGV

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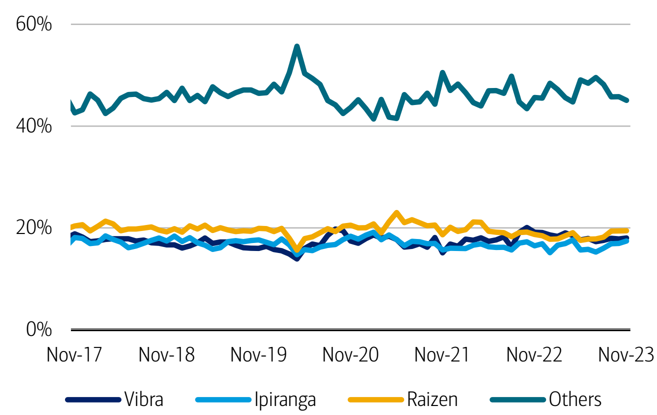
Exhibit 223: Brazilian fuel distributors – Ethanol market share
(2017 – 2023)



Source: BofA Global Research, ANP, FGV

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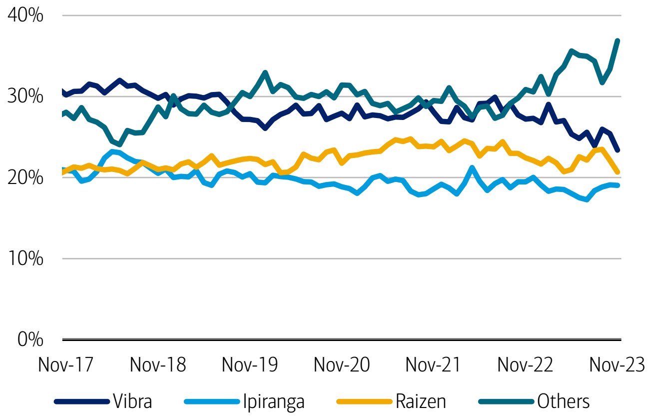
Exhibit 224: Brazilian fuel distributors – Diesel market share
(2017 – 2023)



Source: BofA Global Research, ANP, FGV

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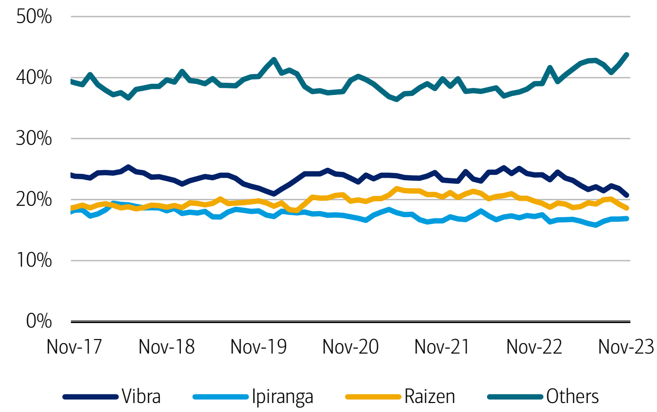
Exhibit 225: Brazilian fuel distributors – Total light fuels market share
(2017 – 2023)



Source: BofA Global Research, ANP, FGV

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The sector 10 years from now

The prospects for the industry are hard to know, given that electric vehicles penetration has been one of the main points of attention worldwide. In Brazil, this is not different. We share the view that the penetration of EVs in Brazil is unlikely to be strong as in other countries as the country is one of the largest ethanol producers in the world. However, most recent research has showed that the penetration of EVs is likely to continue increasing worldwide due to technology improvements that has led to lower prices. Despite an expected rise in global sales of electric vehicles, which could slow demand for transportation fuels in intl. market, we currently do not expect this to have an important effect on sales for fuels in Brazil over the next 3-5 years, though it remains a clear longer-term threat.

In the short-to-mid term, we expect: **(1)** demand for diesel to be driven by the agribusiness sector along with overall economy, and **(2)** higher ethanol share in fuel sales due to govt de-carbonization regulation (RenovaBio program) and direct ethanol sales.

Strengths

The Brazilian fuel distribution sector has natural strengths, including **(1)** well-established major players with experience in the sector and scale; and **(2)** expected solid demand growth for fuels in Brazil, driven by long-term growth potential of the Brazilian economy.

Weaknesses

The high level of market concentration, with the three major players having close to two-thirds of the total market, could be source of regulatory risk, with potential for regulators to limit inorganic growth and investigate pricing. The volatility in fuel distributors' margins has also been a major concern among investors.

Opportunities

The key opportunity in Brazil for the distribution segment is rising demand, driven by a variety of factors: **(1)** Expected pick-up in economic activity, which should benefit consumer income, and **(2)** Rising car penetration, which remain low in Brazil vs. developed countries.

Growth opportunities for distributors should also include conversion/re-branding of "white flag" stations, which accounted for 46.7% of total stations (and ~35-38% of total demand) in 2020 (vs. 39.8% in Dec. 2015 and 43.6% in December 2018). We also expect the opening of the energy sector to provide additional opportunities beyond refining, including natural gas services, power, logistics/infrastructure, and trading.

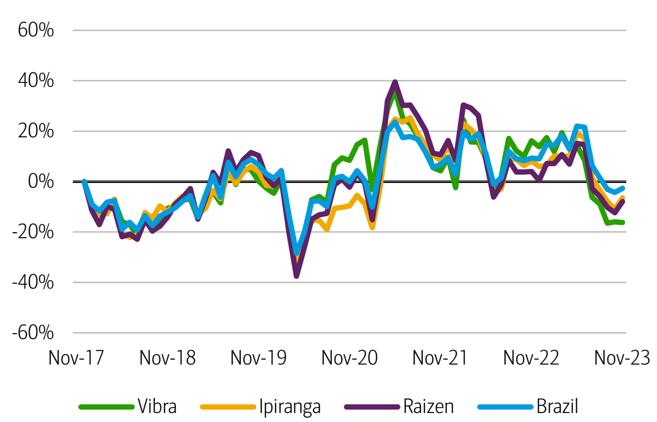
Threats

Given the importance of fuel costs to the Brazilian economy, a key risk is possible intervention by the government to limit distribution margins. This has been rumored in the past, although it is not expected, especially given the current government's clear indicated support of a more open market. Some other risks loom: **(1)** the possible permission of direct sales of ethanol from producers to gas stations, which could allow for greater informality in pricing (lower transparency), in our view; and **(2)** moves by recent entrants (via acquisitions by international companies) to increase market share via competitive pricing. This could be a threat, although we expect international players will work to maximize profitability, which could limit the extent of any eventual price competition.

And, of course, the long-term changes required by the energy transition could deeply affect distribution companies over time. This is already leading key players to broaden their portfolios. Vibra has moved into gas and electricity trading and has taken an important equity stake in Comerc, a company in the process of constructing substantial capacity of renewable electricity generation. Ultrapar has sold non.-core assets to re-deploy in other energy businesses that could provide it with more opportunities to grow long-term.

Though the energy transition is a long-term threat, we do not expect it to have a major impact over the next 3-5 years. The cost of building the infrastructure to support a large fleet of EVS, combined with the cost of purchasing new vehicles for most of the Brazilian population suggests a very gradual change in the market. This should provide the opportunity for the fuel distributors to gradually adjust to the important medium and long-term changes.

Exhibit 226: Gasoline volumes – YoY growth
%



Source: BofA Global Research, ANP, FGV

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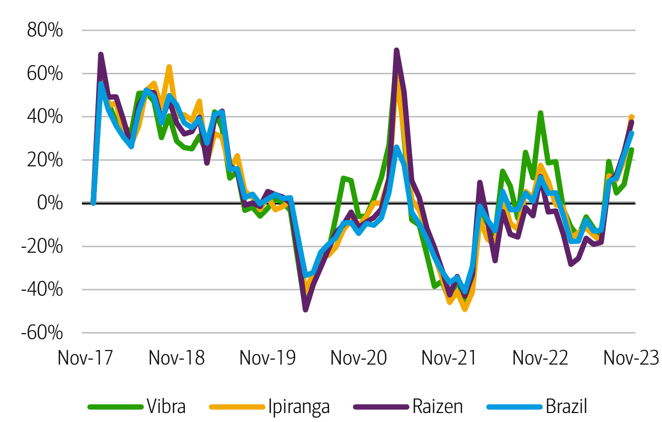
Exhibit 227: Ethanol volumes – YoY growth
%



Source: BofA Global Research, ANP, FGV

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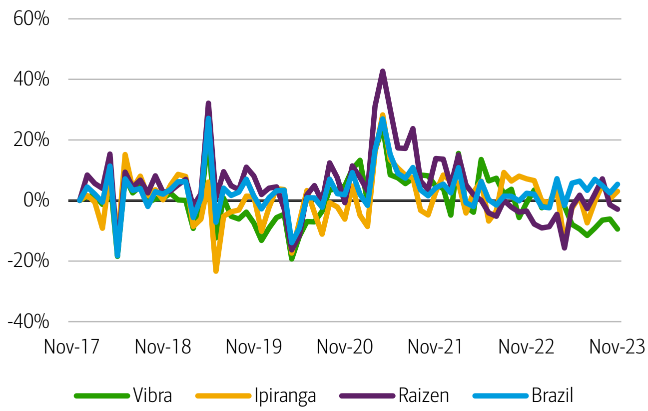
Exhibit 228: Diesel volumes – YoY growth
%



Source: BofA Global Research, ANP, FGV

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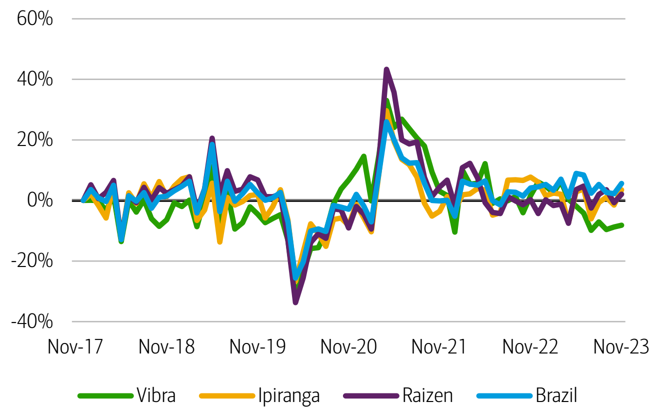
Exhibit 229: Total fuel volumes – YoY growth
%



Source: BofA Global Research, ANP, FGV

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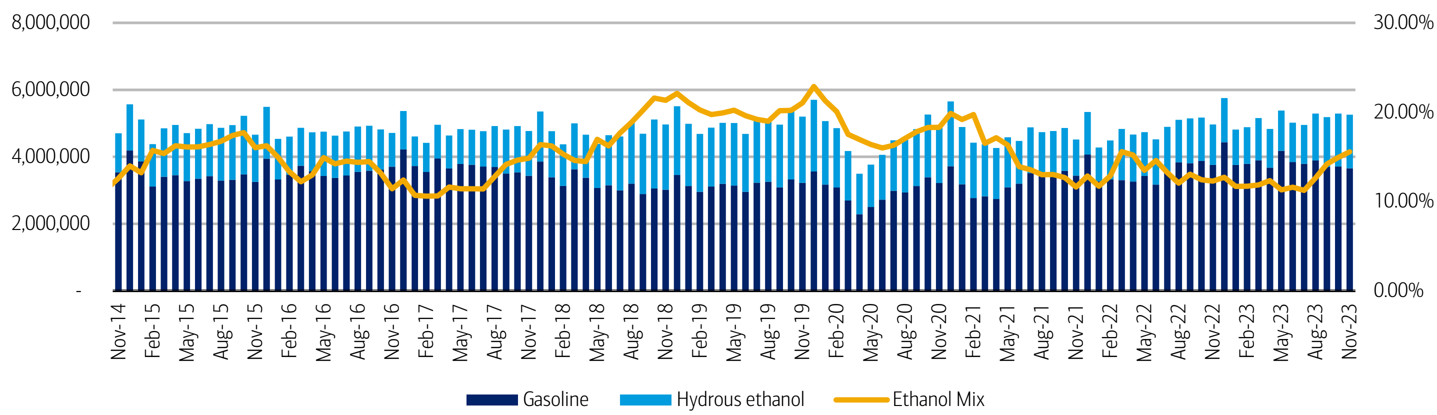
Exhibit 230: Otto cycle total volumes and Ethanol mix
Thousands of cubic meters



Source: ANP, BofA Global Research

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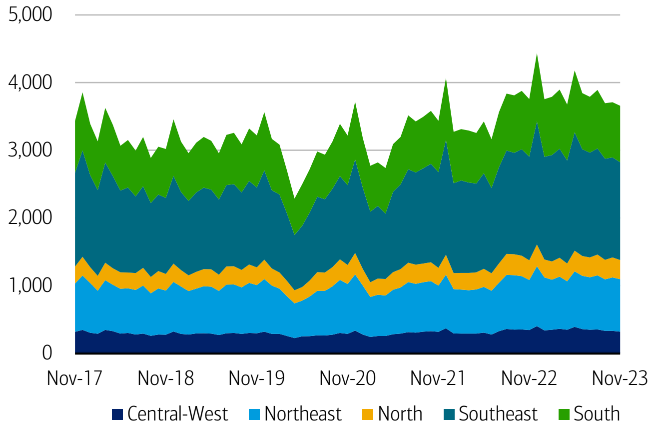
Exhibit 231: Total gasoline volumes per Brazilian region

Thousands of cubic meters



Source: BofA Global Research, ANP

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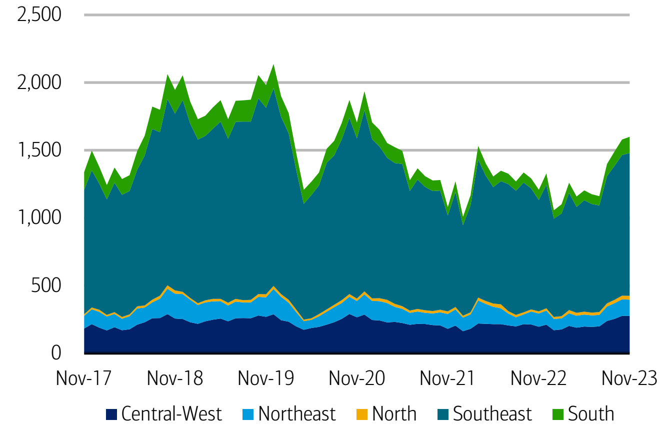
Exhibit 232: Total Ethanol volumes per Brazilian region

Thousands of cubic meters



Source: BofA Global Research, ANP

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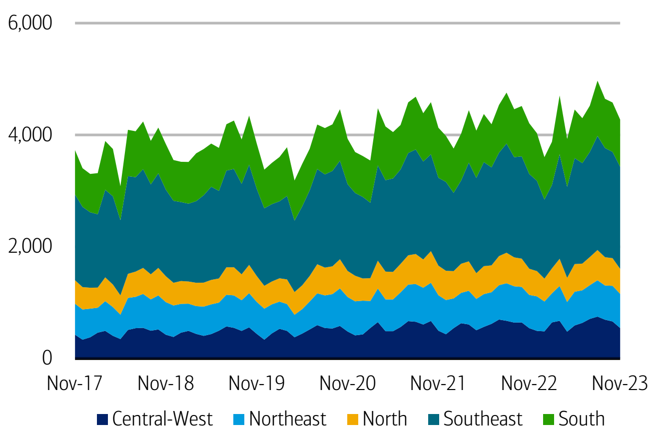
Exhibit 233: Total diesel volumes per Brazilian region

Thousands of cubic meters

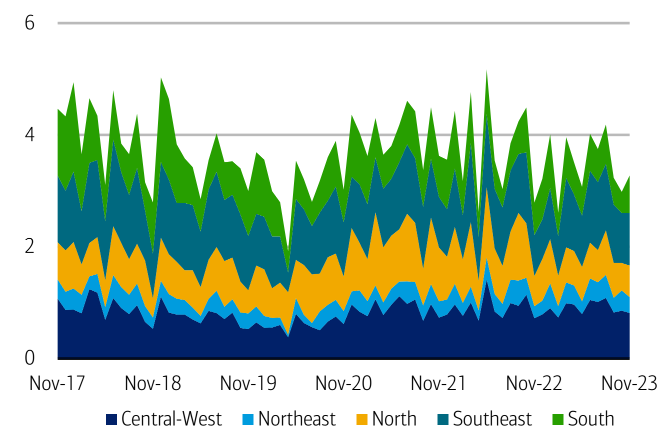


Source: BofA Global Research, ANP

BofA GLOBAL RESEARCH

Exhibit 234: Total aviation volumes per Brazilian region

Thousands of cubic meters



Source: BofA Global Research, ANP

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4. 18 Retail & eCommerce

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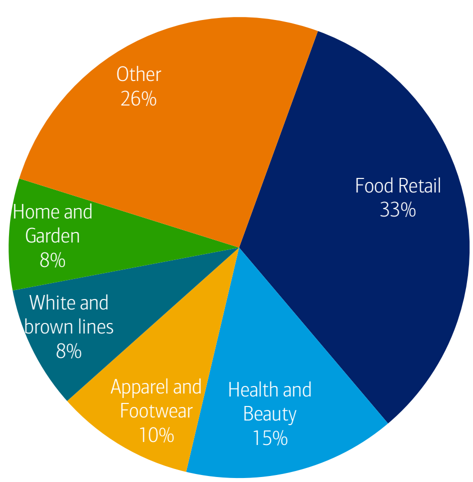
Brazil retail categories still generally fragmented as leaders consolidate

Brazil's retail industry is generally fragmented across segments. We attribute a lack of consolidation, in large part, to highly complex and burdensome tax levies, which facilitate evasion and historically enabled under-scaled retailers to create competitive value propositions. Nevertheless, multiple efforts to improve tax compliance and close loopholes, including an ongoing reform effort. Adoption of debit, credit and other forms of electronic payment, such as PIX, also undermine efforts to conceal income. COVID and high interest rates have also exacerbated pressure, as small operators struggle for working capital and landlords pushed high inflation adjustments on rent. In contrast, segment leaders generally remain well capitalized, in-stock and in-season. Retail leaders are also embracing back and front-end technology to further widen competitive gaps and accelerate consolidation, and we look for AI to further improve existing advantages.

Exhibit 235: Retail Sales across major segments
Brazil retail market by segment, 2022; total market size of R$2.0tn



Source: Euromonitor

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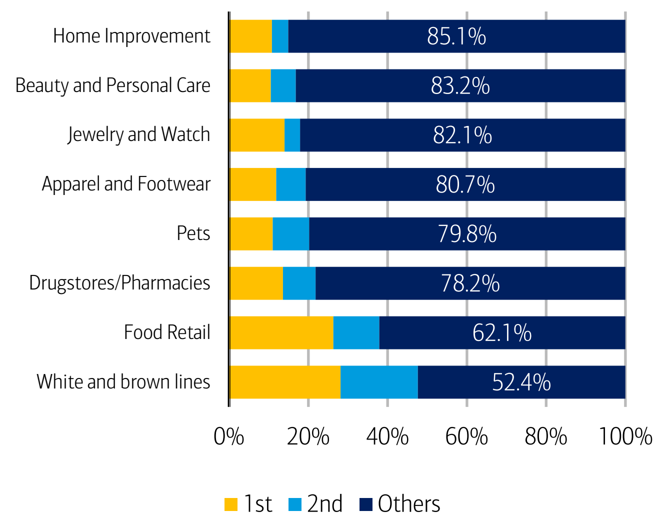
Exhibit 236: Fragmentation remains elevated
Market share per category (%), 1st and 2nd players – 2022



Source: Euromonitor

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Retailers leveraging physical assets, digital payment opportunity

Traditional industry participants are expanding electronic marketplaces, centralizing greater breadth of inventory, and developing electronic wallets and other fintech capabilities. Omni-channel retailers are also better leveraging their physical assets to enable ship-from-store and in-store pick-up/returns and improving service attachment, while extending those capabilities to 3P marketplaces. We look for further development of store-based fulfilment and reverse logistics to improve eCommerce service levels, while addressing faith and trust blemishes, and look for pure e-tailers to further develop affiliated-locations capable of replicating key omni-channel functions. We expect ongoing improvements to further drive scale and density, lowering logistics and last mile costs. Though Brazil is under-banked, it is also characterized by oligopoly banking structures, with high fees and wide margins. That pricing umbrella is creating considerable opportunity to develop electronic payment, factoring, credit and other solutions, potentially enabling the creation of meaningful ancillary revenue streams. Increasingly, we also argue Brazil's leading platforms capable of leveraging into new adjacencies and revenue streams, contributing to more open-ended growth opportunities.

eCommerce penetration still low, but frictions increasingly addressed

Brazil eCommerce penetration rates have historically lagged most of the world, due to a series of structural factors which we believe are continuously being addressed. We highlight the shift to mobile, faster processing and transmission speeds, declining data rates, hot spot availability, improving online assortments and values, growing numbers of payment, pick-up and service locations, financing, and rapidly-growing cross-border offers. Moreover, we suggest that the more limited scalability of Brazil for many general merchandise categories, as well as the country's much higher cost of capital, is likely to favor more efficient eCommerce models, ultimately lifting penetration rates in many more discretionary categories well above those of developed markets.

Exhibit 237: We believe Latam eCommerce penetration rates capable of exceeding those of many developed markets

eCommerce penetration across countries

Geography	2014	2023E	% chg
South Korea	17.9%	44.4%	26.5 ppt
China	7.7%	31.9%	24.2 ppt
United Kingdom	13.3%	27.8%	14.5 ppt
USA	13.2%	26.8%	13.5 ppt
World	7.3%	20.8%	13.5 ppt
Chile	**2.9%**	**16.5%**	**13.6 ppt**
Germany	9.5%	16.2%	6.6 ppt
Poland	4.8%	15.2%	10.3 ppt
Japan	9.1%	15.0%	6.0 ppt
Brazil	**5.2%**	**14.5%**	**9.3 ppt**
Argentina	**2.6%**	**14.2%**	**11.7 ppt**
Canada	3.9%	13.7%	9.7 ppt
Latin America	**3.2%**	**13.1%**	**9.9 ppt**
Mexico	**1.7%**	**12.3%**	**10.6 ppt**
Spain	3.4%	11.5%	8.0 ppt
France	5.7%	10.5%	4.8 ppt
Italy	2.9%	9.8%	6.9 ppt
Portugal	3.4%	9.0%	5.6 ppt
India	1.4%	7.5%	6.1 ppt
Colombia	**1.1%**	**7.3%**	**6.2 ppt**

Source: eBit, IBGE, Euromonitor and BofA Global Research estimates

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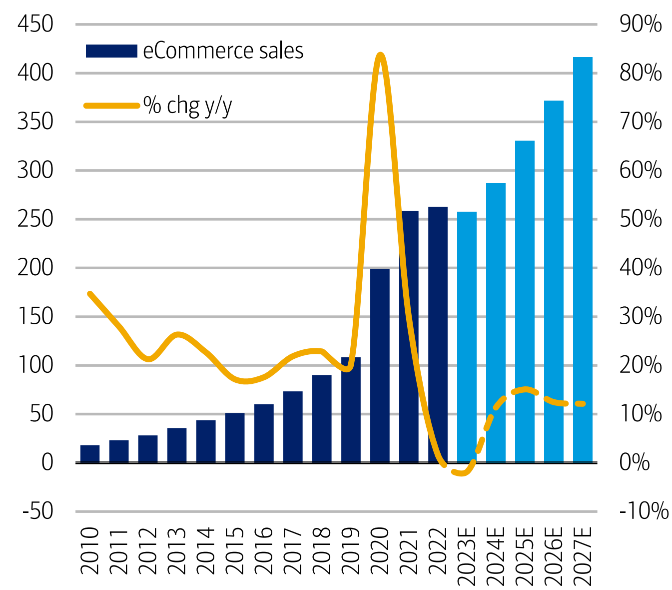
Exhibit 238: Following estimated overall contraction in 2023, forecast eCommerce to grow 11.4% in 2024E

Brazil eCommerce market size, R$ bn, % chg. y/y



Source: eBit, IBGE, Euromonitor and BofA Global Research estimates

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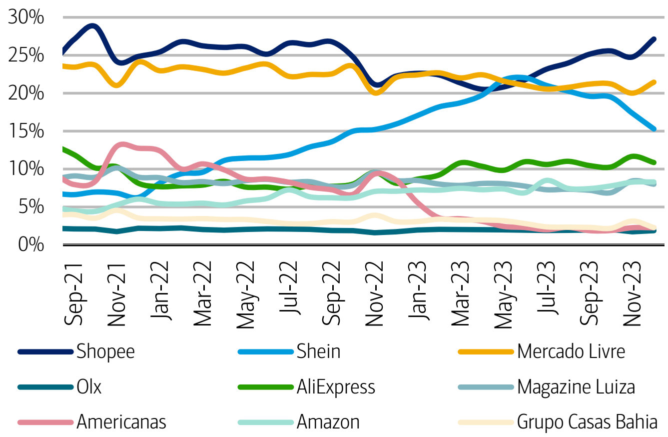
The shift to eCommerce may be poised to re-accelerate

With the exception of MercadoLibre (MELI), Amazon and Sea's Shopee, local eCommerce leaders have typically been omni-channel models affiliated with consumer electronics, department stores and food retailers. For various reasons, those value propositions have generally failed to keep pace with dedicated and better capitalized eCommerce models. We flag the bankruptcy of Americanas and impact of high interest rates on rivals Magazine Luiza (MGLU3) and Casas Bahia (BHIA3) as omni-channel setbacks. As those platforms consolidate within eCommerce, we look for channel shift from physical to online to again accelerate. Ongoing improvements in shipping speeds, assortment breadth and strong value propositions will continue to drive further channel shift, in our view. Leading platforms have moved aggressively to increase fulfillment, cross-docking and mini-hub space, accelerating delivery speeds to same day, and making those high service levels available more broadly and for an ever-growing range of SKUs. Rising rates of centralized inventory and delivery densities are simultaneously lowering shipping costs and helping fund new investment. Increasingly, networks are moving into high-velocity and lower-priced categories, dramatically expanding the addressable market opportunities for industry leaders, and we look for rapidly evolving advertising overlays to further accelerate growth and profitability for leaders (see MELI: 5 themes, and over $6bn in incremental earnings).

Exhibit 239: Cross-border platform have surged in Brazil
Share of broadline e-commerce traffic, App & URL - Brazil



Source: Similarweb, SensorTower and BofA Global Research

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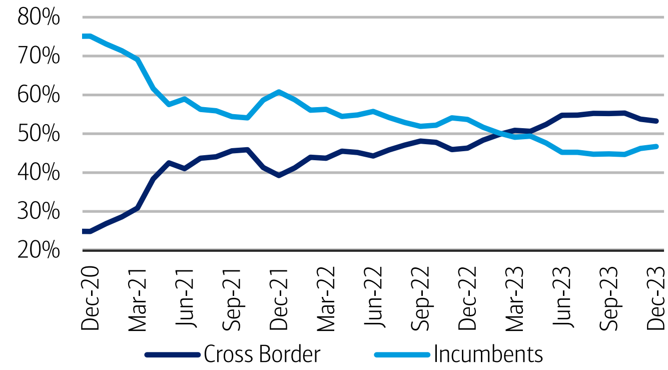
Exhibit 240: Cross-border sites now generate the majority of traffic
Share of broadline e-commerce traffic, App & URL - Brazil



Cross-border: Shein, Shopee, AliExpress, Alibaba and Wish
Local Commerce: MercadoLibre, Amazon, Olx, Magazine Luiza, Grupo Casas Bahia, Enjoei, Fast Shop
Source: Similarweb, SensorTower and BofA Global Research

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Cross-border platforms lead traffic growth in Brazil and across LatAm

Asia-based cross-border eCommerce models are Latin America's fastest growing, and given their superior value propositions among price sensitive consumers, appear to have considerable room to scale and potentially disrupt, in our view. Our data shows Shein and AliExpress to be the region's fastest growing platforms. Temu, currently only available in Mexico and Chile, eclipsed Walmex in terms of traffic in just its third month and is reportedly planning a Brazil launch. Short-format video, social platform, Kwai, has also recently initiated a Brazilian marketplace, and we look for a TikTok entry to follow as Amazon and MELI refocus and expand cross-border offers and Shopee redoubles its Brazil efforts. Given consumer counter-party and service level concerns, cross-border conversion is estimated to be a fraction of leading incumbent sites. However, should cross-border operators assuage consumer fears with faster shipping, free returns and other service improvements, we perceive opportunities to further increase traffic and significantly lift conversion.

Brazil tax uncertainty, reduced likelihood of pass through

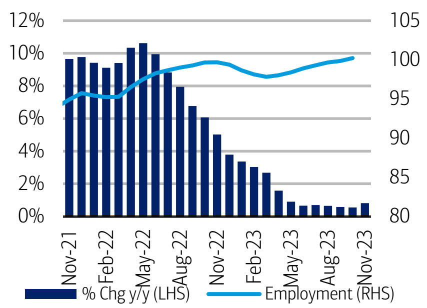
As the Lula administration moves to fund spending priorities, corporate tax proposals appear very capable of materially impacting net income across our coverage, and in some cases, potentially creating retroactive liability. Tax policy adds a new source of uncertainty and appears likely to extend well into the current administration. A provisional measure approved by Congress in the end of 2023 as an effort to tax and/or narrow the use of state tax investment incentives could have wide implications. Visibility, however, is still limited, as corporates wait for a report by the Finance Ministry to better understand the implications. We also expect wide litigation as tax payers challenge the constitutionality of new legislation. Proposed value-added tax reforms could impact service industries and potentially other segments. Sluggish job, wage, and credit growth, suggest limited opportunities to pass through higher frictions to consumers in the form of price, and as a result, higher taxes appear likely to directly impact profitability for most corporates in our universe of coverage.

An improving consumption outlook

Employment has consistently grown over the last year (Exhibit 241). Wages too, are exceeding overall inflation (Exhibit 242). And, aggregate salary mass is currently leading inflation by about 5.1ppts (Exhibit 243). While we perceive strong demand in away from home dining and more upscale retail, incremental strength may not be broad-based. Despite improving consumer confidence (Exhibit 244), we attribute sluggish retail consumption to 1) greater leisure spend, 2) high interest rates and reduced availability of zero-interest installment offers, 3) heavy (albeit declining) existing debt service requirements (Exhibit 245) and 4) food inflation.

Exhibit 241: Brazilian job growth up 1% in November

Employment, mn of inhabitants and % chg y/y

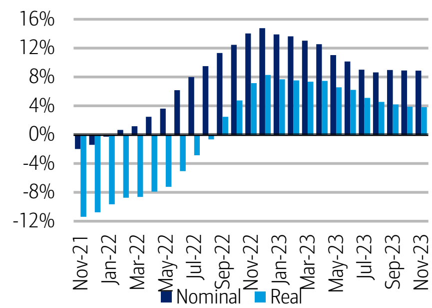


Source: IBGE, BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 242: Real wages up 3.9%

Real vs. nominal wages, % chg y/y



Source: IBGE, BofA Global Research

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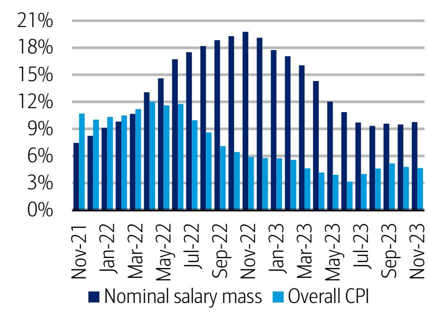
Exhibit 243: Salary mass leading inflation by nearly 5.1 ppt

Nominal salary mass vs Overall CPI, %chg y/y



Source: IBGE, BofA Global Research

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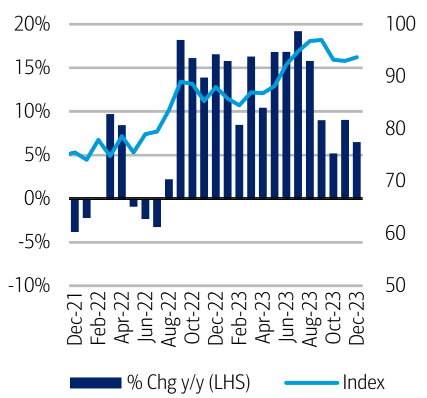
Exhibit 244: Consumer confidence up 6.5% in Dec-23

Consumer confidence index



Source: FGV, BofA Global Research

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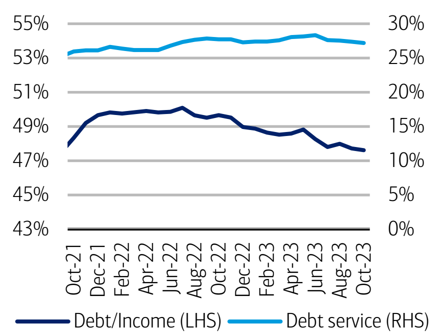
Exhibit 245: Consumers appear to be deleveraging; debt service at 27.2% of aggregate income in last print

Indebtedness and interest burden, % of disposable income



Source: Banco Central do Brasil

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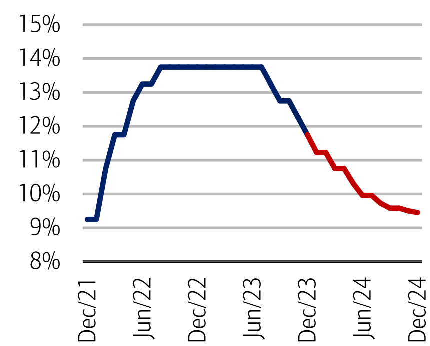
Exhibit 246: Futures imply about 230bp of rate cuts in 2024

Historical Brazil base rate (Selic) and implied expectations based on rates futures, %



Note: Selic estimate based on DI futures from Jan 18th, 2024

Source: Bloomberg, BofA Global Research

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High and concentrated consumer debt, Desenrola's impact appears limited

While aggregate economic data places debt service at about 27.2% of income (Exhibit 245), debt is concentrated in about 60% of households, suggesting far more severe constraints to spending for a substantial portion of the population. High rates are also limiting the availability and durations of subsidized installment debt, adding to frictions in semi-durable and durables categories. Brazil's consumer debt reduction program, "Desenrola", has consistently created headlines as the administration attempts to address encumbrance caused by record debt levels and elevated service costs. Desenrola, however, is limited to about R$30bn or less than 1% of total non-mortgage debt in Brazil. The program could be expanded and there appears to be support for a corporate version. We look for some modest benefit for lower income borrowers, but look for overall impacts to be negligible given Desenrola's relatively modest budget.

4.19 Telecom: Higher growth rates to continue and capex going down

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Before 1972, there were more than 900 telecommunication companies operating throughout Brazil. However, between 1972 and 1975, state-owned telco monopoly Telebrás acquired almost all the companies in the sector. From 1995 to 1998, the Brazilian government implemented a major telco reform, which included the creation and approval in Congress of the Brazilian General Telecommunications Law. This designed the legal structure of telecoms services and created Brazil's Telecom Agency (Anatel) to work as an independent regulatory agency.

Finally, in 1988 the reform included the privatization of Telebrás. Since then, the sector has gone through a series of mergers, acquisitions and corporate reorganizations, not only from a regional perspective (eg, mobile going nationwide), but also in the different telecom businesses (fixed, mobile, pay-TV/cable company mergers).

The Brazilian telco sector primarily consists of three large companies on the mobile segment, with nationwide mobile telephony coverage, regional fixed telephony/broadband and regional or nationwide pay-TV services (cable or satellite). Mobile segment is the most consolidated one with 3 larger players accounting for 97% of the market, while on broadband the 3 larger players account for 45%.

Competitive dynamics have improved over the last few years with (1) companies seeking higher returns on invested capital; (2) operators' parent companies balance sheets remain stretched; and (3) sector consolidation, with Vivo (VIVT3), TIM (TIMS3) and AMX (AMXB) acquiring Oi's mobile assets, leading to more market rationality. Also, margins have been on the rise driven by revenue recovery and tech-driven cost restructurings. More recently, due to the positive top line dynamics growing above inflation

Exhibit 247: Total subs and market share of Brazilian telcos (as of Dec/2023)
Vivo holds market leadership in mobile with 39% of total subscribers, On broadband Claro (AMX) is the market leader with 21%

	Mobile (000)'s	% of subs	Fixed (000)'s	% of subs	Broadband (000)'s	% of subs	Pay TV (000)'s	% of subs
Vivo	98,713	39%	6,504	25%	6,702	14%	849	7%
Claro	86,176	34%	7,436	29%	9,951	21%	5,443	46%
TIM	61,160	24%	702	3%	810	2%	-	-
Oi	-	-	6,769	26%	4,828	10%	1,749	15%
Others	8,833	3%	4,191	16%	24,898	53%	3,837	32%
Total	254,882		25,602		47,189		11,878	

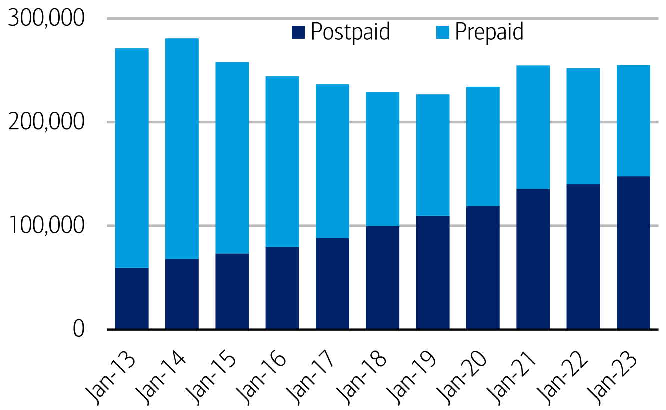
Source: BofA Global Research and Anatel

BofA GLOBAL RESEARCH

The Brazilian telco market has estimated revenue of around R$125bn per year among the three larger companies, with wireless services corresponding for the greatest part of it. Wireless carriers in Brazil have been more selective, disconnecting subscribers to reduce tax payments. Therefore, the number of wireless subs (or better, SIM cards) declined by 16% between 2014 and 2020, but resuming growth in 2021, and remaining flattish since that.

Regarding broadband services, the main trend to look at is the growing Fiber penetration that already corresponds to ~ 74% of Broadband connections and potential market consolidation. Differently from mobile, the broadband market is much more diluted, with the presence of smaller regional internet service providers (ISPs), that represent 53% of total connections. We also highlight that ISPs growth has started to decelerate in 2023, due to the already higher penetration of fiber.

Exhibit 248: Mobile subscribers base (000's)
Mobile subscribers total 254mn in Dec/2023 vs. 270mn in 2014, when it reached its peak



Source: BofA Global Research and Anatel

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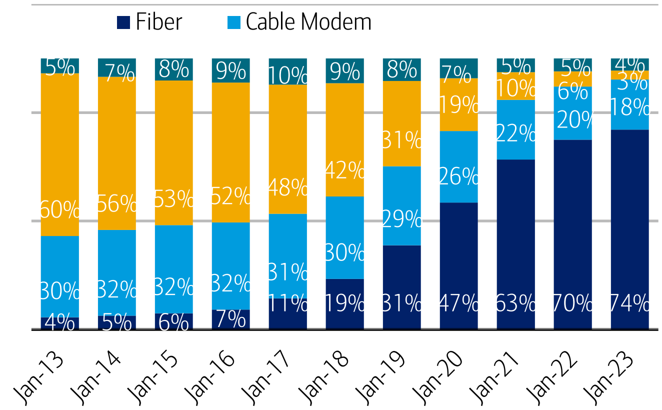
Exhibit 249: Broadband – technology breakdown
Fiber corresponds to 74% of Broadband services in 2023 vs. 19% five years ago



Source: BofA Global Research and Anatel

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The sector 10 years from now

We see five key themes for the next years: (1) The integration and synergies to be extracted from the acquisition of Oi's mobile assets; (2) The new pricing dynamics after sector consolidation, that have so far led to real ARPU expansion; (3) how capex will grow in the next few years with the roll out of 5G and fiber consolidation (we expect it to be stable/decline nominally YoY in the ST); (4) companies should continue to invest in partnerships for alternative revenue sources that could support higher growth rates; and (5) On broadband, net adds have decelerated with more penetration, and we expect market consolidation to continue.

Strengths and weaknesses

We see: (1) Real top line growth since the mobile market consolidation; (2) cost structure that historically grows below inflation (3) stable/declining nominal capex for the coming years and (4) high barriers to entry. The main weaknesses we see are (1) susceptibility to technological changes; (2) high capital intensity; and (3) unexpected regulatory changes.

Opportunities

Main opportunities in our view are (1) sector consolidation, especially in the Broadband segment; (2) more rational mobile market since market consolidation, leading to lower capex and higher top line growth; (3) digitalization of processes should continue to drive more efficient cost control, as well as help to develop new lines of business that could support higher growth rates.

Risks

Risks are (1) technological changes, which require continued capex without a proportionate increase in revenues; (2) regulatory changes that could impact concessions/authorizations owned by companies, as well as regulation regarding data usage and safety; and (3) FX exposure, as an important amount of capex is USD-denominated.

4.20 Utilities: powering up

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Like many of Brazil's infrastructure segments, power and water utilities offer great growth potential over the next years. Regarding the electric sector, authorities estimate over R$500bn investments within next 10 years to improve Brazil's energy supply by enhancing the generation and transmission segments. In power distribution, we expect companies to keep the current ~R$30bn/year capex pace. Worth noting, we expect such investments to continue to be backed by a well-defined federal regulation. On the flipside, Brazil's water sector offers a greater growth venue (~R$800bn in the next 10 years). In addition, recent privatizations in the sector could speed-up investments and improve the sector dynamics efficiency. However, the combination of years of scarce growth opportunities, a few strong balance-sheet non-listed players has driven to very competitive environment for new assets, limiting NPV potential for new entrants.

Brazilian electric utilities

Brazilian electric utilities are composed of private and state-owned companies, being fully regulated by the federal government. The sector is divided mainly in three segments: **1) Distribution (DisCos):** working as natural monopolies and ruled by a price-cap/ROA-based regulatory framework; **2) Generation (GenCos):** operating under ~30-year concession contracts and selling their capacity through regulated (DisCos) and non-regulated contracts (Industrials); and **3) Transmission (TransCos):** operating under 30-year concession contracts and ruled by a revenue-cap regulatory framework.

Sector 10 years from now

Among electric utilities, we see the **distribution segment at a good risk-reward position to face long-term trends**. In our view, main opportunities could be: 1) RAB growth from network refurbishment (e.g. net metering), 2) new services offered to its clients, and 3) energy solutions. We also expect DisCo to be less exposed to volumes.

On generation, we expect a fast-growing generation capacity to translate into competition for energy contracts, which might pressure energy prices. In our view, renewables are better positioned to this environment, given incentives and lower capex/MW but we see risks of volatility in the spot prices vs generation output. Possible new regulations could include: 1) new addressable market, due to the liberalization of the energy market; and 2) different remuneration methodologies for installed generation capacity. Still, looking at the mid-term, authorities estimate a 33% installed capacity growth within next 10 years (+69GW) but there are already ~40GW under construction (mostly driven by non-regulated market), which could translate into a >40% oversupply.

Finally, to connect new generation capacity with major markets, authorities estimate the **transmission** grid to reach 221k kilometers by 2032 (+R$158bn in investments).

Brazilian Water Utilities

Brazilian water utilities are composed mainly by state-owned companies (private players serve only ~20% of Brazil's households). State-owned utilities operate mostly under 30-year concessions through state-related contracts (non-competitive "program contracts"). On the other hand, private players compete for 30-year concession contracts at public bidding processes. Unlike the power sector, water regulation is defined by municipal or state-levels regulatory agencies. Consequently, have been dragged by the combination of political interferences and high regulatory risk perception. The recent new sector legislation (Law 14,026/2020) is fostering investments and improving the private players market share. Nevertheless, the ongoing privatizations with regulation improvements (e.g. Sabesp) could speed-up investments and universalization targets.

Strengths

Brazilian electric utilities benefit from a well-defined regulatory framework, which offers fairly-attractive returns. A turbulent period from 2012-15 forced authorities to address the sector's main structural concerns for each of its segments (offering pro-market and fair solutions). For Water, growth potential and privatizations are the main positives.

Opportunities

Brazil's energy consumption is low vis-a-vis developed economies, indicating room to grow. Also, the liberalization of the energy market for retail could be a growth venue for generation. In water, low penetration of sanitation represents a long-term sustainable growth venue for the sector. Recent privatizations could also improve sector efficiency.

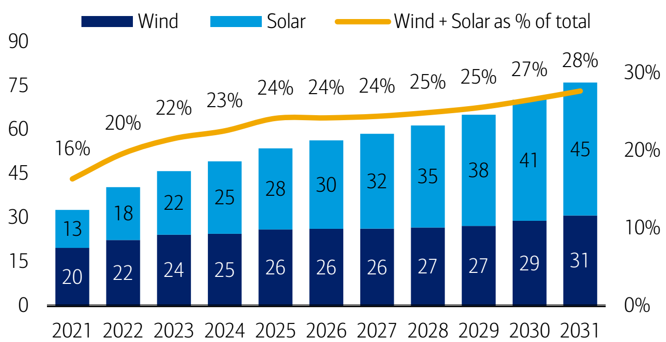
Weaknesses

Utilities are vulnerable to potential govt interventions in regulatory framework. This could be particularly true for water utilities, given their municipal/state-level regulation profile. For the power sector, DisCos are most exposed to potential regulatory risks.

Risks

At a sector level, we see an unstable macro and regulatory environment as the main risks. On a segments perspective, key risks for each segment are: i) declining power prices for generation; ii) lower regulatory returns for DisCos; iii) competition for growth.

Exhibit 250: Renewables will continue to gain share on energy matrix
28% of energy matrix will come from wind and solar in 2031



Source: EPE, BofA Global Research

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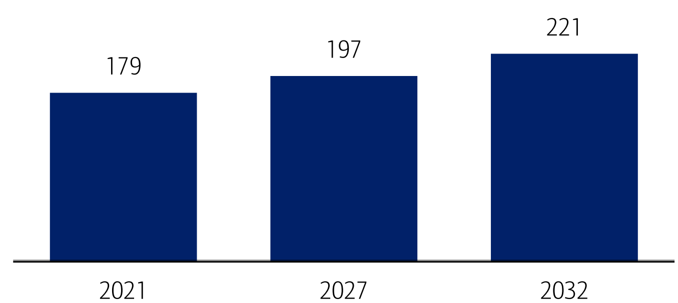
Exhibit 251: Authorities estimate the transmission grid to reach 221k kilometers by 2032 (+R$158bn in investments)
Km of Transmission Lines ('000)



Source: EPE, BofA Global Research

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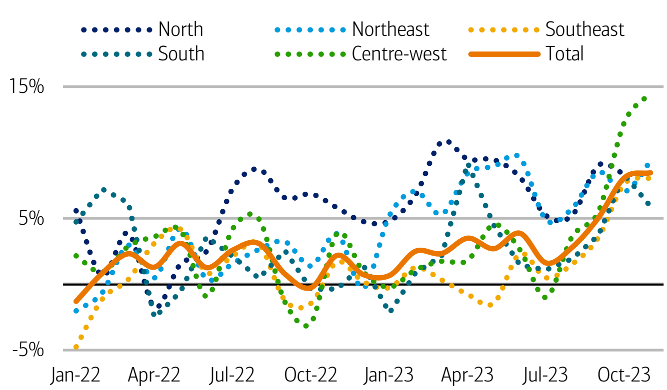
Exhibit 252: Energy Consumption YoY
+3.5% Energy consumption in 2023



Source: EPE, BofA Global Research

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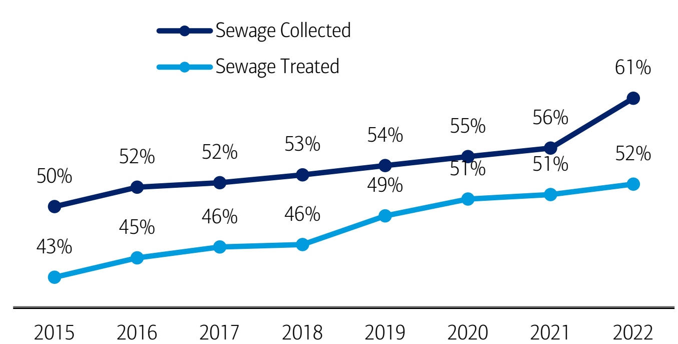
Exhibit 253: On sanitation side, coverage in Brazil is still low Sewage coverage in Brazil
Only 61% population with sewage collected in 2022



Source: SNIS

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Exhibit 254: List of acronyms in this report
List of acronyms in this report

Acronyms	Definition
ABISOLO	Brazilian Association of Plant Nutrition Technology Industries
ABLA	Brazil Association of Car Rental
ABRAPP	Brazilian Association of Closed Complementary Social Security Entities
ANP	National Petroleum Agency
ANS	Brazilian private healthcare agency
ANTT	Brazilian National Transport Agency
ARPU	Average revenue per use
ASK	Available seat miles
BCB/BACEN	Brazil Central Bank
BEES	Business-to-business platform
BNDES	Government controlled Brazilian Development Bank
BZ	Brazil
CADE	Brazil antitrust regulator
CAE	Economic Affairs Committee
CBIOs	Commercialization of carbon credits
CDI	Overnight interbank interest rate
CLT	Consolidation of Labor Laws
CMN	National Monetary Council
CNG	Natural gas for vehicles
CNPE	National Energy Policy Council
CSDs	Carbonated soft drinks
CVM	Securities Commission of Brazil
DAP	Real interest rate futures
DCM	Debt Capital Markets
DDI	cupom cambial futures
DL	Distance learning
DTCC	Depository Trust & Clearing Corporation
E&P	Explo
EAF	global electric arc furnace
ECM	Equity Capital Markets
EMBRAPA	Brazilian Agricultural Research Corporation
ENADE	Brazil national exam done by graduating students
FGTS	Brazil worker's severance fund
FGV	Brazilian research institute
FIES	Brazil scholarship program
FTAA	Free Trade Area of the Americas
FX	Foreign Exchange
GDP	Grosss Domestic Product
GLA	gross leasable area
GMO	Genetically Modified Organisms
HC	Healthcare
HMOs	Health Maintenance Organization
HW	Hardwood
IBAMA	Institute of the Environment and Renewable Natural Resources
IBGE	Brazilian Institute of Geography and Statistics
ICMS	Taxes on goods and services
IOC	Interest on capital
IOF	Brazil financial transaction tax
IPI	Brazilian Tax on Industrial Products
IPTU	real estate property tax
IPVA	tax on vehicle property
IRS	Internal Revenue Service
ISS	Municipal tax
LFT	floating rate bonds
LH	Lower House
LTN	zero discount bonds
M&A	Merger and Acquisition
MCMV	Brazil housing program "Minha Casa, Minha Vida"
MLR	Medical loss ratio
NAIRU	non-accelerating inflation rate of unemployment
NPL	Non-Performing Loans
NTN-B	IPCA inflation-linked bonds
NTN-Cs	IGP-M inflation-linked bonds
NTN-F	fixed coupon bonds

Exhibit 254: List of acronyms in this report
List of acronyms in this report

Acronyms	Definition
OEMs	Original equipment manufacturer
OTC	Over the counter
PCC	Per capita consumption
PISA	Program for International Student Assessment
PIX	Electronic payment system in Brazil
PNAD	Nation-wide Employment Report
Prouni	Brazil scholarship program
RaC	Rent a car
RGB	Returnable Glass Bottles
RPK	Revenue Passenger Kilometers
RTD	Ready-to-Drink
SBPE	Brazil savings deposits
SDGs	Sustainable Development Goals
SG&A	Operating expenses
SKU	Stock keeping unit
SOE	State-owned company
SUMOC	Bureau of Currency and Credit
TEC	External Common Tariff
TLP	long-term interest rate
TPV	Total payment volume
USDA	US Department of Agriculture
ZFM	Free Economic Zone of Manaus

Source: BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 255: Company acronyms
List of company mentioned in the report

Company Acronyms	Company name	BBG Ticker	BofA Ticker
BBAS	Banco do Brasil	BBAS3 BZ Equity	XBBAF
ITUB4	Itau	ITUB4 BZ Equity	ITUBF
BBDC	Bradesco	BBDC4 BZ Equity	BRDPF
SANB11	Santander	SANB11 BZ Equity	XCBDF
XP	XP	XP US Equity	XP
BPAC11	BTG	BPAC11 BZ Equity	XNXCF
MELI	Mercado Libre	MELI US Equity	MELI
ABEV3	Ambev	ABEV3 BZ Equity	AVBPF
WEGE3	Weg	WEGE3 BZ Equity	WGSEF
VAMO3	Vamos	VAMO3 BZ Equity	XPLPF
RAPT4	Randon	RAPT4 BZ Equity	RPRTF
GGBR4	Gerdau	GGBR4 BZ Equity	GGBUF
ARML3	Armac	ARML3 BZ Equity	XCVZF
MILS3	Mils	MILS3 BZ Equity	MLSTF
GOLL4	Gol	GOLL4 BZ Equity	No coverage
AZUL4	Azul	AZUL4 BZ Equity	XAZUF
RAIL3	Rumo	RAIL3 BZ Equity	RUMOF
CCRO3	CCR	CCR3 BZ Equity	CDCRF
ECOR3	Ecorodovias	ECOR3 BZ Equity	XVEDF
B3SA3	B3	B3SA3 BZ Equity	XIMAF
VALE3	Vale	VALE3 BZ Equity	VALEF
CMIN3	CSN	CMIN3 BZ Equity	XZRAF
USIM5	Usiminas	USIM5 BZ Equity	USSPF
SUZB3	Suzano	SUZB3 BZ Equity	XXRTF
ENAT3	Enauta	ENAT3 BZ Equity	QGEPF
RECV3	PetroReconcavo	RECV3 BZ Equity	XPXYF
PRIO3	Petro-Rio	PRIO3 BZ Equity	HRTPF
RRRP3	3R Petroleum	RRRP3 BZ Equity	XPXXF
VBBR3	BR Distribuidora	VBBR3 BZ Equity	XUBRF
RAIZ4	Raízen	RAIZ4 BZ Equity	XUXIF
UGPA3	Ultrapar	UGPA3 BZ Equity	XLRUF
MGLU3	Magazine Luiza	MGLU3 BZ Equity	MGZZF
BHIA3	Via Varejo	BHIA3 BZ Equity	GBXPF
Walmex	Walmex	WALMEX MM Equity	WMMVF

Exhibit 255: Company acronyms
List of company mentioned in the report

Company Acronyms	Company name	BBG Ticker	BofA Ticker
VIVT3	Vivo	VIVT3 BZ Equity	XCPTF
TIMS3	TIM	TIMS3 BZ Equity	XZUAF
AMXB	AMX	AMXB MM Equity	AMXVF

Source: BofA Global Research

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Investment rating	Total return expectation (within 12-month period of date of initial rating)	Ratings dispersion guidelines for coverage cluster[R1]
Buy	≥ 10%	≤ 70%
Neutral	≥ 0%	≤ 30%
Underperform	N/A	≥ 20%

[R1]Ratings dispersions may vary from time to time where BofA Global Research believes it better reflects the investment prospects of stocks in a Coverage Cluster.

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