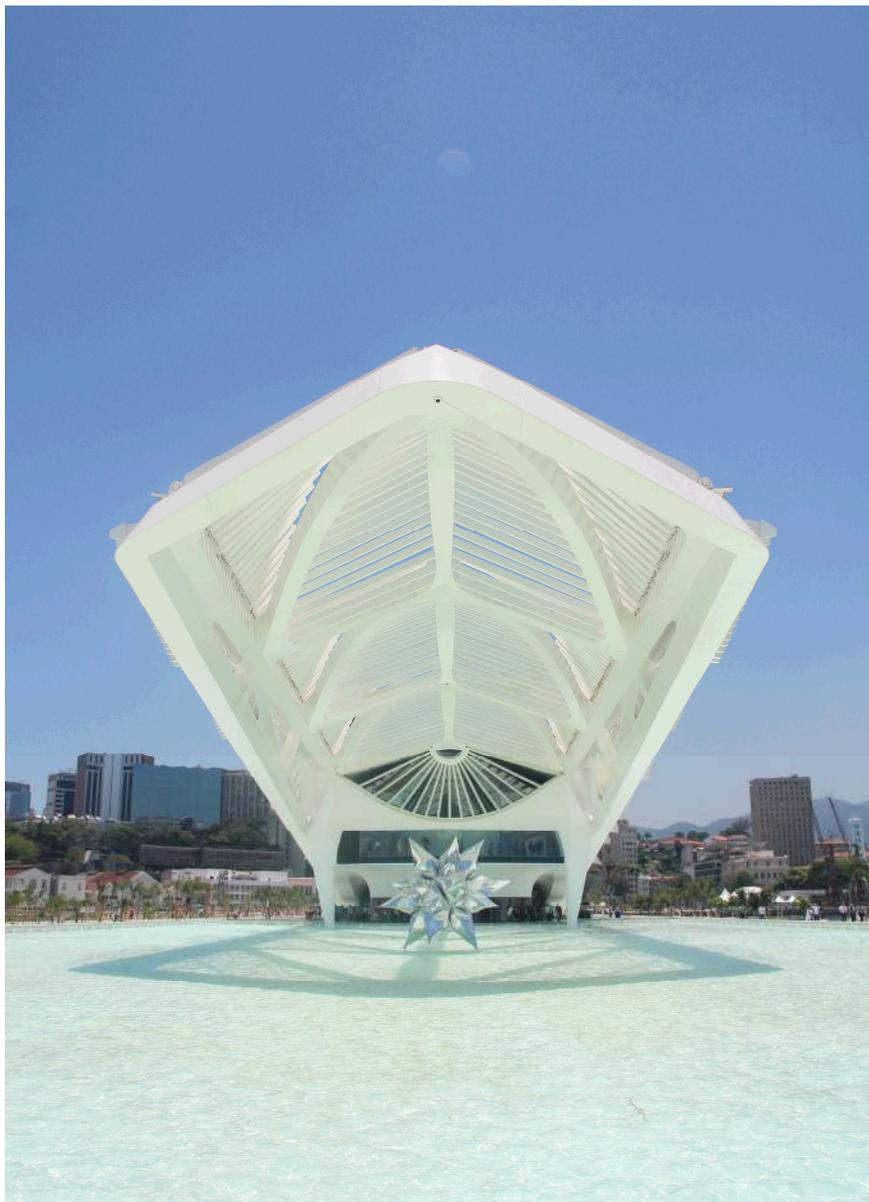


Brazil 101

The 2020 Handbook

This is the seventh edition of our Brazil country guide. This 170+ page handbook is a useful primer and reference guide for new and seasoned investors, both on the securities and real economy sides. We revisit key metrics and some of Brazil's history, processes, and institutions to provide better resources for understanding what is at stake going forward.



Latin America and Brazil Equity Strategist

Emy Shayo Cherman ^{AC}

(55-11) 4950-6684

emy.shayo@jpmorgan.com

Bloomberg JPMA SHAYO <GO>

EM, Economic and Policy Research

Cassiana Fernandez

(55-11) 4950-3369

cassiana.fernandez@jpmorgan.com

Banco J.P. Morgan S.A.

Other publications in the 101 series:

[Argentina 101](#)

[Chile 101](#)

[Mexico 101](#)

[Latam Banks 101](#)

[LatAm Food & Beverage 101](#)

[Brazil Utilities 101](#)

[Brazil Education 101](#)

[Brazil Refining 101](#)

[Brazil Real Estate 101](#)

[Brazil Retail 101](#)

[Brazil Pharma 101](#)

[Brazil Healthcare 101](#)

Cover Picture:
Museu do Amanhã, Rio de Janeiro.

Image Credit:
Andre Luiz Moreira / Shutterstock.com

See page 179 for analyst certification and important disclosures, including non-US analyst disclosures.

J.P. Morgan does and seeks to do business with companies covered in its research reports. As a result, investors should be aware that the firm may have a conflict of interest that could affect the objectivity of this report. Investors should consider this report as only a single factor in making their investment decision.

Table of Contents

Overview	4
Area.....	4
Population.....	5
Income Distribution	9
Economic Distribution of the Population	12
Happiness Level.....	12
Health.....	13
Education.....	14
Security	18
Corruption	19
Tourism	20
Environment	22
Competitiveness Indicators.....	24
Economic Activity	26
Brief Political Economy Retrospect	26
Investments.....	33
Large Investment Programs/ Privatizations	34
Industry	38
Consumption.....	40
Labor	43
Inflation	47
History.....	47
Main Inflation Indices	49
Recent Inflation Behavior.....	50
Central Bank and Monetary Policy	51
Exchange Rate Policy.....	53
External Sector	55
Exports	56
Imports	57
External Accounts.....	59
External Debt.....	61
Fiscal Policy.....	63
Spending Ceiling Law	64
Social Security Reform.....	65
Fiscal Indicators.....	67
Public Sector Debt	69
Sovereign Credit Ratings.....	70
Tax System	71
Credit	77
Credit Markets' Main Aspects.....	79
Brazilian Mortgage System	83
BNDES.....	84

Capital Markets	86
IPOs	87
B3 Equity Indexes	88
MSCI Brazil	90
Equity Market Valuation Metrics	90
Flow of Funds	92
Pension Funds	93
Mutual Funds	94
Political System	95
How a Lower House Representative Gets Elected	97
Brazil's Main Political Parties	97
Structural Reforms	102
Brazil's Presidents	104
Sectors	107
Oil, Gas & Petrochemicals	107
Metals & Mining	110
Pulp and Paper	112
Banks	114
Non-Bank Financials	119
Homebuilders	123
Malls	126
Retail	128
Healthcare	130
Education	133
Food	137
Beverages	139
Electric Utilities	140
Water & Sewage Utilities	151
Telecommunications	153
Transportation	156
Capital Goods	160

Appendices

Appendix I: Brazil Local Markets Guide (May 2018)	163
Appendix II: Historical Economic Data and Forecasts	165
Appendix III: List of Tables and Figures	168

Special thanks to **Cinthy Mizuguchi** and **Waldir Rios** for their valuable contribution to this report. This report wouldn't be possible without them. We also value and appreciate the help from **Cristiano Souza** and **Vinicius Moreira** from the Brazil Economics team.

Overview

Area

With a total area of 8.5 million square kilometers (3.4 million square miles), Brazil is the world's fifth-largest country. It is also the third-largest country in the Americas, after Canada and the US, and the largest in South America, bordering all the countries of the continent except Chile and Ecuador. Brazil occupies about 40% of South America's territory.

Table 1: Top 5 Countries in the World by Area

Country	Area in Square Kilometers
Russia	17,098,242
Canada	9,984,670
China	9,596,960
US	9,833,517
Brazil	8,510,821

Source: IBGE.

The country comprises 26 states, the Federal District and 5,570 municipalities. Brazil is divided into five main regions: North, Northeast, Midwest, Southeast and South. These administrative divisions, set by Instituto Brasileiro de Geografia e Estatística (IBGE), are composed of states with similar cultural, economic, historical and social aspects.

Figure 1: Brazilian Regions



Source: IBGE; J.P. Morgan.

Table 2: Regional Profile (2018)

North	
Area	3,869,637.9 km ² or 45.4% of total
Population	17.7 million or 8.6% of total 4.6 people/km ²
GDP	R\$337 billion or 5.4% of total US\$5,457.29 per capita
Main Activities	Extractive (22.6% of total), forestry (20.8%), agriculture (14.7%), manufacturing (4.8%)
States	Acre, Amapá, Amazonas, Pará, Rondônia, Roraima, Tocantins
Northeast	
Area	1,558,196 km ² or 18.3% of total
Population	56.8 million or 28% of total 36.5 people/km ²
GDP	R\$898.8 billion or 14.3% of total US\$4,521.88 per capita
Main Activities	Forestry (22% of Total), agriculture (18.3%), construction (18%) utilities (17.6%), commerce (15.7%), manufacturing (11.3%)
States	Alagoas, Bahia, Ceará, Maranhão, Paraíba, Pernambuco, Piauí, Rio Grande do Norte, Sergipe
Midwest	
Area	1,606,371.5 km ² or 18.9% of total
Population	15.6 million or 8% of total 9.7 people/km ²
GDP	R\$ 633 billion or 10.1% of total US\$11,580.99 per capita
Main Activities	Agriculture (21.4% of total), forestry (11.7%), finance (11.2%), utilities (11.1%), construction (9.6%), commerce (9.4%), manufacturing (6%)
States	Goiás, Mato Grosso, Mato Grosso do Sul, Distrito Federal
Southeast	
Area	924,511.3 km ² or 10.9% of total
Population	86.2 million or 42% of total 93.41 people/km ²
GDP	R\$ 3,332 billion or 53.17% of total US\$11,057.35 per capita
Main Activities	IT services (71.3% of Total), finance (68.8%), extractive (66.4%), transportation/ storage (59.6%), manufacturing (55.4%)
States	Espírito Santo, Minas Gerais, Rio de Janeiro, São Paulo
South	
Area	575,315 km ² or 6.8% of total
Population	29.4 million or 14.3% of total 51.2 people/km ²
GDP	R\$ 1,066 billion or 17.02% of total US\$10,386.13 per capita
Main Activities	Agriculture (28.8% of total), forestry (23.4%), manufacturing (22.6%), utilities (20.8%), commerce (19.3%), construction (17.1%)
States	Paraná, Rio Grande do Sul, Santa Catarina

Source: IBGE.

Population

According to the UN, the world had 7.7 billion people in mid-2019, and this was projected to reach 8.6 billion people by 2030, 9.8 billion in 2050 and 10.9 billion by 2100. In this context, Brazil was responsible for 2.7% of the world population in 2019.

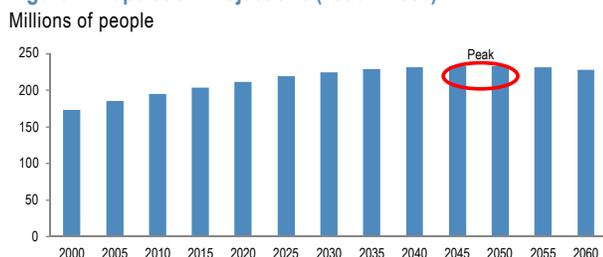
Table 3: Largest Populations in the World (Mid-2019)

	Population ('000)	% of Total
World	7,713,468	100.0%
China	1,433,784	18.6%
India	1,366,418	17.7%
U.S.	329,065	4.3%
Indonesia	270,626	3.5%
Brazil	211,050	2.7%

Source: UN Estimates

Brazil has the fifth-largest population in the world, with an estimated 211 million people as of July 2019 (IBGE). The IBGE forecast is for the population to peak in 2047 at about 233.3 million people and then start to decline, with 5 million less people than peak by 2060 (228.3 million). Within the population, 51.7% are women and 48.3% are men. Currently there are about 7 million more women than men in the country. Indeed, there are more women in every region of the country, except in the North region. Still, Rio de Janeiro is the state with the highest proportion of women relative to men.

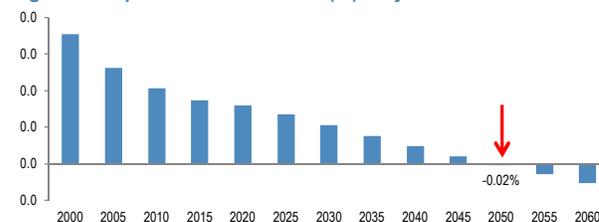
Figure 2: Population Projections (2000 – 2060)



Source: IBGE, 2018

Brazil's population is currently growing at an annual rate of 0.80%, with a declining trend. In fact, from the 1960s onwards, the growth rate of the Brazilian population started to decline, having slowed from more than 3% per year in 1950-1960. IBGE estimates that the population's growth rate is going to remain positive until 2047. After that, population growth rate is expected to turn negative.

Figure 3: Population Growth Rate (%) Projection



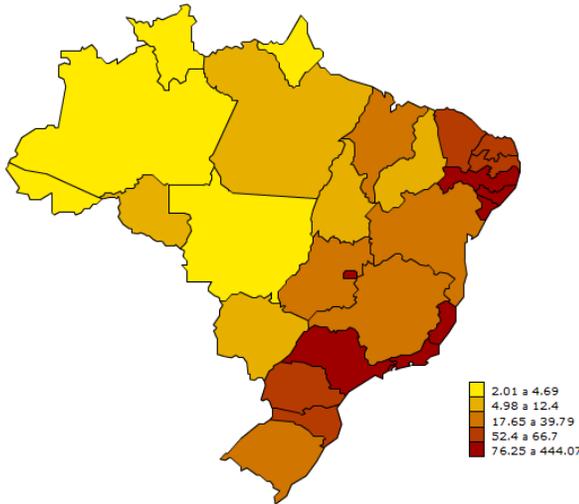
Source: IBGE, 2018

On average, the population density in Brazil is 24.8 inhabitants/ km² (2019). With this number, the country can be considered a sparsely populated one given the world average is 59.3 people/ km², according to the UN. The most populated place in the world is Monaco, with an estimated 26K people/km², followed by Macao (China) with 21.4K people/ km². The least populated are Greenland and Falkland Island (Malvinas).

The Brazilian population is concentrated on the coast, which is partly explained by the European colonization (1500s onward) that took place in those areas. The change of the federal capital to Brasilia in 1960 was responsible for the creation of the highest population density area in Brazil, with over 514.6 people/ km². This dense concentration of people extends to Goias and into Cuiaba (Mato Grosso), in part because the country's agribusiness has expanded from the South/ Southeast to the Midwest, attracting workers to a booming field. In the North region, the country still has unoccupied areas, mainly because of the Amazon forest, which is scarcely populated. Indeed, while the Amazon state occupies 22% of Brazil's total area, it has a population density of only 2.23 inhabitants/km² (IBGE). The exception is Manaus, an important urban area in the region.

Population distribution can also be understood as a reflection of economic development. São Paulo, where the population density reaches over 183.5 people/km², accounts for about one third of the country's GDP. Rio de Janeiro is the state with the second-largest population density in Brazil (392 people/ km²).

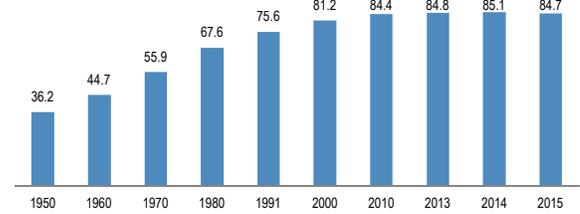
Figure 4: Population Density by State in 2010



Source: IBGE.

Urbanization: According to the UN, 55.3% of the world population lived in urban areas in 2018, and the number is expected to increase to 68.4% by 2050, with 71% of the increase concentrated in Asia and Africa. Brazil is no exception to this trend. Since 1950, the urbanization rate has been rising, and the population living in urban areas has more than doubled (IBGE). The urbanization rate intensified in the 1970s, when the so-called “economic miracle” was taking place, with large government projects in terms of infrastructure and state owned companies attracted people to urban areas. At that time, the most evident migration has been from the Northeast to the Southeast. Since 2010, about 85% of the population has been living in urban areas, and this amount has remained stable since then. The Northeast remains the least urbanized region of the country (73.7%). Maranhão is the state with the lowest urbanization rate: 59.6%. On the other extreme are the large metropolitan areas of the Southeast: Rio de Janeiro (97.4%) and Sao Paulo (96.6%). Some of the problems caused by disorganized formation of urban areas are evident: lack of satisfactory infrastructure, such as transportation, sewage, hospitals and schools. Lack of access to public services of good quality continues to be a key complaint from the population.

Figure 5: Urban Population as % of Total

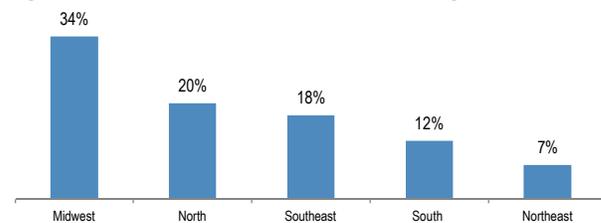


Source: IBGE.

In mid-2017, the IBGE started to discuss a new methodology to be implemented with the 2020 census to characterize the rural and urban populations. Today, urban populations are characterized by what the municipal law says is an urban area. What is outside this area is considered rural. The IBGE’s new methodology would define rural and urban areas by population density, size of the population, and distance of the area to urban centers. A preliminary study showed that if this methodology were to be introduced in the 2010 census, the urban population in Brazil would actually fall to 76% of the total, inhabiting 26% of the municipalities of the country.

Internal migration: IBGE’s data (2015) shows that people do not relocate much in Brazil. It is estimated that only about 31.4 million people (15.3% of the population) do not live in the same state where they were born. The Midwest region showed the largest percentage of inhabitants that come from a different state (34%), likely reflecting that growth in the region’s population has been fast due to agribusiness expansion. The Northeast is the region with the least amount of internal migration as a percentage of total. In absolute numbers, Sao Paulo is the state with the largest number of internal migrants (10.1 million come from another state, or ~ 23% of the state’s population), but this number has been falling in recent years.

Figure 6: Inhabitants that come from another region (% of total)

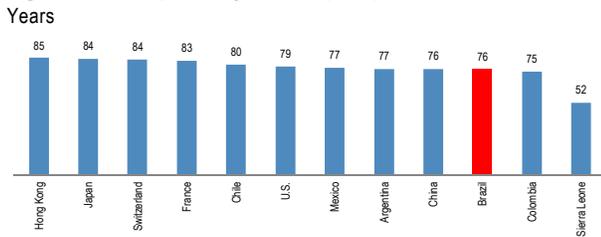


Source: IBGE, PNAD 2015

Life expectancy at birth in Brazil has risen by 30.8 years since 1940, reaching an estimated 76.3 years in 2018, or three months and four days more than in 2017.

As elsewhere, men live less than women (7.1 years less). While men born in 2017 are expected to live until 72.5 years of age, women are expected to live to 79.6. The state of Santa Catarina has the highest life expectancy at birth (79.4 years), while Maranhão has the lowest (70.9). Despite all the developments observed in this indicator, Brazil still has a low life expectancy rate compared to developed countries. Hong Kong has the highest life expectancy in the world, followed by Japan. Sierra Leone has the lowest, according to the World Bank.

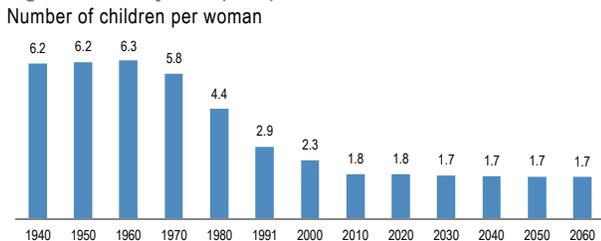
Figure 7: Life Expectancy at Birth (2018)



Source: World Bank, IBGE. Note: data as of 2018

The expected number of children born per woman in Brazil is also falling. According to IBGE, Brazil's average fertility rate was 1.77 in 2018, down from 2.39 in 2000 and over 6 in the 1940s, 1950s and 1960s.

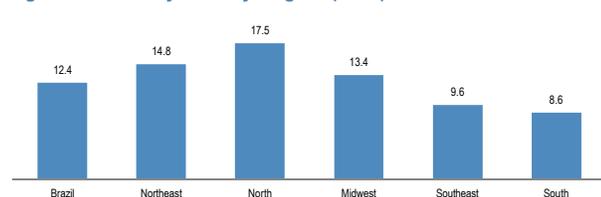
Figure 8: Fertility Rate (2018)



Source: IBGE. Note: data as of 2018

The **child mortality rate** in Brazil stood at 12.4% in 2018. The high reading is due to the North, where the mortality rate is 17.5%. In contrast, in the South region, the mortality rate is 8.6%.

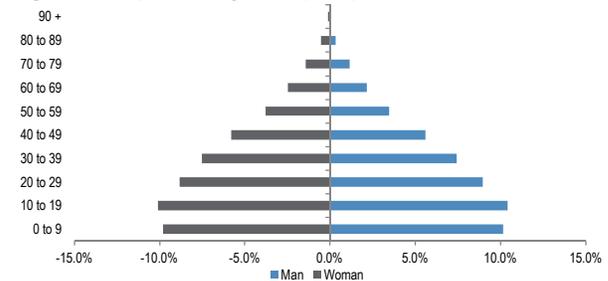
Figure 9: Mortality Rate by Region (2018)



Source: IBGE

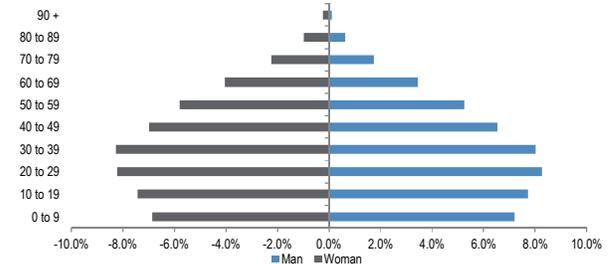
Age groups and the demographic bonus: The Brazilian age pyramid was often considered a "classic" one until the 1960s, with a large base and a narrow top. Since then, the base has been narrowing while the middle has been widening, a reflection of the population getting older. This is happening as both the mortality and the fertility rates have been decreasing. In the past few years, the change in the population pyramid has accelerated. Estimates from 2018 foresee that **13.4% of the population is 60 years old or more**, according to IBGE.

Figure 10: Population Pyramid (2000)



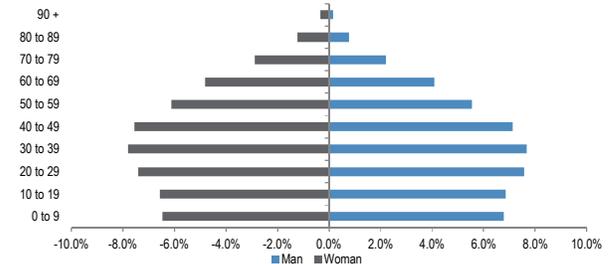
Source: IBGE

Figure 11: Population Pyramid (2018)



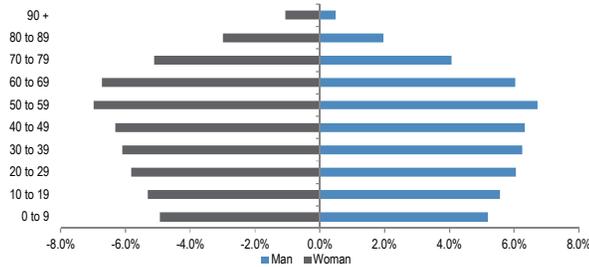
Source: IBGE

Figure 12: Population Pyramid (2025)



Source: IBGE

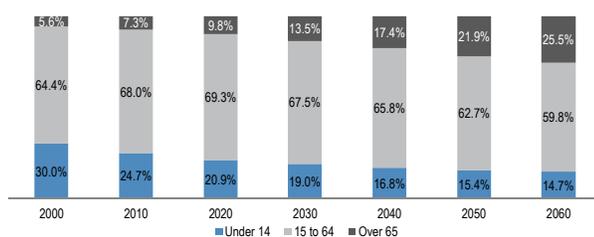
Figure 13: Population Pyramid (2050)



Source: IBGE

Brazilians getting older... In 1960, almost 43% of the population was under 14 years old, while this proportion in 2018 declined to 21.4%. Meanwhile, only 2.7% of the population was over 65 years old in 1960 and that rose to 9.2% in 2018, according to IBGE forecasts. The aging of the population has been a key aspect in the promotion of the social security reform in Brazil.

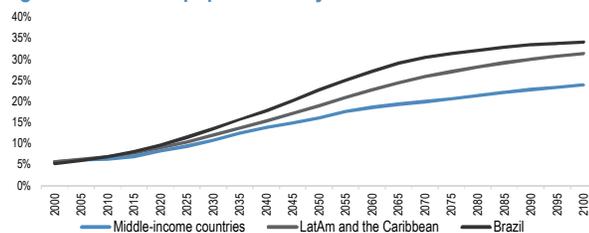
Figure 14: Age Distribution of the Population over Time (2018)



Source: IBGE

...and aging fast: Roughly speaking, over the next 15 years, the percentage of Brazilians who are 65 years old or older will rise by 74.5%. The UN estimates that in 2018, 9% of the population in Brazil was 65+ and that this is going to reach 14% by 2030. Note in the next chart that the aging of the Brazilian population is faster and more abrupt than that in LatAm & Caribbean and middle-income countries.

Figure 15: % of the population 65 years old and older over time

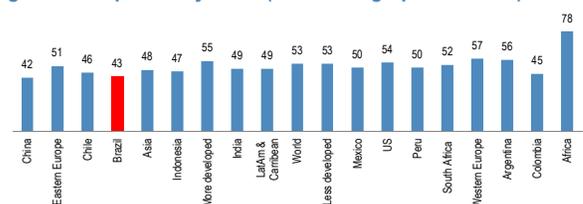


Source: UN population estimates

Dependency ratio / demographic bonus: While the population is getting older, Brazil still has a

“demographic bonus”, as the number of people who work exceeds the number of those who do not work (defined as those under 15 and those above 65). The Brazilian dependency ratio estimated for 2020 is 43, a great advantage for the country, as long as the population that is fit to work is actually working. The Brazil data compares favorably to the world and LatAm average estimates of 49 and 53, respectively (UN 2019 projections). This should provide an important stimulus to the economy, as long as those in working age have productive jobs. However, unemployment in Brazil over the past few years has been in double digits, leading to the view that **Brazil is wasting its demographic bonus.**

Figure 16: Dependency Ratio (the "Demographic Bonus") - 2019



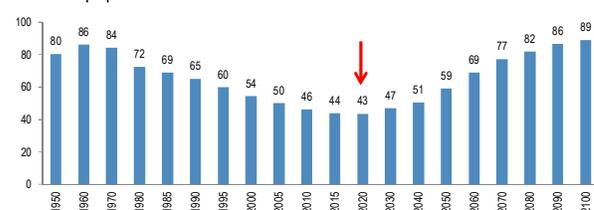
Source: UN population estimates. In Brazil, for every 100 people, 43 are dependent (Child or elderly) and 57 are working. We use the indicator that defines dependency ratio as those under 15 and those above 65 years old.

According to UN data, Brazil is in its best moment in terms of benefiting from its demographic bonus, as the dependency ratio was at 44 in 2015 and is expected to reach its lowest level (43) by 2020. This means that there are more people working than not working. The youth and elderly expected dependency ratios for 2020 are 29 and 14, respectively.

From 2040 onwards, the dependency ratio will invert: there will be more dependents relative to those who work. This is because the population is getting older, the elderly are living more, and the fertility rate is declining.

Figure 17: Brazil Dependency Ratio Estimates

% of total population



Source: UN population estimates

Race: According to the IBGE, in 2018, the population self-declared being mixed race (*pardo*) stood at 46.5% of total population. Whites accounted for 43.1%, while the black population represented 9.3%. Blacks and mixed

race were more predominant in the North (78.9%) and Northeast (74.5%). Meanwhile, people self-declared white was more predominant in the South (73.9%).

Income Distribution

Income distribution has been the center of the political and economic discussion in the past decades. Brazil ranks poorly in international comparisons as one of the countries with the highest income inequalities in the world. Indeed, Brazil has consistently been one of the worst performers in terms of the Gini coefficient, which measures income distribution in the population (zero means perfect equality and 100 perfect inequality). Taking into account existing World Bank measures, Brazil would be the 9th most unequal country in the world, the worst in LatAm.

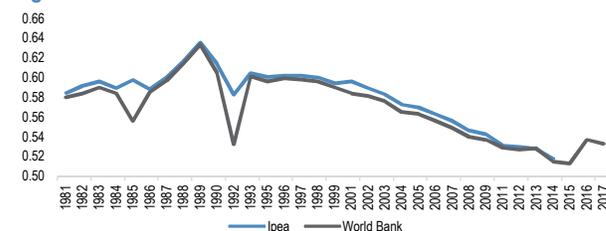
Table 4: Gini Coefficient – Selected Country Rankings: More to Less Unequal

Rank	Country	Gini	Year
1	South Africa	63.0	2014
9	Brazil	53.3	2017
16	Colombia	49.7	2017
23	Venezuela	46.9	2006
26	Chile	46.6	2017
38	Mexico	43.4	2016
39	Peru	43.3	2017
49	Turkey	41.9	2016
52	U.S.	41.5	2016
57	Argentina	40.6	2017
71	China	38.6	2015
79	Russia	37.7	2015
98	India	35.7	2011
135	Germany	31.7	2015
144	Sweden	29.2	2015
154	Norway	27.5	2015

Source: World Bank Note: Gini is multiplied by 100.

During the 20th century, Brazil showed very little evolution in terms of wealth distribution. During the hyperinflation period of the 1980s, income inequality actually increased. Albeit the 1990s was a period of institutional reform, growth was low and unemployment high, which generated little change in the income distribution data, despite the advent of the Real Plan in 1994 which put an end to hyperinflation. The first signs of improvement started around the turn of the century, when the country was able to implement a solid economic policy that balanced growth and inflation. The gini index continued to improve until 2010, but the great depression that started in 2015 caused a big dent on the indicator.

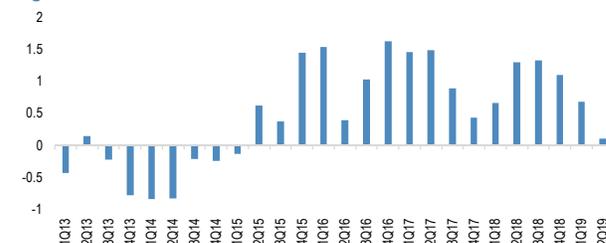
Figure 18: Historical Evolution of the Gini Coefficient



Source: IPEA and World Bank. Note: There was no data available for 1991, 1994, 2000 and 2010. From 2014 onwards, only World Bank data is available.

Despite the gains observed in the first decade of the 21st century, it is key to note that more recently, the gini index has been rising. According to CPS-FGV data, the historical low level for the gini index was 1Q2014. After that, one sees a relentless increase of inequality. Indeed, taking into account the variation of the gini index on a year on year basis, one sees a relentless increase in the income concentration, now lasting 17 consecutive quarters (4 years), which is a record for the historical series. Not even in 1989, which was the peak of income concentration, was there such a long period of year-on-year rises on the gini index.

Figure 19: Recent Evolution of the Gini Index – Slower Gains



Source: CPS-FGV

The increase in the income inequality during the recent crisis years was mostly due to a drastic reduction of per capital income of the poorest sectors of the population.

For the poorest 50% of the population, income fell by 17.01%, while for the next 40% (the middle class) the loss was of 4.16%. On the other hand, the 10% at the top of the pyramid saw income increase 2.55%.

Figure 20: Per capita wage income change by income levels during the recent crisis

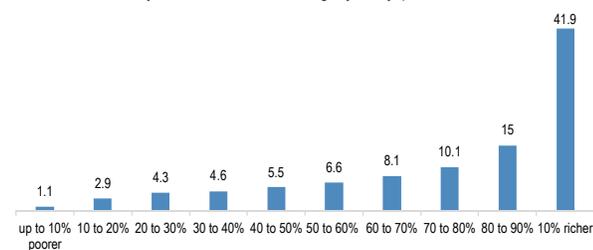


Source: CPS-FGV, Note: 4Q14 to 2Q19

All in all, it is safe to say that income concentration is high and that improvements have been very subtle for the most part of this decade. IBGE data shows that the 10% poorest of the population have only 1.1% of country's income (labor derived), while the richest 10% have 41.9%. Worst still, the richer 1% has 17.8% of the country's income. These statistics have changed very little since 2012.

Figure 21: Real average wage distribution (2018)

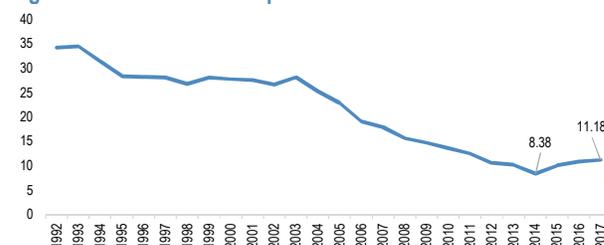
labor income, 14 years or older, average yearly prices



Source: IBGE

It is also important to note that the level of poverty of the population has increased during the crisis years. FGV-CPS estimates that from the YE2014 to YE2017, the increase in poverty in Brazil was 33%. Thus, at YE2017, the poor population (those that make less than R\$233/month) made up 11.18% of the population, up from 8.38% in 2014. This means that 6.27 million people became poor during the period. All in all, at the end of 2017 there were 23.2 million poor people in Brazil.

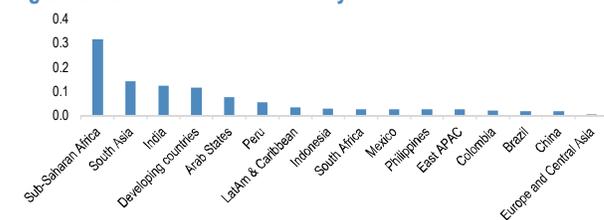
Figure 22: % of the Poor Population Relative to Total



Source: FGV-CPS; Harmonized series

Still, Brazil is not considered a poor country, but an unequal one. There are several data that shows that, including The Multidimensional Poverty Index (UN), which takes into consideration the amount of people living in poverty and the intensity of deprivation (the higher the index, the poorer it is). Brazil's index is 0.016, which is a lot better than the LatAm & Caribbean average of 0.033.

Figure 23: Multidimensional Poverty Index



Source: UNDP

Bolsa Familia - Brazil's landmark poverty reduction program: Created in 2003, Bolsa Familia is today one of the largest conditional cash transfer programs in the world, serving 13.5 million families at the end of October 2019, with a cost of about R\$30 billion per year. Families that qualify must have a monthly income per household member equal or less than R\$89. Families with children that have an income between R\$89.01 to R\$178 also qualify to the program. The amount of the benefit depends on the income, number and ages of children. The benefit varies from R\$89 to R\$390 monthly and in mid-2019, the average benefit was ~R\$190. For a person or family to receive the benefit, they must be included in their city's unique registry (*Cadastro Único*), a registrar that identifies those living below the poverty line and determines their benefits. How the program works: The basic benefit of R\$89/month is paid to all families with income of up to R\$89/month per capita, even if they have no children. These families, which are considered to be in extreme poverty, can get a variable benefit of R\$41/month for each child until 15 years for up to five children and R\$48/month for up to two children ages 16 to 17 years old. Families that have an income below R\$85/month per household member qualify for the Bolsa

Familia, but if they earn between R\$85 and R\$170/month, they do not get the basic R\$85/month benefit, only the variable benefits depending on the number and age of the children in the household. Pregnant women and those with babies of up to six months qualify for an extra benefit as well. There is an additional benefit, in which families even within the Bolsa Familia program that do not achieve an income per capita of R\$89/month get a supplement income to get to this level.

Table 5: Bolsa Familia Main Benefits

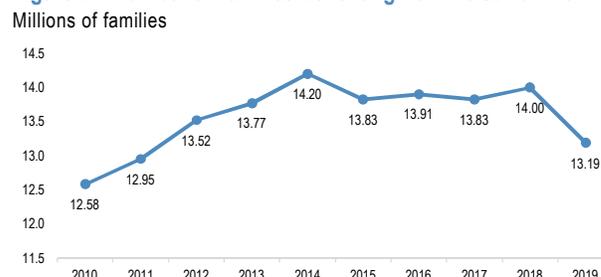
Number of Children		Monthly Benefit by Income Segment	
Until 15 years old, pregnant or nursing	From 16 to 17 years old	Up to R\$85 per capita	From R\$85 to R\$170 per capita
0	0	R\$ 89	-
1	0	R\$ 130	R\$ 41
2	0	R\$ 171	R\$ 82
3	0	R\$ 212	R\$ 123
4	0	R\$ 253	R\$ 164
5	0	R\$ 294.00	R\$ 205
0	1	R\$ 137	R\$ 48
1	1	R\$ 178	R\$ 89
2	1	R\$ 219	R\$ 130
3	1	R\$ 260	R\$ 171
4	1	R\$ 301	R\$ 212
5	1	R\$ 342	R\$ 253
0	2	R\$ 185	R\$ 96
1	2	R\$ 226	R\$ 137
2	2	R\$ 267	R\$ 178
3	2	R\$ 308	R\$ 219
4	2	R\$ 349	R\$ 260
5	2	R\$ 390	R\$ 301

Source: Ministerio da Cidadania

The Bolsa Familia Program is a conditional cash transfer program, which means that to receive the benefit the families must fulfill certain conditions imposed by the government, such as immunization monitoring and, especially, school attendance. Children between 6 and 15 years of age must be properly enrolled at school and attending at least 85% of the classes. For teenagers between 16 and 17 years old, the class frequency must be at least 75%. If the family fails to meet any condition five consecutive times, its benefit is canceled. The government reports that as of September 2019, 92.7% of the children aged 6 to 15 were meeting the schooling

requirement of the program. For those aged 16 and 17 years old, compliance was at 83.8%.

Figure 24: Number of Families Benefiting from Bolsa Familia



Source: Ministério do Desenvolvimento Social, UOL, J.P. Morgan

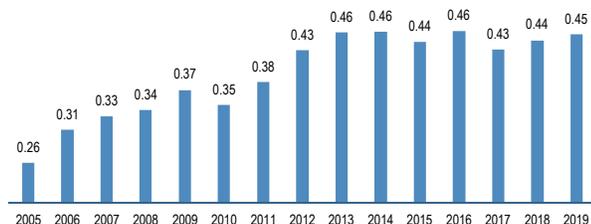
For its reach and relevance, Bolsa Familia has of course become a highly politicized issue. In every presidential race there is the talk that a particular candidate will end with the Bolsa Familia. Each president that takes over introduces changes or enhancements to the program. Following the impeachment of Dilma Rousseff, President Temer introduced a 12.5% increase in the Bolsa Familia benefits (above inflation, which was 8.8% at the time). President Bolsonaro will pay an extra monthly benefit of the Bolsa Familia in December. Congress is also considering including the Bolsa Familia program in the constitution. Bolsa Familia costs the government about 0.45% of GDP and is generally not considered an expensive program for the scope of benefit it provides. Most of the beneficiaries of the program are in the Northeast region.

Table 6: Regional and Selected States Distribution of Bolsa Familia Beneficiaries

	# of Families	% of Total
Southeast	3,343,662	25.35%
São Paulo	1,382,939	10.49%
Minas Gerais	972,739	7.38%
Rio de Janeiro	819,465	6.21%
Northeast	6,770,825	51.33%
Bahia	1,751,688	13.28%
Pernambuco	1,129,047	8.56%
Ceará	1,014,719	7.69%
Maranhão	927,773	7.03%
Paraíba	502,347	3.81%
North	1,702,233	12.91%
South	770,793	5.84%
Midwest	602,054	4.56%
Brazil	13,189,567	100.00%

Source: Ministerio da Economia. Note: # of families as of December 2019.

Figure 25: Bolsa Família Cost as a % of GDP



Source: Portal da Transparência, J.P. Morgan

Benefício de Prestação Continuada program (BPC): Together with Bolsa Família, the BPC is one of the most important programs of cash transfer in Brazil. BPC is responsible for assuring one monthly minimum wage to the elderly and disabled who belong to families with a per capita income under one quarter of the minimum wage per month. Since its implementation in 1996, the program has increased the number of recipients, reaching 4.7 million people in June 2019, with an estimated cost of R\$55.3 billion in 2019. The social security reform that was approved in 2019 aimed to change the BPC benefit, but at the end of the day, it was maintained unaltered.

Economic Distribution of the Population

In Brazil, it is very common to use a letter to classify a particular economic segment for the population. Class A refers to the richest sectors, while class E refers to the poorest. A household is classified in one or another economic “class” depending mostly on its total income, the presence of some comfort items in the house (such as number of bathrooms, TVs, refrigerators, etc.), and the education level of the head of the household.

Table 7: Economic Classes: Household Earnings per Month (BRL)

Class	Average Household Income
A	25,554
B1	11,279
B2	5,641
C1	3,085
C2	1,748
D/E	719

Source: ABEP – 2019 criteria.

In the 1980s and 1990s, it was common to say that Brazil was a country of extremes, that people were either rich or poor as the middle class lacked critical mass. Since then, however, the middle class (commonly referred as Class C and B2) has been growing and today constitutes the majority of the Brazilian population (64.1%). The large

exception is the North and Northeast, where Classes D and E surpass Class C.

Table 8: Population Distribution per Economic Class (% of Total)

Class	Brazil	Southeast	South	Northeast	Midwest	North
A	2.5	3.1	3.0	1.3	4.0	1.3
B1	4.4	5.6	5.3	2.3	5.3	2.8
B2	16.5	20.5	21.3	9.1	18.8	8.6
C1	21.5	25.1	26.6	14.8	22.4	13.8
C2	28.3	19.4	15.7	26.4	28	26.7
D/E	28.3	19.4	15.7	46.1	21.5	46.8

Source: ABEP - 2019

Middle class measurements change massively depending on the income level that each entity adopts. However, the data trend is clear in the sense that there has been a great increase in the middle class between 2004 and 2013. The government calculated that between 2003 and 2013 44.7 million people entered the middle class (C) and an additional 12.5 million entered classes A and B. Unfortunately, there is no comparable data series to be able to access what happened to the middle class during the years of crisis. On Table 9 we combine two data sets to have a historical perspective only.

Table 9: Distribution of Economic Classes

% of total population

	2001	2005	2010	2013	2016	2018
Class AB	8.3%	8.3%	12.0%	13.1%	12.2%	11.5%
Class C	38.1%	41.8%	53.6%	56.0%	54.4%	53.5%
Class DE	53.6%	49.9%	34.4%	30.9%	33.4%	35.0%

Source: CPS – FGV, SAE, ABEP. Note: 2018 data includes new methodology: B2 class is distributed into C and AB and C2 into C and DE.

Class C currently represents more than 110 million people. If this economic class happened to be a country, its population would be the 12th largest in the world.

Happiness Level

The 2019 World Happiness Report shows that the North European countries took the first few positions in the happiness ranking, while the poorest African countries and conflict zones fared the worst. Brazil was ranked 32 out of 156 countries, with Mexico (23) and Chile (26) ahead of it in Latin America. The Happiness Report is not a survey, but it consolidates a series of quantitative and semi-quantitative measures to come out with a score. Still, is important to flag that Brazil posted a decrease and now is 15 positions below the 2017 survey.

Table 10: Happiness Ranking

Country	Rank	Country	Rank
Finland	1	Mexico	23
Denmark	2	Chile	26
Norway	3	Brazil	32
Iceland	4	Argentina	47
Netherlands	5	Japan	58
Switzerland	6	Portugal	66
Sweden	7	Russia	68
Australia	11	China	93
Israel	13	Venezuela	108
U.K.	15	Syria	149
United States	19	South Sudan	156

Source: World Happiness Report 2019

However, taking a deeper look at the data, one notes that over time, **Brazilians are becoming somewhat less happy**, maybe due to the sharp recession of 2015- 2016. CPS-FGV using data from Gallup World Poll shows that Brazil was the 17th happiest country in the world in 2013/14 and fell to the 37th position in 2017/2018, one of the largest declines in the entire ranking. Indeed, Brazil ties with Yemen in terms of % decline of happiness during the period and is only ahead of Malawi and Zimbabwe. Thus, even though Brazilians are considered happy, they are less happy than before. Indeed, their level of happiness fell the most during the period mentioned, as compared to Latin American peers.

Figure 26: Happiness Ranking (Gallup)

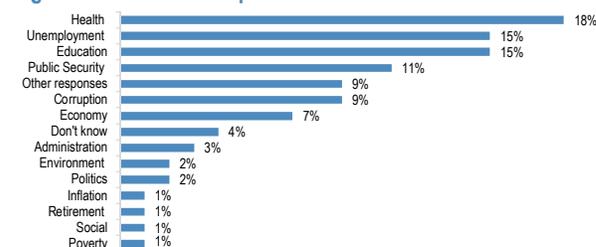
Geography	Average of Happiness			Ranking		
	2017/18	2013/14	Δ	2017/18	2013/14	Δ
Total	5.49	5.44	0.06	-	-	-
Finland	7.85	7.4	0.45	1	5	34
Norway	7.6	7.4	0.2	2	5	53
Denmark	7.6	7.55	0.05	2	1	68
Chile	6.35	6.75	-0.4	29	24	115
Uruguay	6.3	6.5	-0.2	33	31	101
Brazil	6.25	7.05	-0.8	37	17	132
Colombia	6.1	6.5	-0.4	46	31	115
Argentina	5.9	6.65	-0.75	56	26	131
Bolivia	5.7	5.85	-0.15	62	55	93
Peru	5.7	5.85	-0.15	62	55	93
Tanzania	3.35	3.7	-0.35	140	137	114
Yemen	3.3	4.1	-0.8	142	126	132
Afghanistan	2.7	3.35	-0.65	143	143	127

Source: FGV Social/CPS with microdata from Gallup World Poll

Health

Polls consistently show that health is considered the greatest problem in Brazil. The diagnosis is easy, but the causes are more difficult to detect. Accessibility is certainly a problem as there are fewer beds per person than in the majority of comparable countries. Also, the population as a whole needs to wait for a long time to have access to a doctor, exams, and surgeries.

Figure 27: Brazil's main problems



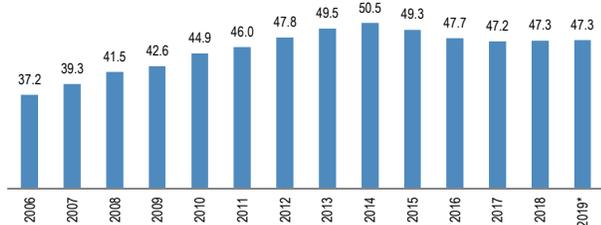
Source: Datafolha. September 2019.

The Brazilian health system is divided in two: public and private. The public system is known as SUS (Sistema Único de Saude), a universal health system. The idea that the government must provide free health care for all Brazilian citizens was an important item of the 1988 Constitution, which considered health a citizen's right. The SUS is decentralized, with most municipalities running the system with state and federal resources. The private system complements the public one and can provide services for the SUS through specialized clinics, diagnostic labs, private practices, etc. The private system is mostly available for those who pay for it and/or have access to health insurance.

The SUS, in theory, reaches 100% of the population. It is estimated that more than 47 million people or 22% of the population are covered by private health insurance, but they are also entitled access to the SUS's health services. Each time someone with private health insurance uses the SUS, the plan is required to reimburse the government 1.5x the cost of the procedure/consultation.

During the recession (2015-2016), the number of citizens covered by private health insurance fell. The highest level was reached in 2014 with more than 50mn people been assisted and the number declined up to end of 2017. The beneficiaries of private health insurance up to June 2019 stood at 47.3mn and slightly improved from 2018 readings (47.2mn), but is still below the highest level registered in 2014.

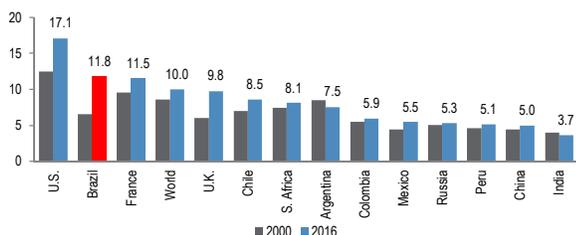
Figure 28: Number of Beneficiaries of Private Health Insurance
 Millions of people



Source: ANS. Data as of June 2019.

In Brazil, total expenses associated with healthcare amounted to 11.8% of GDP in 2016, up from 6.6% in 2000 and 10.8 in 2014. This is above the global average (10%), the highest among Latin American countries and among the BRICS. Still, this allocation is lower than the expenditure on healthcare of high-income countries (12.6%) but somewhat in line with those that offer universal health care. Health represents 9.4% of total government expenditures (2018), according to the Comptroller General of the Union. Per capita expenditures on health in Brazil amounted to US\$1016 in current USD terms in 2016, which is more than four times the level from 2000, according to World Bank data.

Figure 29: Total Expenditure on Health as % of GDP (2016)



Source: The World Bank, most recent year.

Brazil's relatively high expenditure on health is only made possible by the private sector. Public sector expenditures on health amounted to 33% of the total health expenditures in 2016, while the private sector (both insurance and out of pocket) amounted to 67%, which is high relative to the global average (26%) and also high relative to upper middle income countries (45%). However, public sector disbursement to health is low for a country that wishes to offer universal health coverage. In the cases of Spain, U.K., and Norway, 71-85% of total health expenditures come from the public sector in 2016. Global average stands at 74% of total health expenditure, according to the World Bank.

Government expenditure on health is highly regulated. Constitutional Amendment 86, which was approved in 2015, establishes that the budget needs to allocate a fixed

amount of net revenues to health, starting with 13.2% in 2016 and rising to 15% by 2020. This excludes the mandatory allocation of 25% of oil revenues to health (the remainder goes to education). In addition, the bill mandates that 1.2% of revenues need to be allocated to congressional initiatives, 50% of which must be allocated to health. Constitutional Amendment 95 (*PEC do teto*), which was approved in 2016, creates a ceiling of spending for the federal government, in which total expenditures are frozen in real terms for the next 20 years. Still, health and education sectors had privileged treatment and started to operate under the ceiling rule only from 2018 onwards. At the state level, 12% of net revenues must be allocated to health, and this rises to 15% at the municipal level. Rules for local governments were established by Constitutional Amendment 29.

Brazilians are getting fatter: According to the Ministry of Health, 55.7% of the populations was overweight in 2018, up from 53.8% in 2016. This is up 11.6 percentage points in 10 years. The obese population soared in ten years to 19.8% in 2018 from 13.1 in 2008. From 2015-2017, the obesity rate was stable at 18.9, but grew again in 2018, when 19.8% Brazilians were considered obese. The most recent data from 2018 shows that 38.1% of the population exercises more than 150 minutes per week, up from 37% in 2017 and 33% five years ago. On the other hand, the share of the population that doesn't do any physical activity stood at 13.7%, with this percentage being higher among women (14.2%) compared to men (13%).

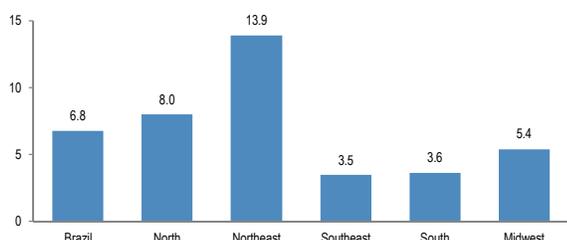
Education

The Brazilian education system is divided into basic (early infancy, primary and secondary) and superior education (college, master, doctorate). Beyond school, the education system also incorporates professional and technical education. Theoretically, basic education is mandatory for children between 4 and 17 years old and free for everybody (including adults). Primary education takes nine years to be completed. Secondary education lasts three years and is also free. Higher education, which includes university study, is free only at public universities.

Education is recognized as one of Brazil's main structural problems. Not only do children not stay at school much, but the quality of education is also very poor, thus continuing to perpetuate a system of workers with very low skills and, consequently, productivity. Indeed, the poor education of the country is seen as a major obstacle to growth going forward.

The illiteracy rate in Brazil in 2018 was 6.8% (11.3 million people) for those over 15 years old. The illiteracy rate reflects the regional inequalities within the country: the highest illiteracy level is observed in the Northeast (13.87%) and the lowest in the South of the country (3.63%). Illiteracy in Brazil is closely linked to age, as more than half of those illiterate are over 60 years old. It is also important to note that as of 2018, 3.9% of those illiterate were white, while the rate tripled among the black or mixed race to 9.1%.

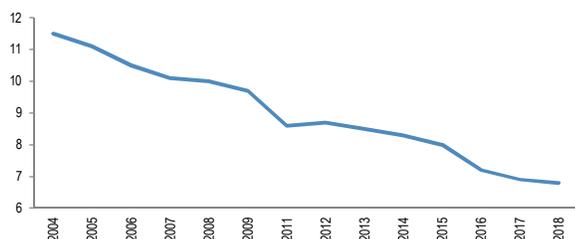
Figure 30: Illiteracy Rate of People 15 Years or Older by Region
 % of the population



Source: IBGE. 2018

The illiteracy rate has been consistently declining. In order to set goals and guidelines for Brazilian education and promote educational improvement, the government implemented the National Education Plan, where it aimed for the eradication of illiteracy by 2024, when the Plan expires.

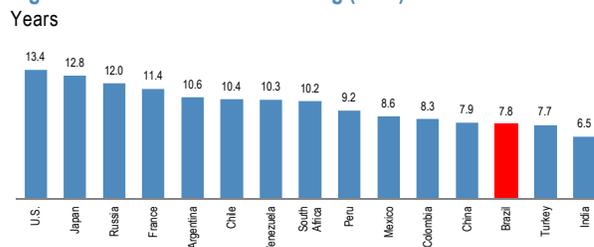
Figure 31: Illiteracy Rate for People 15 Years or Older (%) (2018)



Source: IBGE. PNAD Continua.

On average, a Brazilian student spends 7.8 years at school, which is not even enough to complete primary education and, within Latin America, Brazil lags all the other countries. In the region overall, mean years of schooling is 8.5 years, while for high human development countries (which Brazil is part of), the mean is 8.2 years.

Figure 32: Mean Years of Schooling (2018)

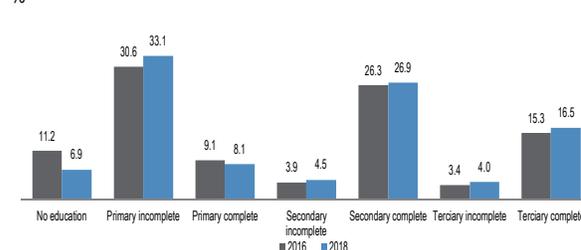


Source: HDR – UNDP

The problem is not in terms of enrollment, as in Brazil there is pretty much universal enrollment in primary schools. The challenges appear in the transition between primary and secondary school (elementary to high school), when there is a very high level of school evasion.

Still, the data have been on an improving trend. In 2007, over 52.4% of the population had no instruction or didn't finish primary education, 38.5% had primary education, and college graduates were 9.1% of the population, among the worst ratios in the world. In 2018, 40% of the population had no instruction or didn't finish primary education, 60% had primary education, and 16.5% were college graduates. Still, the number of students enrolled in high school is below OECD average. Only 86% of the 15 year old population is registered in a high school, while the OECD average stands at 97%.

Figure 33: Education Level of People Aged of 25 Years or More
 %



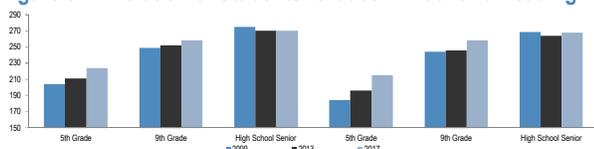
Source: PNAD 2018 – IBGE

Spending on education: The OECD's Education at Glance 2019 study shows that in 2016 the Brazilian government spent 4.2% of GDP on primary, secondary, post-secondary and non-tertiary education, above the OECD average (3.2%). Education accounted for 10.5% of total government expenditure in 2016, again above the OECD average of 7.9%. Nevertheless, given the country's relatively low GDP per capita and the below-average share of total government expenditure to GDP, the absolute amount spent per student at these levels is less than half the OECD average. In 2016, the

government spent about US\$3,800 per primary student (OECD average: US\$8,600), US\$3,700 per lower secondary student (OECD average: US\$10,200) and US\$4,100 per upper secondary and post-secondary/ non-tertiary student (OECD average: US\$10,000).

The SAEB (Basic education assessment system) is a Math and Portuguese language test that is applied in all public schools to students at the 5th year and 9th year and also high school seniors. The latest result (2017) indicates that for children there were some improvements, but for teenagers the learning quality remains precarious. For 5th grade students the result has been improving over the years: from 2009 to 2017 these students improved 10% in math and 17% in reading. The 9th grade students saw a slower rate of improvement as their grades went up by a modest 4% in math and 6% in reading in the same period. The recent improvement is no reason for celebration as the absolute grades are extremely low. Indeed, the average grades are below those registered 20 years ago. The worst result comes from high school seniors, which have not improved in eight years. In fact, they worsened in the math exam and haven't improved in reading.

Figure 34: Evolution of Students' Grades in Math and Reading



Source: MEC, INEP - SAEB 2017.

Since 2007 the government has used the IDEB (Development Index of Basic Education) to measure the quality of education and to establish targets for improvement. The IDEB consists of the results of the student's performance in the INEP test, measure by SAEB - for states and the country - and Prova Brasil - for municipalities. Still, the index also includes statistics on whether students pass from one grade to the next, measured by Censo Escolar.

Table 11: IDEB Results

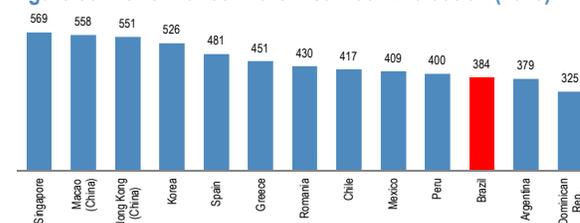
School Level		2009	2011	2013	2015	2017
Beginning years of Basic Education	Result	4.6	5.0	5.2	5.5	5.8
	Target	4.2	4.6	4.9	5.2	5.5
Final years of Basic Education	Result	4.0	4.1	4.2	4.5	4.7
	Target	3.7	3.9	4.4	4.7	5.0
High School	Result	3.6	3.7	3.7	3.7	3.8
	Target	3.5	3.7	3.9	4.3	4.7

Source: MEC, J.P. Morgan. Highlighted cells mean that target results were achieved.

The PISA (International Student Assessment) is an international study conducted by the OECD with the aim of evaluating the proficiency of 15 year olds worldwide

in key subjects (reading, math, and science). Brazil has been well below average in all topics. The country was not able to register significant improvements in the 2018 assessment relative to 2015 in all fronts: science (404 vs. 401), math (384 vs. 377), and reading (413 vs. 407). However, the country falters in all three categories and Brazilian students are among the ten worst performers in math, for example, in the 2018 assessment. In the last PISA exam (2018), the average performance of students in Brazil was significantly below the OECD average in science (404 vs. 489), reading (413 vs. 487), and mathematics (384 vs. 489 points). According to the 2018 OECD PISA report, in Brazil 95% of the 15 year olds are enrolled in school, in grade 7 or above, a remarkable improvement the previous PISA in 2015, when it stood at 84%. Still, education in the country is poor. In the 2018 exam, Brazil ranked 70 in Math, 66 in Science, and 57 in Reading out of 78 countries.

Figure 35: Performance in the PISA Math Evaluation (2018)



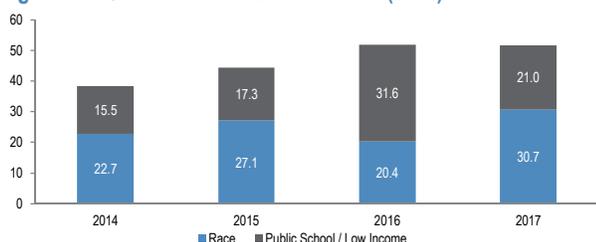
Source: OECD.

College admission paradox: Contrary to public schools, public universities are considered centers of excellence in Brazil. And they are free: once admitted in one of these top universities, the student doesn't pay ANY tuition; there is zero disbursement in terms of tuition or material during the entire time that the student takes to graduate from a public university. However, the exam to enter public universities is particularly difficult and it takes an excellent (private) high school education to prepare the student for it, something that the public schools don't offer. Thus, the poorer students, who cannot afford a private high school education, end up in less good colleges that have tuitions that vary from moderate to expensive.

Affirmative action in higher education: A law approved in 2012 instituted affirmative action in access to Brazilian higher education, mandating that by 2016 federal universities will need to offer 50% of seats to students from public schools, setting aside a specific number of seats to blacks, browns, and the indigenous population. This amount must be proportional to the percentage of minorities within the total population where the campus is located. Brazil uses the process of

auto-declaration for students to qualify for the seats reserved for minorities. In 2017, 52.4% of federal public university seats were reserved or 131,753 seats. In 2017 the University of São Paulo, considered the best university in Brazil and under state control, also implemented race-based quotas and quotas for public school students. It was mandated that by 2021, 50% of the seats will be reserved for public school students, of which 37% must be black, mixed race, or native Brazilian. At the end of 2018, 50.3% of students in public universities were black or mixed race. On private sector universities, the ratio falls to 46.6% of total students.

Figure 36: Quotas in Federal Universities (2017)



Source: G1 with GEMAA data.

FIES—Student Financing Loan: FIES (Student Financing Fund) is a college loan program that became fully operational in 2010. Students that wish to qualify for the loan need to have completed the ENEM (a secondary education completion test) and enroll in an on-campus course at a private sector university that has a good national qualification. In its essence, FIES seeks to give access to college education to students who wouldn't otherwise have the opportunity to attend an undergraduate course.

Starting in 2015 the government imposed limits on FIES as it started to weigh on the budget/fiscal accounts. At its peak in 2014, about 730K students were being admitted on the FIES program. By mid-2017 the government sent a bill to Congress to reformulate the FIES program. The most important change was that companies will bear most of the brunt related to delinquencies. Until then the government was responsible for 85% of NPLs. Now, it will make a one-time contribution of R\$2 billion to the guarantor fund, and the remainder will be borne by companies and banks. The vision here is that the government wants to subsidize only the tuition itself and not the student who fails to comply with his/her obligations. Moreover, there will be a limit of 310K slots a year for FIES, distributed in three categories that range from 0% interest to rates that are negotiated in the market.

In 2019, the government stated some changes regarding the FIES program. The first most notable change is related to financing structure. The new FIES will be divided in two categories. In the first one, the government will offer a zero interest loan for students that have a household gross income up to 3 minimum wages per capita. Still, the student will start to pay down its debt based on its income. The second category, named P-FIES, is a loan offered by financial institutions using public resources for students that have a household gross income of no more than 5 minimum wages per capita. In addition, to qualify for both categories students must have done at least one ENEM exam in the last 10 years and a minimum score of 450 (maximum 1000). The second change regards the deadline to start to pay down the debt. Previously, the student had 1.5 year after the graduation to start the payment. In the 2019 edition, the student will have to deduct a portion right after it concludes the course.

It is estimated that in 2018 the government spent R\$2.8 billion on the FIES program, or around 7.1% of the total federal government expenditure on education.

Table 12: FIES as a % of GDP and Total Expenditures

Year	% GDP	% Net Revenue
2013	0.09	0.48
2014	0.11	0.61
2015	0.10	0.55
2016	0.11	0.65
2017	0.09	0.54
2018	0.04	0.23

Source: National Treasury, Finance Ministry, J.P. Morgan.

PROUNI: The program was created in 2005 and gives total or partial (50%) scholarships for students entering private universities. To qualify, students must have a minimum score of 450 on the last ENEM exam (maximum is 1000) and have household gross income of no more than 1.5 minimum wages per capita for total scholarship and 3 minimum wages for partial scholarship. Also, students must graduate from public schools or from a private one with scholarship.

PRONATEC: The National Program for Access to Technical Education and Job Training was created in 2011 to increase access to technical/professional courses for students in secondary education. The government provides scholarships for students to attend these courses. In 2018, the government spent R\$141.5 million in the program and has been declining since 2014, when it registered R\$3.78 billion.

Security

As in the rest of Latin America, security is a major issue that permeates Brazil's society and fundamentals. The issue has gained enormous public visibility in recent years and has never, in Brazil's recent history, been so pressing. Problems related to crime, degradation of public spaces, overcrowding in prisons, and an increasing sense of impunity, especially in large urban centers, represent a tough barrier to the country's development.

According to the World Economic Forum (2018), Brazil is poorly ranked and below the world average in all indicators associated with crime. Among 140 countries, Brazil was ranked 111st in reliability of police services, 124th in organized crime, and 133rd in homicide rate per 100,000 inhabitants. Still, Brazil is better than its Latin peer Mexico in all aspects except for the homicide rate and is worse than Russia in all items.

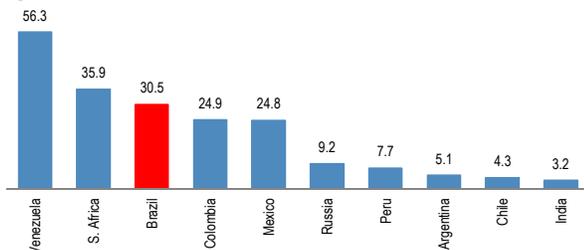
Table 13: Brazil and Peer Countries' Ranks on Crime/ Violence

Rank of 140 countries	Homicide Rate	Organized crime	Police reliability
China	15	80	63
Russia	117	78	88
Colombia	131	135	114
Brazil	133	124	111
Mexico	130	139	138
South Africa	135	125	119

Source: World Competitiveness Report 2018

The figure below shows the number of homicides per 100,000 inhabitants. As of 2017, Brazil had 30.5 intentional homicides per 100,000 people, which is the 7th highest reading in a list of more than 180 countries. The data for Brazil has been gathered since 2010, and it has been worsening continuously since then, when the reading was 21.9 murders per 100,000 people.

Figure 37: Intentional Homicide Rate per 100,000 People (2017)

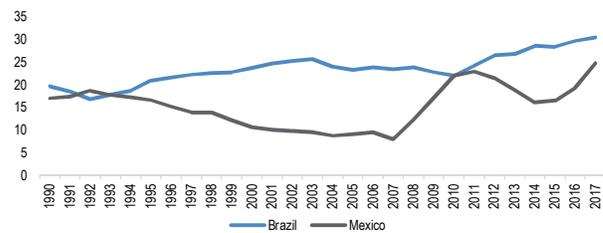


Source: World Bank

Brazil vs. Mexico: Although one hears a lot about violence in Mexico, official data shows that Brazil is

worse, at least in terms of murders. The data below tells a tale of two countries: Brazil's violence being highly driven by economic cycles, with the commodity boom driving the murder rate lower. On the other hand, the murder rate in Mexico jumps in 2006 following the advent of Felipe Calderon at the Presidency and the beginning of an active engagement "war" against organized crime. As policies changed over time, so did the (recorded) murder rate, which is also impacted by economic cycles. Still, while's Brazil murder rate, which stood at 20.5 per 100,000 inhabitants increased by 30.3 between 2007 and 2017, Mexico's increased by 214%, but still stands lower, at 24.8 per 100,000 inhabitants. Brazil is the most violent among the large Latin American countries, coming second only to Venezuela.

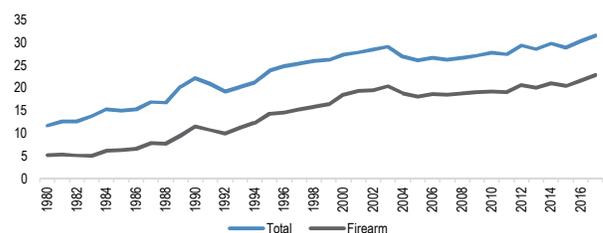
Figure 38: Murder Rate per 100,000 Inhabitants: Mexico vs. Brazil



Source: World Bank

No pretty comparison: Between 1980 and 2017, close to 1 million people were killed by firearms in Brazil. Data from Atlas da Violencia 2019 show there were more than 65K murders in the country in 2017, 47.5K of which involved firearms. Most of those occurred in the Northeast (46%), which is the country's poorer region. In 2007, Rio was top on the list, but it fell to 4th position (among 27 states) in 2017. Still, it would be interesting to find out in the future where Rio is in the current rank, considering the deterioration of the state finances. Also interesting is that the number of murders in the capitals is falling, while murders are rising in other towns. Other than murder, robbery with a firearm is a huge problem in Brazil, and is most frequent in large cities.

Figure 39: Historical Murder Rate by Firearm and Total Murders per 100,000 inhabitants



Source: Atlas da Violencia 2019.

Firearms in Brazil: While there is no official study on data regarding the number of firearms in Brazil, a study made by Aaron Karp (Estimating Global Civilian-held firearms numbers) from Small Arms Survey, states that Brazil is among the 25 top ranked countries, ranked in the 6th position in the World and the 1st in Latin America. Still, he estimates an amount of 17.5 million legal and illicit firearms in Brazil. The United States is the leader of the rank (393.3 billion).

As of June 2019, there were 773,151 people in Brazilian prisons, according to the Justice Ministry, an increase of 3.89% relative to December 2018. Of those 33% have not have a final guilty verdict. This is the third largest prison population in the world, behind the U.S. and China. Almost 30% of these are in jail for drug trafficking. There is a huge problem of overcrowding in jails (165% occupation rate according to CNMP), which often generates violence and inhumane conditions in the Brazilian prison system. It is estimated that Brazil needs an additional 320K places in prisons to safely accommodate those who are already incarcerated.

Recent developments – a decline in crime rates: President Bolsonaro was elected on a platform that included a reduction in crime and more access to firearms. According to the Brazilian Forum of Public Security, there was a reduction of 19% in violent crime in Brazil during 2019, the largest decline since the series started in 2007. There were 4,635 murders in 2019, compared to 51,558 in 2018. Data from the Justice Ministry shows a reduction of 22% in the homicide rate in Brazil in the first eight months of the year, with an additional decline in nine other crimes including rape (-10.5%), car theft (-11.1%), cargo theft (-22.9%), robbery followed by murder (-21.7%), among others. Beyond that, Bolsonaro is also trying hard to make good on his campaign promise to allow for more flexible rules in terms of owning and carrying of firearms. Since the start of his term, he has issued eight decrees on that front, some of which were changed and others revoked, but the trend is one of greater liberalization on that topic.

Corruption

Corruption represents a severe constraint to Brazil. According to Transparency International’s 2019 ranking, Brazil ranks 105 out of 180 countries, with a score of 35, with 0 the corrupt and 100 the least. The country lost 9 positions considering the data from 2017, when it was ranked 96 among 180 countries. Within the most important LATAM countries, Chile, Argentina and Colombia are ahead of Brazil. Peru (105) and Mexico (138) are worse than Brazil.

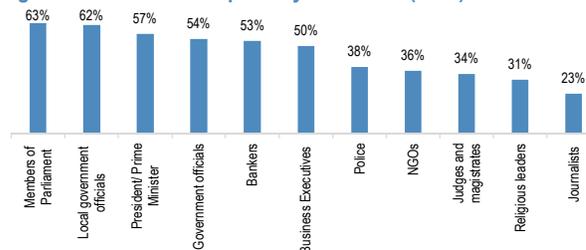
Table 14: Global Corruption Perception Index 2018

Rank	Country	Rank	Country
1	Denmark	78	India
2	New Zealand	78	Turkey
3	Finland	85	Argentina
11	Germany	87	China
22	United States	89	Indonesia
23	Uruguay	99	Colombia
27	Chile	105	Brazil
41	Spain	138	Mexico
45	Korea, South	138	Russia
58	Saudi Arabia	168	Venezuela
61	Cuba	176	Korea, North
73	South Africa	180	Somalia

Source: Transparency International

Because the public sector in Brazil is so large, corruption is mostly concentrated in that area. A survey conducted by Transparency International in Latin America shows that, for citizens, the most corrupted institutions in Brazil are those related to the government. Nonetheless, the same study revealed that only 13% of interviewers paid bribe for public services in the LTM, the lowest value among the main countries in the region.

Figure 40: Brazil's Corruption by institution (2019)



Source: Global Corruption Barometer Latin America & the Caribbean.

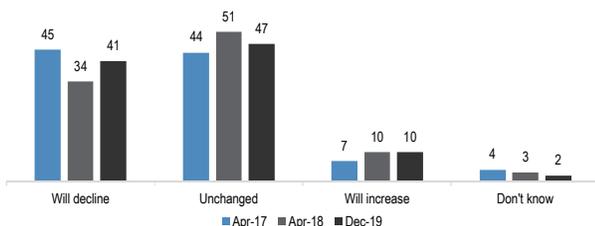
Car Wash Operation: At this stage, one cannot write about corruption in Brazil without mentioning the Car Wash operation (Lava Jato). Car Wash started in March 2014 by a group of prosecutors in the state of Paraná who were investigating money laundering. The investigation ended up unveiling a large criminal ring inside Petrobras that involved many of its then current and former directors as well as politicians from all government spheres and most political parties. The scheme, in a nutshell, was that large construction companies won contracts with Petrobras in exchange for payments to Petrobras directors, who then passed on part of the resources to politicians they represented. These funds were used for personal enrichment and also to fund costly political campaigns. Lava Jato is already in its 66th phase, and this number is likely to be obsolete at the

time of publication of this report. The operation has so far resulted in 2,476 indictments, 155 temporary prison sentences, 548 international cooperation requests, 12 leniency agreements with companies involved, 91 criminal accusations against 426 people, which have already resulted in 50 guilty verdicts. Importantly, Lava Jato has unleashed 183 plea bargain agreements. These plea bargains have been a constant source of new phases for Lava Jato, as those who are “taken” by the operation have to tell about those who are not yet included, so they can have a reduced sentence. Dozens of politicians and business people in Brazil have been mentioned in Lava Jato plea bargains and have ended up in jail. Former Judge Sergio Moro, currently the Minister of Justice, was responsible for the Lava Jato sentences in the Lower Court and became a symbol of anti-corruption in Brazil, together with the prosecution team behind the operation, among them Deltan Dalagnol, who replaced Sergio Moro.

Over the past few several months, the Lava Jato investigation suffered some setbacks. First, the Supreme Court ruled that a suspect needs to exhaust his appeals before going to jail. This reversed the previous understanding which ruled that after the appeal court (second judgement), one could go to jail. This was the decision that allowed former President Lula to be released from jail in November. The Supreme Court is still going to decide on whether Judge Moro ruling against President Lula was unbiased, something that was highly contested following the release of WhatsApp messages between Judge Moro and prosecutors on the case. On the legislative front, issues that are seen as Lava Jato supportive lost track such as the approval to move the entity that stores financial information (COAF) from the Justice Minister to the Central Bank.

Despite the recent setbacks, Lava Jato is still widely supported by the population. A December 2019 poll from Datafolha showed that 81% of the population think that Lava Jato must continue. Still, for 47% of those polled, corruption will not decrease

Figure 41: Poll: What will happen to corruption post Lava Jato?



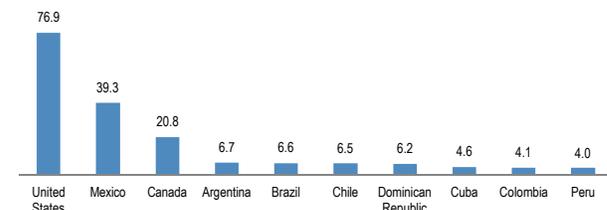
Source: Datafolha

An important advancement of the past few years has been the *Ficha Limpa* law. The measure was brought to Congress via popular request, and approved in 2010. It stipulates that only candidates that have no pending issues with Justice can run for elected office. However, for a candidate to be barred from running for office, he needs to be found guilty in the appeals court. This is important because many politicians are found guilty in the lower court but are still awaiting an appeal. In the meantime, they can run for office.

Tourism

Despite its natural beauty and its huge and diversified territory, Brazil is far from being a popular tourist destination. One of the reasons for the low international demand could be the distance between Brazil and core tourism centers. In addition, issues such as safety and security and lack of infrastructure and skilled labor also contribute to low tourism in the country. However, even with the low number of international tourists, the country’s assessment is positive: 95% of tourists who come to Brazil leave intending to come back (according to Embratur). From 2012 until 2015, Brazil was the most visited country in South America. However, in 2016 and 2017, Argentina became the most visited country, with Brazil falling to second place.

Figure 42: Top 10 Travel Destinations in the Americas
 # of arrivals, million



Source: World Bank 2017.

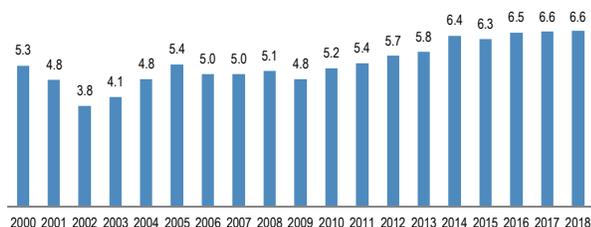
About half the international travelers that come to Brazil are from South America (61%), mainly from Argentina (almost 38% of the total). Europeans represented 22%, coming especially from France and Germany, and North Americans account for 10% of international travelers to Brazil in 2018, according to the country's ministry of tourism.

Over the past few years, Brazil hosted both the FIFA Soccer World Cup (2014) and the Olympic Games (2016). Both events contributed to the rise in the number of foreign tourists in Brazil, which reached 6.5 million people in 2016, 4.3% higher than 2015 and surpassing the World Cup year by more than 100K visitors. This

increased in tourist arrivals during the international events contributed however to a more permanent flow of tourists to the country: in 2017 and 2018, the number of tourists arriving in Brazil reached a record level of 6.6 million visitors.

Figure 43: Tourist Arrivals in Brazil

Millions of people

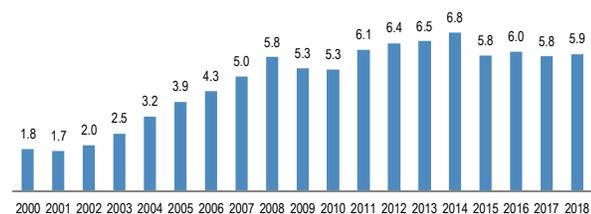


Source: Ministério do Turismo.

One of the main issues that could have improved the number of foreign tourists to Brazil over the past few years is the more competitive exchange rate. From 2015 onward the currency fluctuated north of R\$3/USD compared to significantly stronger levels prior to that. From 2018 onwards, the currency has remained above R\$4/ USD which might stimulate not only foreigners to come to Brazil, but also Brazilians to travel inside the country instead of taking an overseas vacation. Still, the revenue that comes from international travelers in Brazil has declined following the 2014 peak, when the soccer World Cup was hosted in the country.

Figure 44: Revenues from International Travelers in Brazil

US\$ billion



Source: Ministerio do Turismo

Below we look at Brazil’s main touristic regions. Rio de Janeiro is foreigners’ favorite destination, while Bahia (on the Northeast coast) is the preferred destination for domestic tourists, especially during Carnival. São Paulo is the business and financial center, receiving most of the people who come to Brazil for business reasons or commercial events. Among the most popular destinations are also the Amazon rainforest, the Pantanal in the Midwest region, and the country’s capital, Brasilia, famous for its complex and innovative architecture.

Figure 45: Main Travel Destinations



Source: IBGE; J.P. Morgan.

According to the World Economic Forum, Brazil is ranked 32nd in the overall 2019 tourism & travel competitiveness index out of 140 countries and fourth in the Americas, behind the US, Canada, and Mexico. From 2013 to 2019, Brazil gained 19 positions, partly for hosting the FIFA World Cup (2014) and the Olympic Games (2016), which has proved to be a good opportunity to boost tourism competitiveness in the country. However, with these sporting events over, most of the infrastructure put in place for the games is quickly deteriorating and Brazil lost 4 positions compared to 2015 data. Globally, the most competitive countries in terms of tourism are Spain, France, and Germany.

Table 15: Travel and Tourism Competitiveness Rank

Country	2013	2015	2017	2019
Spain	4	1	1	1
France	7	2	2	2
Germany	2	3	3	3
Japan	14	9	4	4
US	6	4	6	5
UK	5	5	5	6
Australia	11	7	12	7
Italy	26	8	8	8
Canada	8	10	9	9
Switzerland	1	6	10	10
Mexico	44	30	22	19
Brazil	51	28	27	32
Argentina	61	57	50	50

Source: World Economic Forum

The overall Travel and Tourism Competitiveness index measures the set of factors and policies that enable the sustainable development of the travel and tourism sector, which contribute to the development and competitiveness of the country. It's a result of a combination of four sub-indexes: (1) Enabling Environment, (2) T&T Policy & Enabling Conditions, (3) Infrastructure and (4) Natural & Cultural Resources. Brazil's overall classification is marked by extreme results, sometimes positive but sometimes extremely negative:

Competitive advantages: The nation relies on its exceptional natural (2nd) and cultural (9th) resources to attract visitors, especially given its less-impressive performance on other areas of T&T competitiveness. The country has the largest number of known animal species in the world, fairly extensive protected nature areas (16th) and a significant endowment of UNESCO natural (7th) sites and cultural and intangible heritage UNESCO listings (19th).

Competitive disadvantages: Brazil has become less competitive since the 2017 edition, dropping five places on the overall global ranking. In part, this can be explained by the country's worsening tourist service infrastructure, price competitiveness, and poor safety & security.

Table 16: T&T Competitiveness Index Breakdown (2019)

Categories	Rank
T&T Competitiveness Index	32
Business Environment	127
Safety and Security	124
Health and Hygiene	69
Human Resources and Labor Market	88
ICT Readiness	66
Prioritization of Travel & Tourism	106
International Openness	89
Price Competitiveness	72
Environmental Sustainability	67
Air Transport Infrastructure	42
Ground and Port Infrastructure	114
Tourist Service Infrastructure	59
Natural Resources	2
Cultural Resources and Business Travel	9

Source: World Economic Forum.

Environment

The animal and plant biodiversity is one of the greatest attributes of Brazil. There are six biomes in Brazil:

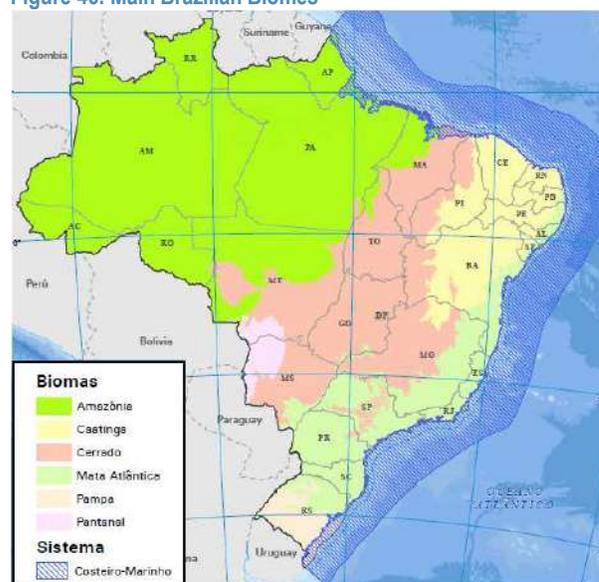
Amazon, Atlantic Forest, Cerrado, Caatinga, Pampa and Pantanal. They are important not only because of the natural resources for the population but also due to the great natural wealth which houses uncountable species.

The relief is composed by flat lands, plains and depressions. Flat lands are areas essentially flat formed by the sediment deposition from higher lands, they are formations more recent from the geological time. The plains are older lands located in higher altitudes. Depressions are areas characterized to be in altitudes lower than underlying areas, including those below the sea level.

Brazil has the biggest potable water reserve in the world. The distribution of water is unequal as 80% of the superficial water is located in the hydrographic region of the amazon.

There are three types of climate in the region, equatorial, temperate and tropical. The equatorial climate encompasses the majority of the territory, as the Amazon, it is characterized by daily rains and elevated temperatures. The tropical climate varies to the region but it is also hot and rains less frequently. The temperate climate predominates in the south region and during intern can register negative temperatures.

Figure 46: Main Brazilian Biomes



Source: IBGE

Amazon: The biome encompasses about 49% of the Brazilian territory. The Amazon is the biggest tropical forest in the world and contains 20% of the available potable water and mineral reserves.

Atlantic forest: It represents about 13% of the territory and is occupied by 50% of the population. Currently it is the biome more threatened by deforestation in Brazil as only 27% of its original forest is still untouched. Still, the biome provides hydric resources that supplies 70% of the Brazilian population.

Caatinga: The biome covers around 10% of the territory and is characterized by semi-arid climate, presenting a huge variety of landscapes and specific species. The vegetation suffered huge modification in the past years, being replaced by agriculture and livestock. Deforestation and fires are a common practice to prepare the land for livestock. About 36% of the original vegetation was already modified for these purposes.

Cerrado: The Cerrado is considered to be the Brazilian Savannah. The biome covers mainly the Brazilian central highlands and occupies about 25% of the national territory. Until 1950, the biome was untouchable, but with the construction of Brasilia, the natural vegetation was replaced by agriculture and livestock.

Pampa: This is the smallest biome in the country, representing only 2% of the territory. It is characterized by rainy weather and negative temperatures during winter. In the whole coverage of the biome the practice of livestock and agriculture (mainly production of rice) is observed.

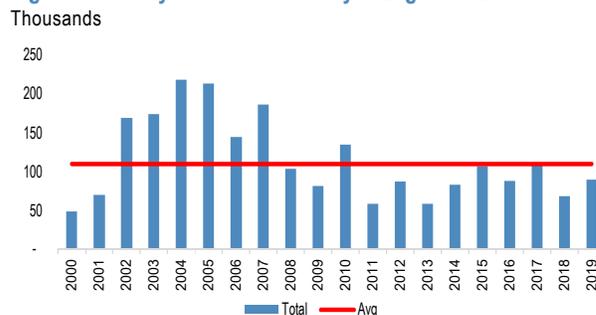
Pantanal: The biome also encompasses only 2% of territory, like the Pampa biome. Nonetheless the coverage is known by flat lands that get flooded during rainy seasons. This biome is the most preserved and has the largest amount of wildlife in the country. Livestock and tourism are very common in the region.

Amazon fires: In August 2019, fires in the Amazon caught the attention of the whole world, with artists, politicians, musicians manifesting mainly on social media defending the forest. The event gained a lot of traction as it was one of the topics of the G7 meeting and still threatened the ratification of the EU-Mercosur trade agreement that was signed 2 months before the fires began. The Brazilian government published a decree which allowed the army to fight the fire and to prevent new spot fires.

Data: The INPE (National institute of Space Research) produces data on forest fires through satellite image for the nine states that form the “Legal Amazon” and also across Brazil. The data relies on NASA satellites and thus, is the same one that is produced by Nasa. The data shows that the fire activity on yearly basis was below the

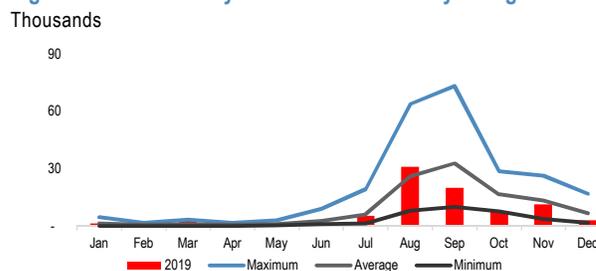
average for 2019. However, the month of the turmoil, August, registered spot fires above the average as per.

Figure 47: Yearly track of fire activity in Legal Amazon



Source: INPE.

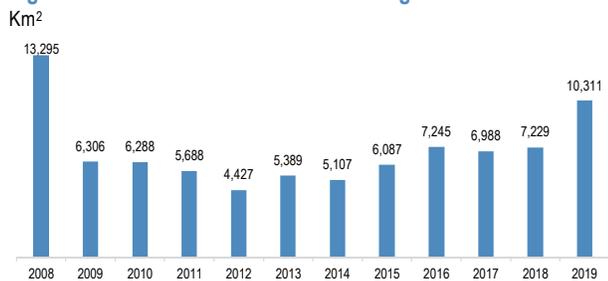
Figure 48: 2019 Monthly track of the fire activity in Legal Amazon



Source: INPE.

The INPE provides two sets of data: The first one is called DETER, a real time deforestation system which send daily alerts for the purpose of control and monitoring. The system’s limitation is that it doesn’t detect deforestation in cloudy conditions and images are of low resolution. The noise around the Amazon began when the institute showed deforestation skyrocketing in June (up 88%/y). The government argued that DETER data is not to be used for statistical and comparison purposes on a monthly basis, only for alert and control. Environment Minister Salles also said that the data includes double counting and other problems. In 2019, the DETER registered 10.311km² of deforestation, the highest mark in the past 10 years and a jump of 42%/y.

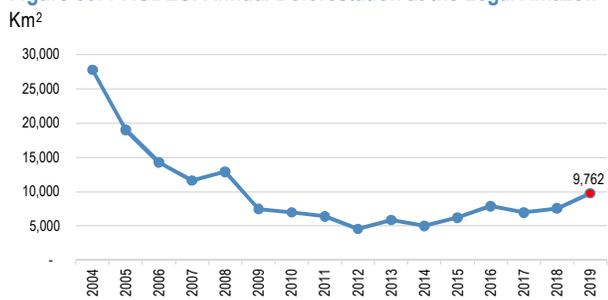
Figure 49: DETER: Deforestation in the Legal Amazon



Source: DETER, Terra Brasilis, INPE.

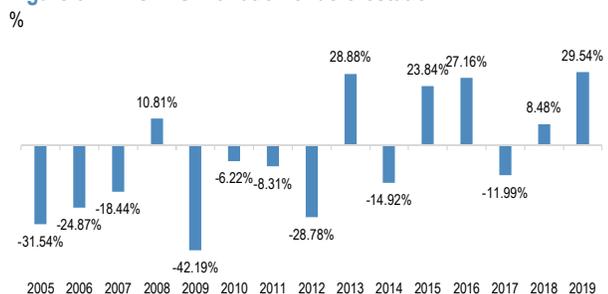
The second metric is called PRODES which provides annual data about the deforestation rate since 1998 and is the main source of information for the government vis a vis Amazon forest policies. For 2019 the data showed that there was an increase of 30%/y of the deforestation to ~9.700km² in the Legal Amazon, much higher than the 10yr average of 6.500 km²/year. The former director of the INPE argues that there is an 82% correlation between the DETER and PRODES data.

Figure 50: PRODES: Annual Deforestation at the Legal Amazon



Source: INPE

Figure 51: PRODES: Variation of deforestation



Source: INPE

Competitiveness Indicators

Brazil ranked 71st out of 141 countries in the 2019 World Economic Forum (WEF) Global Competitiveness Index, a marginal improvement of one position relative to the previous year. Singapore leads the ranking as the most competitive economy in the world, followed by the United States. All major LatAm countries are ahead of Brazil: Chile is the best (33), followed by Mexico, Colombia and Peru (48, 58 and 65 positions). Argentina (83) is behind Brazil. Within the BRICS, Brazil also fares the worst, behind China (28), Russia (43), South Africa (60) and India (68).

In 2018, the WEF launched a new methodology for the report. The index is a new composite indicator that assesses the set of factors that determine an economy's level of productivity and seeks to capture the dynamics of the global economy in the Fourth Industrial Revolution.

Table 17: Global Competitiveness Index 4.0 2019 GCI

Rank	Country	2019-2018 Comparison
1	Singapore	+1.3
2	United States	-2
3	Hong Kong	+0.9
4	Netherlands	-
5	Switzerland	-0.3
6	Japan	-0.2
7	Germany	-1
8	Sweden	-0.4
9	United Kingdom	-0.8
10	Denmark	+0.6
23	Spain	+1.1
28	China	+1.3
33	Chile	+0.3
43	Russia	+1.1
48	Mexico	+0.3
57	Colombia	+1.3
60	South Africa	+1.7
65	Peru	+0.4
68	India	-0.7
67	South Africa	-5
71	Brazil	+1.4
83	Argentina	-0.3

Source: World Economic Forum.

The overall rank consists of four sub-indexes (Enabling Environment, Human Capital, Markets, and Innovation) and 12 pillars. Brazil ranks 71st overall, one position higher from the last assessment in 2018. As South

America's largest economy, its score is driven by its relatively large market size (ranked 10th overall) and performance on the Health pillar (73rd). Brazil leads the region on the Innovation capability pillar (40th) yet remains below its potential. The poor integration of policies and the lack of coordination between the public and private sectors are among the institutional factors inhibiting its performance.

The country ranks 8th in the Latin America and Caribbean region. Economic growth is slowly picking up after the 2015-2016 economic slowdown. Further improving Brazil's productivity is of paramount importance for the country's social agenda as well. The improvement on the competitiveness index has been driven by a significant simplification of regulations to start and close a business, which has boosted the Business dynamism pillar score (67th), coupled with lower inflation and by somewhat better market efficiency (105th). In addition, the Brazilian competitiveness performance also benefits from a relatively high innovation capability level (40th) and from the size of the market (10th). Conversely, further progress on macroeconomic stability (115th), should be accompanied by greater trade openness (125th), especially in terms of applied tariffs (12.3% average, 128th) and non-tariff barriers (135th), better security (132nd) and sounder government stability (130th). Moreover, Brazilian business leaders rate excessive red tape (141st) and lacking long-term vision from the government (129th) among the most pressing priorities to revamp the country's competitiveness, closely followed by excessively distortive taxation (136th). Going forward, as the global economy strives to become more inclusive and sustainable, governments are increasingly expected to set the course towards higher social and environmental standards and their long-term vision and policies will be critical to achieve these goals.

The country's weakness is mostly concentrated on issues related to the public sector. The country is considered the worst in terms of burden of government regulation (141st). Still, the country is ranked 120th in terms of efficiency of legal framework in settling disputes and 130th regarding government ensuring policy stability. Taxation is an important matter that is still pushing Brazil's overall index down. Brazil is known for having one of the most complicated tax systems in the world.

Table 18: Brazil's Classification Breakdown (2019)

Indicator	Rank
Overall index 2019 (out of 141)	71
Overall index 2018 (out of 140)	72
Enabling Environment	
Institutions	99
Infrastructure	78
ICT adoption	67
Macroeconomic stability	115
Human Capital	
Health	75
Skills	96
Markets	
Product Market	124
Labor Market	114
Financial System	55
Market size	10
Innovation Ecosystem	
Business dynamism	67
Innovation capability	40

Source: World Economic Forum.

Regarding the infrastructure pillar that captures the quality and extension of transport infrastructure and utility infrastructure, Brazil was ranked 78th, an improvement of 3 positions considering last year's score. The pillar breakdown indicates that airport connectivity is the best performer among the category (ranked 17th overall) and the quality of roads is the worst (112nd).

Table 19: Infrastructure Pillar Breakdown (2019)

Infrastructure Subgroup	Rank/141
Quality of overall infrastructure	78
Road connectivity index	69
Quality of roads	116
Railroad density	78
Efficiency of train services	86
Airport connectivity	17
Efficiency of air transport services	85
Liner Shipping Connectivity Index	48
Efficiency of seaport services	104
Electrification access	73
Electricity supply quality	102
Exposure to unsafe drinking water	57
Reliability of water supply	76

Source: World Economic Forum.

Economic Activity

Brief Political Economy Retrospect

Economic policy and GDP performance: Economic activity since the end of hyperinflation can be categorized in three periods. The first is under the Fernando Henrique Cardoso administration (1995-2002). The second falls mostly during the first Lula administration until the global credit crisis (2003-2008). The third takes place mostly during latter part of Lula's second mandate (2009-2010) and during the entire administration of Dilma Rousseff (2011-2016), characterized by the embracing of a different economic model, which culminated in one of the largest recessions in Brazilian history. Since the impeachment of President Dilma in mid 2016, the fourth period has started, with the Temer administration working to restore fiscal balance and implement structural reforms, and, in large brushes, remains in place.

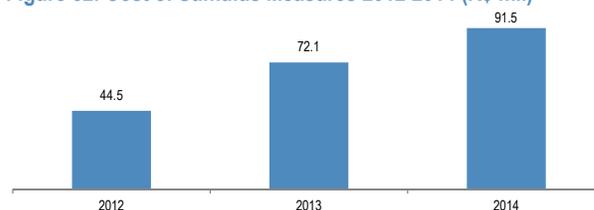
First Phase: Cardoso I—The Real Plan: In the first period, the country was making several adjustments in order to stabilize the economy and regain international credibility. As a Finance Minister, even before his first mandate (1995-1998), Fernando Henrique Cardoso created and implemented the Real Plan in 1994, finally controlling the hyperinflation that had characterized Brazil for the better part of the prior 15 years. His administration also conducted several structural reforms, including a deep privatization initiative of state-owned companies.

Second Phase: Cardoso II—Introduction of the Tripod: Cardoso's second mandate (1998-2002) was marked by several crises, starting with Asia, passing through Russia, and culminating in the BRL devaluation in January 1999, the energy rationing of 2001, and the great instability caused by uncertainties related to Luis Inácio Lula da Silva's (Lula) election in 2002. It was during this time that fiscal policy was taken more seriously, and the economic team led by Arminio Fraga implemented the so-called macroeconomic "tripod," which is viewed to this day as the ideal recipe for Brazil's economy: floating exchange rate, fiscal responsibility, and inflation-targeting regime. The tripod was pretty much in place until the global credit crisis of 2008 and the government of Michel Temer in 2016 is putting extra effort to reestablish it. Growth during the Cardoso years was modest, averaging 2.3% per year, and unemployment was high.

Lula I—Strengthening the Tripod, the Commodity Boom: With the economy stabilized, the country had concrete opportunities to grow, also helped by China's great hunger for commodities. President Lula followed the economic model inherited from Fernando Henrique Cardoso, even tightening the fiscal standards at the start of his administration to increase credibility. It was also then that social security reform for public sector workers was approved. Both monetary and fiscal policy were in large part well managed until the global economic crisis of 2008. Average growth in this second period was 4.2%.

Third Phase: Lula II and Dilma I and II—The New Economic Matrix: Economic policy changed after the global financial crisis. From 2009 onward the government started to play a much more interventionist role in economic management and financing. One could argue in broad terms that the "tripod" was abandoned and in its place a policy that became known as the "new economic matrix" was implemented and strengthened during the first mandate of President Dilma Rousseff. Within the real economy, the BNDES, for example, was greatly expanded, with annual loans increasing from R\$65 billion in 2008 to over R\$100 billion a year from 2009 to 2015. In 2013 BNDES loans reached a peak of R\$190 billion, up 22% from the previous year. Public sector banks also took a larger share of credit for companies and consumers and became responsible for the majority of the loan stock in Brazil. In the fiscal accounts, the primary result (excluding interest payments) fell from a surplus of 4% of GDP in October 2008 to a deficit of 2.5% at the time of the impeachment of President Dilma, while the overall budget deficit climbed from only 1.2% of GDP to a whopping 9.5% of GDP, perhaps the largest in all emerging markets. The autonomy of the central bank was questioned more than once, and last but not least, the government took a more interventionist approach, putting regulatory issues at the forefront of economic policy, often causing a great deal of uncertainty within the business community. Prices of utilities and gasoline were frozen for a long time, creating significant distortions.

Figure 52: Cost of Stimulus Measures 2012-2014 (R\$ mil)

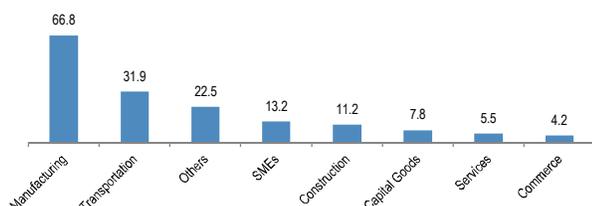


Source: Ministerio da Fazenda

The result of this new approach is in the numbers: following the slump of 2009 and the substantial stimulus injected in the economy, 2010 was a record year, with GDP growth of 7.5%, second only to China and India within EM. Unfortunately, the higher the climb, the deeper the fall.

Figure 53: Fiscal Stimulus per Sector (2013-2014)

In R\$ billion; total = R\$163.6 bil



Source: Ministerio da Fazenda

After the October 2014 elections (when President Dilma Rousseff was reelected), there was an effort to restore economic policy credibility. Joaquim Levy, a University of Chicago-trained economist with government and private sector experience, tried to implement a fiscal adjustment. Prices were deregulated, which generated higher inflation, leading the central bank to hike rates. But, in essence, the adjustment was not enough and a deep stagflation (among other things) made it very difficult for the government to pass austerity measures in Congress. By the end of 2015, Levy left the government as the administration fell back to the old practice of trying to stimulate the economy. GDP in 2015 fell by 3.5%, the lowest since 1981. Weak growth, high inflation, low popularity and the lack of support in Congress culminated in the impeachment of President Rousseff in mid 2016.

Figure 54: Primary Surplus During Presidents' Lula and Dilma Administrations



Source: Banco Central do Brasil

Fourth Phase: President Temer and Bolsonaro – From recession to low growth: What became clear following the period between 2009 and mid 2016 was that economy policy wasn't going to deliver faster growth on a sustainable basis without fixing the fiscal

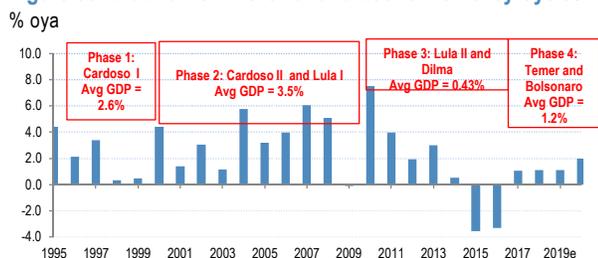
problem. It was imperative to start to dismantle the public sector machinery that was built in the previous years to allow the private sector more room to invest. President Temer, who took over the helm of the country following the impeachment of President Dilma in mid 2016, committed to that path, with the nomination of a credible economic team with commitment to restore the fiscal path to normality and implement structural reforms. In 2H 2016, the government approved the spending ceiling bill (virtually all federal expenditures are frozen in real terms for the next 20 years), and in mid 2017 a Labor reform was approved. State owned companies were revamped, not only in terms of management but also in terms of policies. For example, Petrobras was under the helms of very respected CEOs and started a program of asset divestments. Also, the BNDES largesse was curtailed and it started to pay back the Union part of the R\$500 billion subsidized loans from past years. These efforts have allowed the central bank to embark on a large and extended easing cycle, one that lasts until now. What also made possible for rates to follow was that double digit inflation started to decline, mostly a result of a deep recession that led the country's GDP to contract by 7.5% in 2015-2016. Interest rates were more than halved, falling from 14.25% by the time President Temer took office to 6.5% by the time he left (Dec 2018), the lowest Selic nominal rate ever recorded up to that year. The disappointment continued to be the weak growth, which registered a combined increase of only 3.7% in 2017 – 2018, following the recession.

One could say that events that took place during the Temer administration had an important impact on curbing growth by lowering confidence, at a time when growth was starting to pick up. In May 2017, the administration was on the brink of approving the social security reform in the Lower House when it was shook by the release of the "JBS tapes" that in theory involved the President in wrongdoings. After that, Temer became a lame duck president and spent the rest of his mandate with low popularity and trying to defend himself and his legacy. Still, his administration was able to approve an all-important labor reform, which allowed for more outsourcing and reduced the cost of hiring and firing, decreasing the number of labor lawsuits and reduced the power of labor unions.

In May 2018, a truckers' strike paralyzed the country for 9 days, having an estimated impact of -0.7% on GDP at a time when the economy was showing solid signs of recovery following the deep rate cut from the previous year. The truckers' strike brought forward electoral concerns that were expected to take place only in 3Q, as

the elections were to take place on October 27. 2018 was another year of uncertainty and low growth.

Figure 55: Brazilian GDP Growth and Economic Policy Cycles



Source: Source: IBGE, J.P. Morgan. Note: 2019 and 2020 JPM estimates

Main Macro Pillars of the Bolsonaro Administration:

2019 started with President Bolsonaro taking office, after a commanding victory in an election that was characterized by polarization, the huge advent of new media channels (social media especially) and an anti-establishment message. The new President embraced economic liberalism, with the appointment of Paulo Guedes as Economy Minister. In our understanding, the economic policy agenda of the new administration can be summarized on the following points: 1) fiscal responsibility, with social security reform as its main item; 2) De-bureaucratization and ease of doing business, which also encompasses a tax reform; 3) Reduce the size of the state through privatizations and divestments; 4) Trade openness; 5) Federalization. At the time of this writing (4Q19), there has been progress in all areas, but not in a uniform manner. The advent of the social security reform (tighter fiscal policy) along with tame inflation and the global macro scenario has allowed the central bank to re-embark on an easing cycle, with rates touching all time lows and expected to stay at those levels for the foreseeable future. After another sub-par growth year (2019 JPM = 1.1%), Brazil's growth is expected to accelerate significantly in the next couple of years.

Figure 56: Main Macro Guidelines of the Bolsonaro Administration



Source: J.P. Morgan

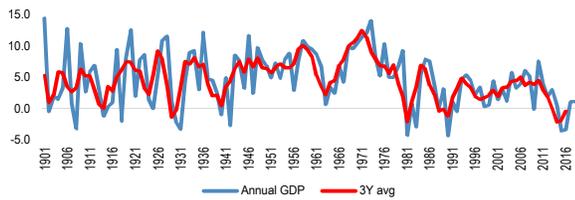
GDP in context

Long-term historical GDP: Brazil data for the last 100 years shows that the country's GDP pattern has been mostly characterized by severe boom and bust cycles. This is especially true until the industrialization phase, which started in the 1950s. After that period, the country enjoyed a period of growth and stability that lasted until high inflation took over in the mid 1960s. With the military coup in 1964, Brazil embarked on a new phase, with the development of several heavy industries (oil, iron ore, steel, utilities, etc.) at the same time that urbanization accelerated. These were the "miracle" years, with growth peaking at almost 14% in 1973, when the oil shock hit Brazil. The rise in oil prices from around US\$3/bbl to US\$12/bbl enhanced fiscal difficulties, but the country continued to grow at very high rates until the end of the decade. The second oil shock of 1979 gave way to an acute external debt crisis in the 1980s, which together with hyperinflation characterized the period as the "lost decade." In the 1990s the economy stabilized, and although growth has been more subdued, the severe boom and bust cycles of the past were, to a great extent, smoothed—until now.

Few times in history has Brazil had negative GDP episodes as in the recent past. **Since 1901, there have only been two occasions when Brazil had two consecutive years or more of negative or flat annual GDP.** The first happened in 1930-31 after the 1929 crash, and the second in 2015-16. Single negative GDP readings are more usual and have happened 14 times since 1901. These were mostly due to external shocks (First and Second World Wars, Great Depression, oil shock, Asia/Russia crisis, 2008 credit crisis), with the exception of the late 1980s hyperinflation. One could generalize in the sense that this is the second time in

history that a stream of weak GDP readings are being produced mostly due to domestic economic policy choices. The biennial of 2015/2016 was responsible for a GDP contraction of 7.6%, above the 5.4% contraction observed in 1930/1931. The impacts of the previous recession and of policy choices of the past continue to curb GDP growth, which has been expanding by only around 1% since 2017.

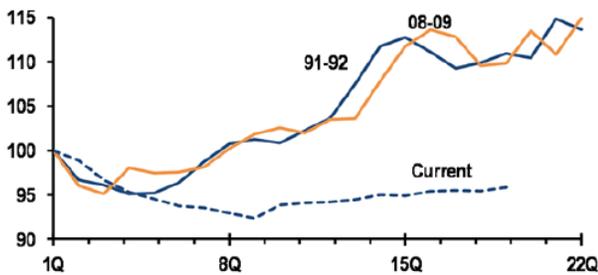
Figure 57: Brazil Real GDP Since 1901



Source: Source: IPEA, J.P. Morgan

2019/ 2020 GDP prospects and beyond: Usually in Brazil, after a deep recession, there is a big rebound, but this has not been the case. Despite the ~7% GDP contraction of 2015-2016, Brazil's growth has been at around 1% yearly in 2017, 2018 and 2019.

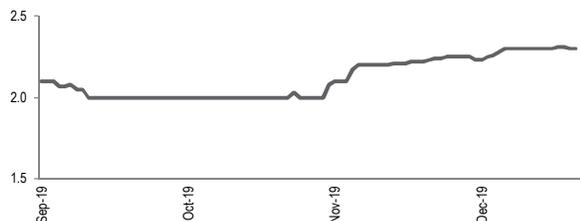
Figure 58: Recession past and present anatomy (GDP SAAR %)



Source: IBGE; J.P. Morgan

The central bank weekly consensus survey (FOCUS) indicates that prospects for 2020 are better, with GDP expected to rise by 2.3% (JPMe 1.9%).

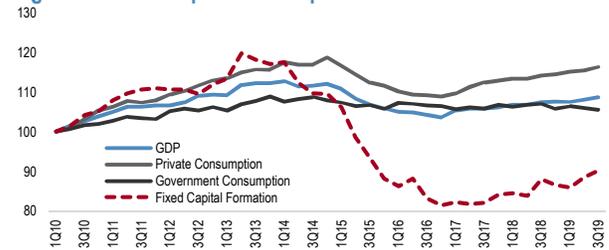
Figure 59: Consensus GDP for YE 2020



Source: Focus Survey, Banco Central do Brasil

Some issues could enhance GDP prospects, while others could dampen them. On the positive side, the central bank has re-embarked on an easing of monetary policy. The Selic closed 2019 at 4.5%, a record low. This supports a consumption-led recovery, based on rising real wages due to falling inflation, a slow pickup in employment and some improvement on the volume of new credit. On the other hand, the rebound is made more difficult by the investment side. First, and more importantly, there is excess capacity in almost every sector in Brazil, which delays new investment decisions, a key growth component. Second, external accounts are expected to worsen as imports accelerate and exports don't get back to pre-trade war levels. Third, the Argentina debacle is taking a toll on Brazil's manufacturing industry. And last but not least, while the fiscal adjustment is welcome, the level of government spending is actually contracting, having an estimated 40bp negative impact on GDP in 2019.

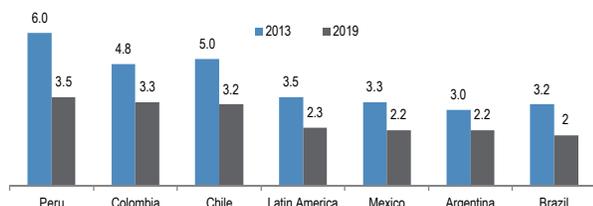
Figure 60: Consumption and Capex



Source: IBGE, J.P. Morgan. Note: 1Q10 = 100

Structural impediments to growth: This headline has been the topic of dozens of articles in the last several years. There are questions that abound on whether Brazil is going to be able to embark once more on a high growth path. The need for structural reforms has already been diagnosed and to some extent, the medicine is starting to be administered. Poor education standards, a very low investment/savings rate, and a high cost of labor are also issues that dampen competitive and productivity. Currently, J.P. Morgan projects that Brazil's long-term GDP (potential GDP) is 2.0%. This is down from 4% at the turn of the century.

Figure 61: Estimated Potential GDP for LatAm Countries
% yearly



Source: J.P. Morgan

According to the IMF, the Brazilian economy is the ninth largest in the world by nominal GDP (in USD) and the largest in Latin America. In 2018 the country's nominal GDP reached US\$ 1.87 trillion. The result is 9% lower than in the previous year and it has to do mostly with the depreciation of the BRL, considering that nominal GDP expanded by 4.2% in local currency terms. Since its peak in 2011, USD nominal GDP fell by 28%. The IMF predicts that Brazil's GDP in USD will improve by about 5% in each of the next two years, thus remaining the ninth largest economy in the world after falling from the seventh position in 2014. Brazil's share of global GDP in PPP terms is about 2.4%, down from 3.1% in 2004.

Table 20: Nominal GDP

US\$ billions

	2018	2019	2020
United States	20,580	21,439	22,322
China	13,368	14,140	15,270
Japan	4,972	5,154	5,413
Germany	3,951	3,863	3,982
United Kingdom	2,829	2,744	2,717
France	2,780	2,707	2,772
India	2,719	2,936	3,202
Italy	2,076	1,989	2,014
Brazil	1,868	1,847	1,893
Canada	1,712	1,731	1,812

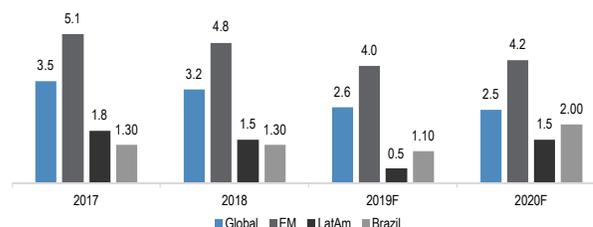
Source: IMF, World Economic Outlook, October 2019 estimates.

LatAm comparisons

Since 2012, Brazil's growth rate has consistently lagged EM and LatAm. Still, this is going to change in 2019, considering the big dive of Argentina's economy (-2.3%) and the close to flat growth in Mexico which will drag overall LatAm's growth. This over performance relative to LatAm is expected to continue in 2020. Still, Brazil's growth relative to EM is to remain sub-par for the foreseeable future at the very least, considering the 5.5%

plus growth expected for Asia over the next couple of years.

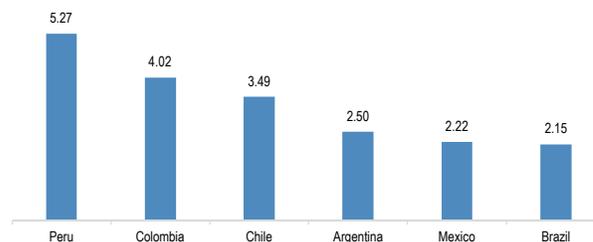
Figure 62: Economic Growth: Brazil vs. LatAm, EM, and World
% oya



Source: J.P. Morgan, official agencies

Until 2018 and excluding Argentina with its ups and downs, Brazil has typically been the slowest growing country in the region since 2014. In 2019, however, things have changed, but not because Brazil improved. Other countries in LatAm had to deal with important structural shifts such as Mexico and Chile, which Brazil is expected to outgrow also in 2020. Still, there is nothing to be proud about: Compared to other Latin America countries, Brazil is the slowest growing one when looking at longer time periods. It has averaged a GDP growth of only 2.15% over the past 15 years, the worst among the major LatAm economies. From 2005 to 2019 (using JPM forecast), Latin American countries have grown on average 3.3% (unweighted). Below the average are Argentina, Mexico and Brazil. Above the regional average are Peru, Colombia and Chile. Over the last decade, the country with the strongest growth on average in LatAm was Peru (5.3%), followed by Colombia (4.0%).

Figure 63: Latin America Countries' GDP – 15 Year Average
% average growth 2005-2019



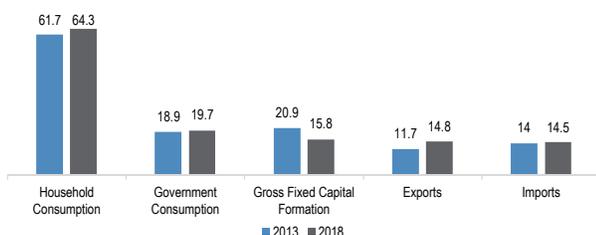
Source: J. P. Morgan, Bloomberg. Note: 2019 is JPM forecast.

GDP Composition: Looking at GDP composition (weight), household consumption is the main component on the demand side. This is not news as in the last two decades household consumption has been responsible for over 60% of GDP. Indeed, the recent collapse of investment led to an increase in the share of household consumption, which is approaching 65% of GDP.

Government consumption is the second largest component, accounting for about 20% of GDP, but this has been falling considering tighter fiscal policy. Fixed capital formation is the most problematic, responsible for only 15% of GDP and currently at an all-time low. The investment rate has been falling over the past few years and today is the lowest in EM, preventing an acceleration of growth in the long run. On the external side, there is significant yearly variation in terms of contributions of exports and imports. Exports were very weak in the period of the fixed exchange rate (1994-1999), accounting for about 8% of GDP, while imports at the time were hovering around 9.5% of GDP. This relationship reversed when the BRL was devalued in January 1999 and with the advent of China as a large buyer of Brazilian commodities. Exports recovered and rose to 15% of GDP. From 2010 to 2014, however, the appreciation of the exchange rate led imports to outpace exports once more. More recently, the deep recession and weaker BRL put a dent in imports, and currently both exports and imports account for about 15% of GDP.

Figure 64: GDP Components by Expenditure (Demand Side)

% of total GDP, 2013 and 2018



Source: IBGE

Looking at the growth rate of demand components, it is clear that the drag of the past few years is not yet fully reversed. Growth in 2019 and 2020 are being led by consumption, which continues to expand at a 2% - 2.5% clip, but with the greater contribution of investment, which is gaining 4 - 5%. Imports will once more grow more than exports, but the latter at least will post a positive reading in 2020, contrary to the contraction observed in 2019, a result of the trade war. Interestingly also, is the fact that government consumption continues to decline, a result of the current economic policy framework.

Table 21: Real GDP Growth by Demand Components

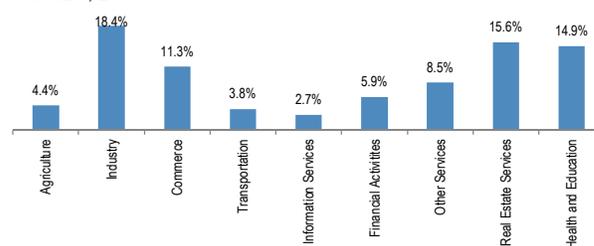
% oya	2017	2018	2019F	2020F
GDP at Market Prices	1.3	1.3	1.1	2.0
Private consumption	2.0	2.1	2.0	2.6
Government consumption	-0.7	0.4	-1.0	-0.9
Investments	-2.6	3.9	4.0	5.3
Exports	4.9	4.0	-0.8	2.0
Imports	6.7	8.3	3.0	4.0

Source: IBGE; J.P. Morgan forecasts

On the supply side, the economy is dominated by services, which make up more than 60% of Brazil's GDP. The largest share of services is real estate activity and public health & education, each accounting for around 15% of GDP. Commerce accounts for 11% of GDP and has been maintaining this share pretty constant over the past several years. A category entitled "other services" has an 8.5% share and growing and includes establishments like beauty parlors, private security and private health and education. Industry is responsible for 18.5% of GDP. While this share has been stable since 2016, it has been declining overtime. About 50% of industry is manufacturing (of which half is autos) and 15% is mining/ oil. Civil construction is another 4%. Finally, although Brazil is an important exporter of agricultural commodities, the sector accounts for only about 4.5% of GDP and has been stable at this level since 2008.

Figure 65: GDP Components by Sector (Supply Side)

% of GDP, 2018

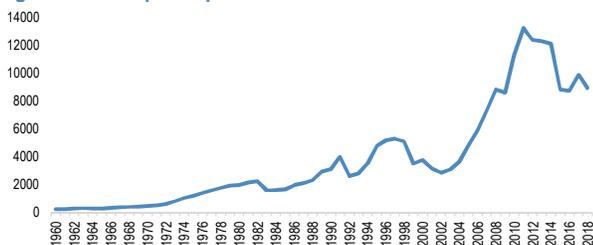


Source: IBGE

Per capita GDP

Per capita GDP reached US\$8,920 in 2018, a decline of almost 10% y/y. Per capita GDP today is 33% below the peak of US\$13.2 K registered in 2011. A lot of the loss has to do with the depreciation of the BRL, which went from R\$2/USD in 2011 to R\$3.9/USD in 2019. At the same time, the expansion of nominal GDP was very mild during the period due to the deep recession of the mid 2010s which led to a very low expansion of nominal GDP (below 5% between 2015 and 2018, which is almost the inflation level).

Figure 66: GDP per Capita in USD



Source: World Bank

Regional GDP

Brazil's GDP has a particular characteristic: more than a half of it is concentrated in the Southeast region (52.9%), where São Paulo, Rio de Janeiro, and Minas Gerais are located. It is interesting to note that the Southeast GDP share is significantly larger than its population. Sao Paulo state alone is responsible for one-third of Brazil's GDP (32.3%)

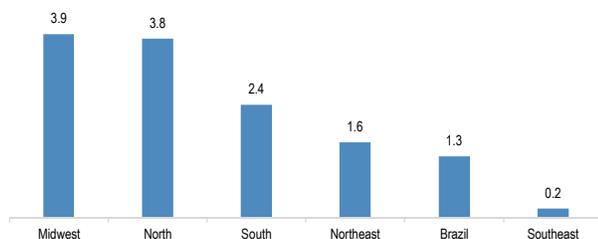
Table 22: Regional GDP and Population Distribution

	GDP		Population	
	2002	2017	2002	2017
North	4.7	5.6	7.8	8.6
Northeast	13.1	14.5	27.9	27.6
South	16.2	17	14.7	14.3
Southeast	57.4	52.9	42.6	41.9
Midwest	8.6	10	7.0	7.6

Source: IBGE, 2017 (last available data)

What is interesting to note is that the regions with a smaller participation are the ones that are growing the most: The Midwest and the North grew 3.9% and 3.8% respectively in 2017 (last available), mostly due to advents in agriculture and mining. On the other hand, GDP in the Southeast grew only 0.2%. This very poor reading is partly due to the -1.6% contraction of Rio de Janeiro, the lowest of all states in the country.

Figure 67: Regional Real GDP Growth % oya (2017)



Source: IBGE

Indeed, in 2017, 18 states grew more than the Brazil aggregate (1.3%), with the vast majority located in the

Midwest, North and Northeast. All the Southeast grew less than Brazil, with the exception of Minas Gerais.

Table 23: States: GDP growth and Participation

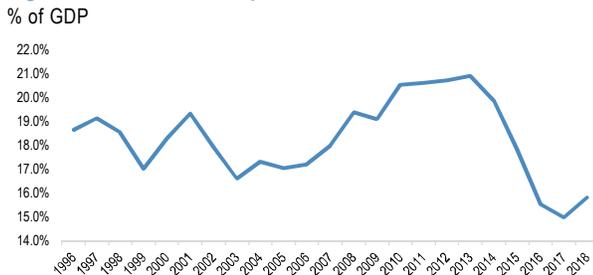
State	GDP % oya	Participation % of total
Mato Grosso	12.1	1.9
Piauí	7.7	0.7
Rondonia	5.4	0.7
Maranhão	5.3	1.4
Amazonas	5.2	1.4
Mato Grosso do Sul	4.9	1.5
Santa Catarina	4	4.2
Alagoas	3.3	0.8
Pará	3.2	2.4
Tocantins	3.1	0.5
Roraima	2.4	0.2
Goías	2.3	2.9
Pernambuco	2.1	2.8
Paraná	2	6.4
Rio Grande do Sul	1.8	6.4
Amapá	1.7	0.2
Minas Gerais	1.7	8.8
Ceará	1.5	2.2
18 states above	3.1	45
Brazil	1.3	100
9 states below	-0.1	54.7
Rio Grande do Norte	0.5	1
Espirito Santo	0.5	1.7
Federal District	0.3	3.7
Sao Paulo	0.3	32.2
Acre	0.2	0.2
Bahia	0	4.1
Paraíba	-0.1	0.9
Sergipe	-1.1	0.6
Rio de Janeiro	-1.6	10.2

Source: IBGE

Investments

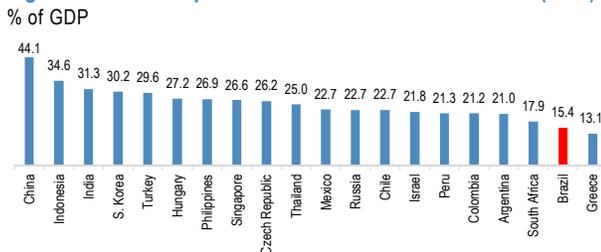
One of the central issues of the Brazilian economy is that there is too little investment and too much consumption, somewhat similar to the composition of the US economy. Investments ended 2018 accounting for 15.8% of GDP, around the same level of the past three years. Brazil has one of the lowest investment rates in the world, including all the major LatAm countries. It is interesting to know that Brazil never had an investment led growth cycle. The closest it got to that was during the commodity super cycle, when there were investment multiplier effects. One of the key weaknesses of the Brazilian economy is indeed that low investment curbs growth. Typically what happens is that when consumption rises, the economy overheats and the central bank has to tighten monetary policy to contain inflation. In other words, there is limited supply for the level of consumption in Brazil, which ends up generating inflation. Until investment expands, it will be difficult for Brazil to have a natural and sustainable growth rate that is higher than the current 2%. The common sense is that for Brazil to be able to grow at around 4% on a sustainable level, it would need to have an investment rate of at least 24% of GDP.

Figure 68: Gross Fixed Capital Formation - Brazil



Source: IBGE

Figure 69: Gross Capital Formation – Selected Countries (2018)

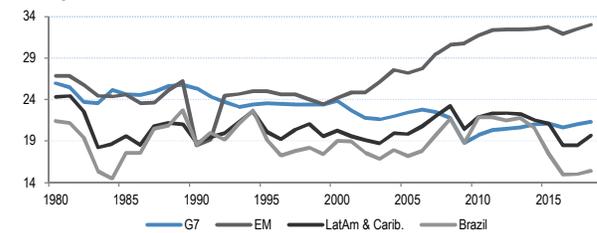


Source: World Bank

The issues surrounding Brazil's low investment levels are not new. Indeed, for the past 20 years, Brazil's investment rate has been below that of Latin America. In 2010, Brazil's investment rate reached 21.8%, the same as the average for LatAm, but that year was a one off,

driven by massive loans by public sector banks (BNDES especially), high commodity prices derived from the post-crisis Chinese stimulus package, and single digit interest rates for most of the year. After that, however, the regulatory framework in the country started to deteriorate, as the government started to tamper with taxes, stimulus and laws to try to maintain the same level of high growth observed during the commodity boom years. That was not effective in stimulating growth, on the contrary: the legacy was a deep recession which led investment to decline the lowest observed level since 1984.

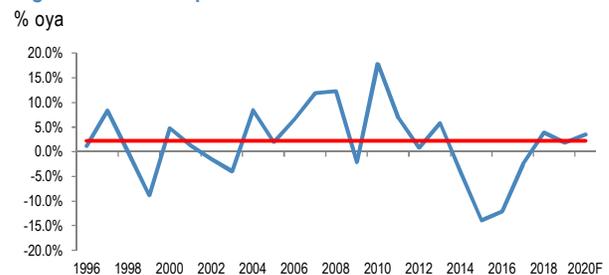
Figure 70: Investment Rate Comparisons by Major Country Groups



Source: IMF

In 2019, gross fixed capital formation in Brazil is estimated (JPM) to have increased by 1.8% y/y, following a 3.9% rise in 2018. From 2014 to 2017, gross fixed capital formation contracted by 32.8%. JPM expects that investment in 2020 will rise by 3.5%. As low as that sounds, this is higher than the average of the series (which starts in 1996), which stands at a low 2.2% growth rate.

Figure 71: Fixed Capital Formation

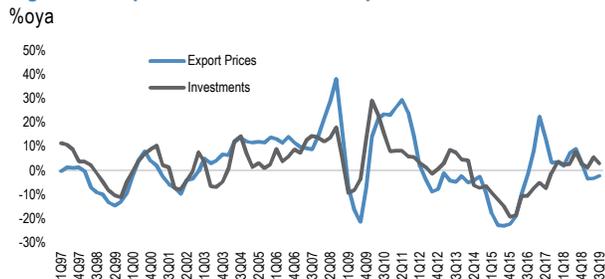


Source: IBGE

Why is Brazil's investment rate low? There are many theses on why investment is low in a country that supposedly has so much resources, both in terms of its large consumer market and its commodities. One could rightly advance the thesis that investment in Brazil only rises substantially in times of high commodity prices, when a large amount of foreign resources enter the

country. The below figure shows that there is a close correlation between export prices (mostly commodities) and investments.

Figure 72: Exports Prices vs. Fixed Capital Formation Growth

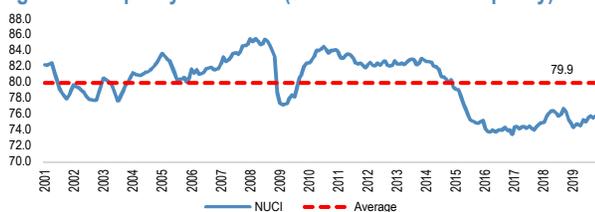


Source: Funcex, IBGE, J.P. Morgan.

During the military period, the investment/GDP ratio used to be higher than the current level, mainly due to industrialization and heavy public sector investment, which put a burden on Brazil's fiscal accounts. The macroeconomic instability of the 1980s and part of the 1990s curbed investment from the private sector at the same time that the public sector capability to invest was constrained by fiscal concerns. The commodity boom allowed investment to rise but its end, along with unorthodox economic policies, led the investment rate to plunge. The issue now is that the fiscal adjustment leaves no space for the government to invest, at the same time that the private sector is on the sidelines, waiting for more concrete signs of growth.

Capacity utilization indicators capture well the story of investment. Typically, Brazil operates at high capacity, mostly due to a lack of investment, not because of high growth. From 2004 to 2014 (except for the 2008 crisis period, when the country's industry suddenly stopped), utilization has been operating close to full capacity, always above the 80% level, even in periods of low growth. In 2Q15, capacity utilization fell below 80% for the first time since the 2008 global crisis, and has continued to fall since then, as result of weak growth. The conundrum at this point is that capacity utilization is so low that it should actually delay more investment, as there is excess capacity in most sectors.

Figure 73: Capacity Utilization (% of total installed capacity)



Source: FGV

Large Investment Programs/ Privatizations

The Brazilian government always has some sort of investment program in place: this century started with the **PAC** – Program for Growth Acceleration – under President Lula, which prioritized several infrastructure investments that would receive government funding and monitoring. The PAC was expanded around 2010 to include housing, water, urban mobility and others, right before the election which culminated in the victory of Dilma Rousseff. In 2012, the government announced a R\$470 billion logistics program whose main accomplishment was the privatization of a few local airports (GRU in São Paulo, for example). Many of the road concessions also took place, but at a discount of 70% from the asking price. In mid-2015, the government launched the **PIL** (Logistic and Infrastructure Program), a R\$190 billion infrastructure and logistics program.

Upon taking office in mid-2016, President Temer created his own investment program, this time the **PPI** (Investment Partnership Program). In essence, the government created a bunker within the Presidency that would coordinate all the moving parts of selected projects. The PPI survived the Temer administration and is still in place under the Bolsonaro government.

The **PPI** has successfully concluded 48 projects: 23 ports, 7 oil and gas, 5 airports, 4 hydro generation, 4 energy transmission, 2 in energy distribution, 1 highway and 1 in others sectors. Some of the most high profile are the privatization of CELG, the concession of airports (Salvador, Porto Alegre, Fortaleza, Florianopolis and a black of 12 smaller airports), and the North-South railroad.

At this point, there are 83 projects on the PPI program, the majority of them related to oil and gas, ports, roads. The privatization of Eletrobras is included in the program, along with the one of Casa da Moeda (the Mint), the lottery, the Infraero (airport administrator), studies for the privatization of the Santos port and the post office, among others. Within the highways, the most important is the concession of Dutra (which links Sao Paulo and Rio de Janeiro), but there are also important paths. On oil and gas, there are several oil field auctions taking place in 2020. It is also interesting to note that the Bolsonaro administration also included in the program the concession of some important tourist spots in Brazil such as Foz do Iguacu, Lençóis Maranhenses and Jericoacoara National Parks.

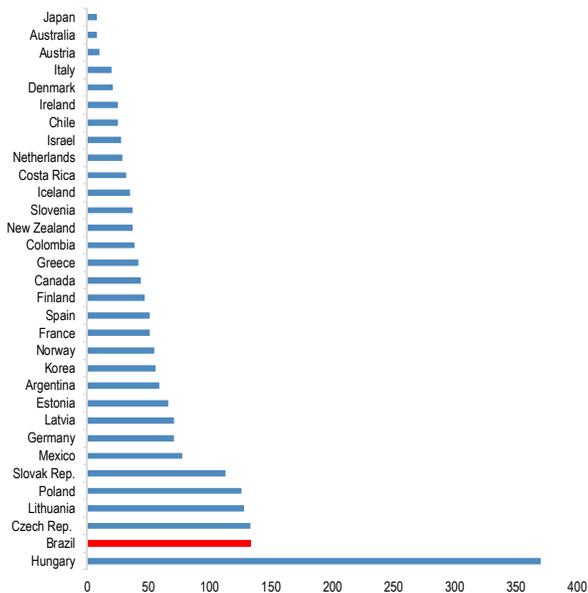
Figure 74: Investment Partnership Program



Source: PPI, J.P. Morgan

Privatizations/ Divestments: At the end of 2018, Brazil had 134 federal state owned companies. According to an OECD report produced at the end of 2015, Brazil has the largest numbers of SOEs within LatAm countries and the third largest within the sample (all OECD members and some aggregates).

Figure 75: # of SOEs at Selected Countries



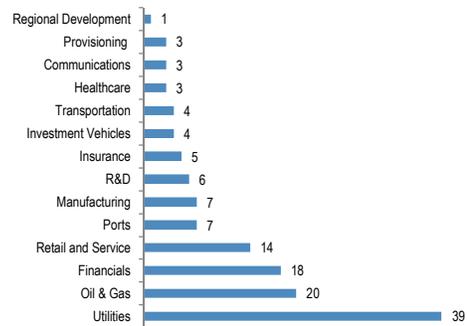
Source: OECD, J.P. Morgan

The study also shows that there were about 600K people employed in Brazilian federal SOEs (2015), second only

to France. Beyond the federal SOEs, there was about 283 SOEs at the local level. It is estimated that local entities employ about 750K people across 27 states. Last but not least, the federal government also owns 750,00 real estate assets that could be put up for sale. The government estimates that the total potential value of all divestible assets in Brazil are R\$990 billion.

Utilities is the sector with the largest number of federal state-owned companies (39). The most representative within the sector is Eletrobras and its subsidiaries. Oil and gas has 20 SOEs, led of course by Petrobras and its subsidiaries. Note that Petrobras also has several subsidiaries in utilities. The financial sector comes in third place, with 18 state-owned companies, among them Banco do Brasil, Caixa Economica Federal, BNDES, and their subsidiaries.

Figure 76: Federal SOEs Distribution by Sector



Source: Federal Government, J.P. Morgan

In 2H19, the government recalculated the number of state owned enterprises to include the related companies (*coligadas*). The current number stands at 632 for federal SOEs, which is 63 less than at the start of the Bolsonaro administration. The idea is that by the end of 2020, the government will be able to divest of 120 additional companies.

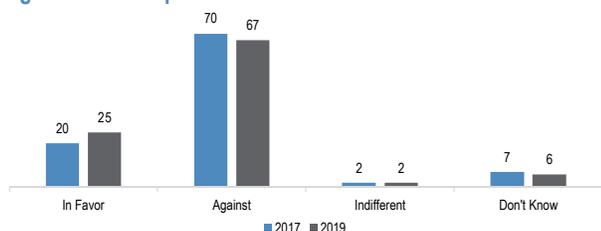
Table 24: Structure of Federal State Owned Companies

Union	Subsidiaries	Affiliates	Simple Part.	Total
Direct Shareholder			57	57
Banco do Brasil	26	46	9	81
Caixa + FGTS	5	24	16	45
Eletrobras	72	74	29	175
Petrobras	48	76		124
BNDES	3		100	103
Correios	1			1
Direct control	46	155	220	632

Source: Ministry of Economy, J.P. Morgan

One of the most celebrated nominations of the Bolsonaro administration was that of **Salim Mattar**, former owner and Chairman of Localiza. Mr. Mattar is known for being an advocate of liberal causes and was appointed to steer the privatization/ divestment effort of the federal government. This is the first time since the 1990s that the government has one person that is responsible for a privatization agenda. It is interesting to note that although most of the population remains against privatizations, the level of those who are in favor has increased somewhat over the past couple of years.

Figure 77: Poll: Opinion on Privatizations



Source: Datafolha, J.P. Morgan

The established goal of Mr. Mattar as Divestment Secretary (subordinated to the Economy Minister Paulo Guedes) for his first year in office was US\$20 billion in divestments (R\$ 76 billion at the FX at that time). By the end of November 2019, the divestment program had already reached the R\$100 billion mark, of which R\$51 billion in privatizations, R\$36.3 billion in divestments (which include asset sales from state owned companies), R\$13.2 billion in sale of natural assets, and R\$5.7 billion in concessions. The entire list is featured on the table on the right.

The divestment goal for 2020 was set at R\$150 billion. As in 2019, the total amount is likely to be helped a great deal by the sale of equity participation that state owned companies own. For example, at the start of 2020, the BNDES is selling about R\$10 billion of Petrobras ON share that it holds. The idea is that by the end of 2020, the BNDES will see its entire equity stake, today amounting to R\$110 billion (see Table 26). Beyond that, there are over two dozen companies that are included in the **National Privatization Program**, which include: **1) Energy:** Eletrobras and its distributors; **2) Natural Gas:** Gas companies in the states of Mato Grosso do Sul, Copergas and Rio Grande do Sul; **3) Sanitation:** 14 companies, especially in the North and Northeast of the country, where the sanitation requirements are more daring; **5) The national lottery;** **6) The National Mint (Casa da Moeda);** **7) Sepro and Dataprev,** two data tech companies.

Table 25: 2019 Divestment Results

Privatization	
	R\$bn
Petrobras	
Belém Bioenergia Brasil	0.03
BR Distribuidora	9.60
Pasadena (PBR Refinery)	1.70
Paraguay (PBR Fuel Distribution in Paraguay)	1.50
TAG (PBR Pipeline)	33.50
Liquigas	3.70
Eletrobras	
Amazonas Energia	0.00
CEAL	0.00
Uiapuru Transmission	0.10
Others Distribution Lots	0.88
TOTAL	R\$ 51 bn
Divestment	
	R\$bn
Union	
IRB	3.20
Caixa	
IRB	2.50
Petrobras	7.30
Banco do Brasil	3.10
Banco Pan	0.50
Banco do Brasil	
IRB	4.20
Neoenergia	1.80
SBCE	0.00
BNDESPar	
Linx	0.35
Petrobras	3.70
Vale	0.90
Fibria	8.10
Rede Energia	0.70
TOTAL	R\$ 36.3 bn
Natural Asset Sale	
	R\$bn
Petrobras	
Enchova and Pampo Field	3.20
Bauna Field	2.50
Maromba Field	0.30
Tartaruga Verde Field	5.10
Macau	0.70
Land fields from Ponta do Mel and Redonda	0.03
Pargo, Carapeba and Vermelho Field	1.32
Lagoa Parda	0.04
TOTAL	R\$ 13.2 bn
Concessions	
	R\$bn
Infraero	
Northeast Block	1.90
Southeast Block	0.44
Mid West Block	0.04
CODESP	
Terminal STS 20	0.11
Terminal STS 13 th	0.03
APPA Terminal PAR01	0.00
VALEC North-South Railway	2.70
CDP - Para Terminal	0.45
TOTAL	R\$ 5.7 bn

Source: Ministry of Economy, J.P. Morgan

Table 26: BNDESpar Equity Portfolio (3Q19)

Company	% of BNDES ownership	%of BNDES portfolio
Petrobras	13.9%	40.7%
JBS	21.3%	14.9%
Vale	6.1%	12.1%
Eletrabras	18.7%	8.0%
Suzano	11.0%	3.9%
Copel	24.0%	2.6%
Marfrig	33.7%	1.8%
AES Tiete	28.4%	1.1%
Cemig	5.5%	1.0%
Klabin	5.2%	0.7%
Tupy	28.2%	0.6%
EMBRAER	5.4%	0.6%
Light	6.3%	0.3%
Engie Brasil	1.0%	0.3%
GERDAU MET.	1.4%	0.3%
Copasa	3.5%	0.2%
Ouro Fino	12.3%	0.2%
MRV	1.6%	0.1%
Cyrela	1.3%	0.1%
CSN	0.6%	0.1%
Energisa	0.4%	0.1%
lochpe	2.0%	0.046%
TIM	0.2%	0.037%
OI	0.6%	0.028%
Spring Global	3.6%	0.017%
Coteminas	6.3%	0.015%
Renov a	5.0%	0.011%
Triunfo	5.1%	0.010%
Bombril	2.1%	0.008%
Gerdau Met,	0.2%	0.008%

Source: BNDES; J.P. Morgan

New Gas Market: One of Economy Minister Paulo Guedes' pet projects is the opening of the gas market in Brazil. The argument is that gas prices in Brazil are a lot higher than abroad because the market is monopolized by Petrobras. The idea is to open up the market for other players, which would reduce gas prices by 30 - 40%. The New Gas Market program was launched on 23 July 2019 and its ultimate objective is to contribute with the re-industrialization of the country by giving cheaper access to fuel sources. The idea is that large companies will purchase long term energy contracts at a fixed prices in auctions established by the federal administration. This opening will require significant infrastructure in terms of building gas pipes.

Sanitation: One of the poorest aspects of Brazil's underdevelopment has to do with access to water and sewage in the country. It is estimated that there are 57 million households without access to sewage, or 44% of total (PNAD 2018). As is the case with other social and macro indicators, the situation is much better in the South / Southeast than in the North/ Northeast. Sanitation today is one of the priorities of investment in Brazil. To make that a reality, Congress is in the process of voting a new sanitation bill that paves the way for greater private investment in sanitation companies and foresees universalization to be achieved by 2030 at the latest.

Figure 78: % of Households with Access to Sewage



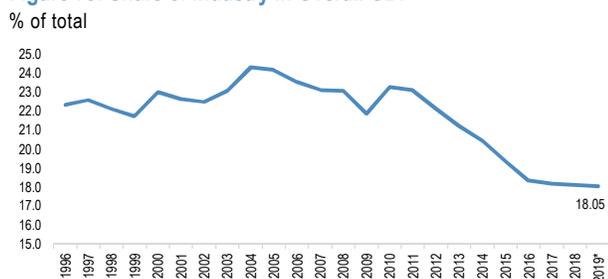
Source: aosfatoss.org, based on PNAD2018 data

Privatizations Legal Aspect: In 2019, the Supreme Court ruled that the government can sell the subsidiary of SOEs without Congressional approval, but it needs approval to sell the main companies, such as Banco do Brasil, Petrobras, Eletrabras and Caixa Economica Federal. President Bolsonaro has already determined that other than Eletrabras, the other companies aforementioned will not be subjected to privatizations. Beyond that, the government is now seeking Congress to approve a more expedited procedure for the privatization of SOEs' subsidiaries. The so called "fast-track" would allow for the elimination of several bureaucratic steps and speeding up of legal decisions. This would be especially important for larger subsidiaries, which are usually more scrutinized. Moreover, there is already a type of legislation that allows for a more simplified sale process for companies that have gross revenues of less than R\$300 million/ year.

Industry

Industry represented 18.1% of GDP in Brazil in 2018, the lowest level within the current GDP methodology, which starts in 1996. Nearly 54% of total industry corresponds to manufacturing, while construction corresponds to 18% of total. Utilities account for 14% and mineral extraction (includes oil) is less than 14%. The 2015/2016 recession pressured industrial activity, and the first signs of recovery took place in 2Q17. Since then, the data has been in positive territory but at a tepid pace. The recovery started with the auto industry but it is slowly becoming more widespread. As in other countries, the share of industry in GDP has been declining over the past few years (18% as of 3Q19), with a recent peak of 22.1% in 2004.

Figure 79: Share of Industry in Overall GDP

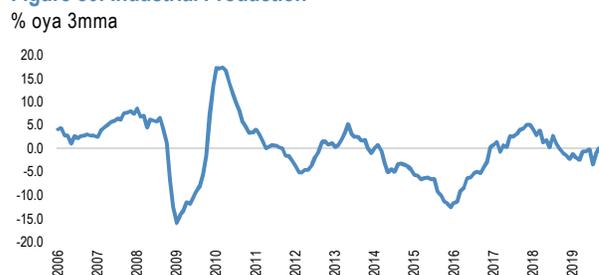


Source: IBGE

The deep industrial contraction should be mostly attributed to a weakness in manufacturing. Brazil is not the only country where a sharp de-industrialization has taken place. Other than in Asia, most emerging markets also de-industrialized over the past decade. However, it appears that the process in Brazil was a lot deeper. The strong exchange rate that was in place from 2007 to 2013 and the flood of Chinese goods to the country over the past 10 years are the obvious culprits. However, taxes are far too complicated and a real obstacle to keep industry in business, as well as the fact that the cost of capital is also prohibitive, albeit it's in a declining trend, given the low levels of the Brazilian CDS and the macro reforms momentum.

In 2019 industrial production (y/y comparison) stood in negative territory (-1.1%/y). This contrasts with the positive result seen in 2018 of 1.1%/y. In 2019, the sentiment was mixed. In December and November, IP plunged 0.7%/m/m and 1.2%/m/m, curbing some of the enthusiasm with recent data following three positive figures of IP expansion on a monthly basis.

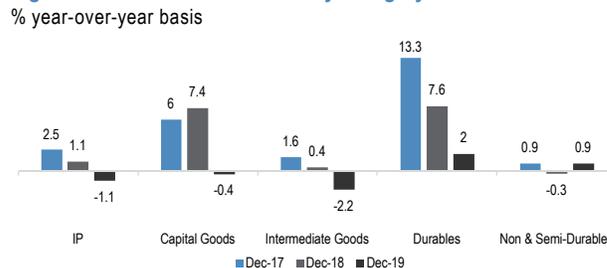
Figure 80: Industrial Production



Source: IBGE.

Within the index breakdown, intermediate goods led the negative performance on a year over year basis through decreasing 2.2%/y, on the back of the lackluster performance in the mining activity (-9.7%/y), given the Brumadinho dam burst in the beginning of the year. On the other hand, durable goods increased the most (2%/y), mainly driven by autos (+2.1%/y). Capital goods is still very weak and declined 0.4%/y in 2019, a tepid result that doesn't bode well for capex outlook going forward.

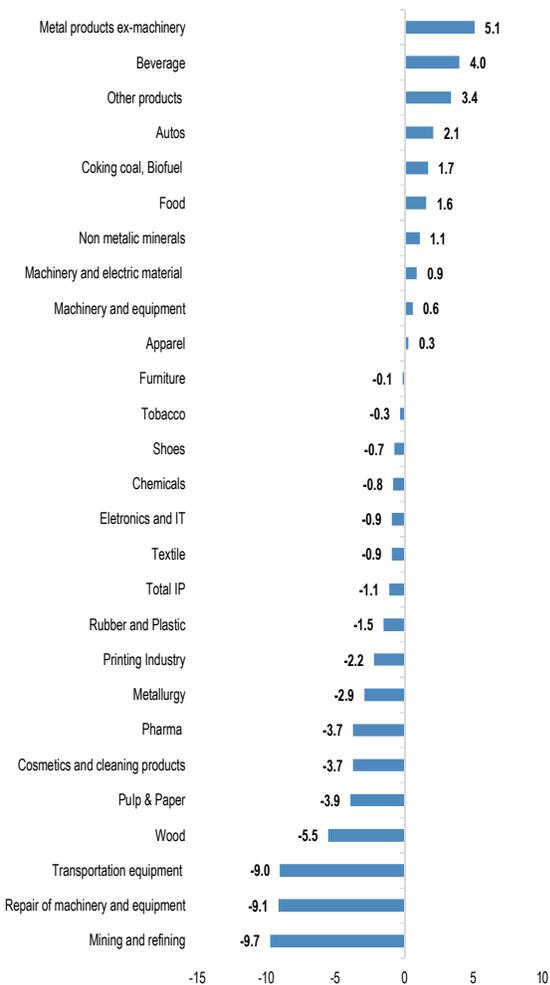
Figure 81: Industrial Production by Category



Source: IBGE.

Looking at the actual sector level, the best performers in 2019 have been metal products ex-machinery, beverage and other products. On the other extreme are mining & refining and repair of machinery and equipment.

Figure 82: Industrial Production by Sector
 %, 2019 year-over-year basis



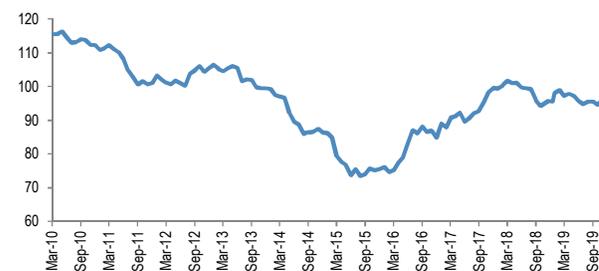
Source: IBGE

The sharp decline in mining can be attributed to a 16% y/y (forecast) decline in mining extraction from Vale on the back of the Brumadinho tragedy at the start of the year. That was partly compensated by an increase of 4% in Petrobras production.

Industrial business confidence: In 2015 and 1H 2016, the dismal macro performance combined with a deteriorated political scenario led business confidence to reach the weakest levels in the historical series, with the exception of 4Q98 when the Russia crisis hit the Brazilian shores. In the beginning of 2016, confidence jumped from the level of ~75 to ~85 in a short period of time. It gave back some of the gains but resumed its expansion up to April 2018 (101). However, the data seems to lose traction since then and have been flat, showing some improvement at the end of 2019 (4%/y/y).

Despite the improvement, the indicator remains on the negative level (below 100).

Figure 83: Industrial Business Confidence
 Index, seasonally adjusted



Source: FGV

Industrial activity in Brazil is pretty much concentrated in the Southeast region, mainly in the state of São Paulo. The region is an industrial center marked by diversity and production volume. The industry in the Southeast is technologically more sophisticated than in the other regions and thus attracts a lot of multinational companies, mainly because of its more specialized labor market and its strong consumer market. In the South, industry has an important linkage to agricultural production. The region is also an important producer of intermediate goods, complementing Southeast production. The Northeast industry is more focused on agribusiness. The region has been evolving lately but still suffers from the South-Southeast competition. In order to attract more industries to its states, the North and especially the Northeast have been offering attractive tax subsidies. Over the past few years, many auto makers have been setting up large plants in the Northeast: Fiat, Jeep, a Ford engine plant, among others. Although lower taxes are the main reasons behind the development of the Northeast industry, it is important to highlight that the infrastructure of the region is improving, especially related to ports, and that labor is somewhat cheaper (income per capita in the region was 35% below the national average in 2018).

Consumption

Consumption was perhaps the most compelling story in Brazil before the recession and looks like it will be the driver for growth over the next couple of years, at least. From 2004 to 2010, the intensive migration of lower-income Brazilians to the middle-income segments brought to the market more than 40 million new consumers who were able to buy things that were out of their consumption universe before, especially as they had access to credit. During the crisis that started in 2013, however, the tide turned: credit conditions became a lot tighter, unemployment rose, inflation eroded real incomes. The unthinkable happened, which is that household consumption printed negative year on year readings in both 2015 and 2016.

Figure 84: Household Consumption

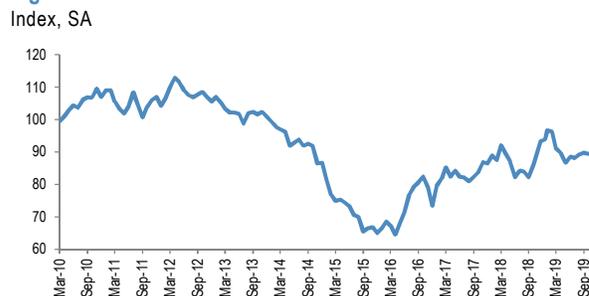


Source: IBGE

Despite all that, consumption actually posted a recovery in the 2Q17 GDP reading, rising by 1.6% versus the same period in 2016. This was the first positive figure on yearly basis after 9 consecutive declines and has been in positive territory since then. Household consumption, which represented as of 3Q19 66% of total GDP, was the one of the main highlights within the demand GDP side, which led to a GDP boost in 3Q19 of 0.6%q/q.

- **Temporary boost:** In part, the consumption has another catalyst based on the release of over R\$28 billion in FGTS funds in 2019 and further R\$12 billion in 2020. Nonetheless, the money started to be withdrawn in the beginning of September 2019. A larger impact is expected in the 4Q19.
- **Structural improvement:** The decline in inflation has allowed for consumption to pick up as it freed up disposable income, even though unemployment remains high (albeit lower than peak). Also, there was some tentative recovery in credit to consumers, which has also de-leveraged some on the back of lower interest rates.

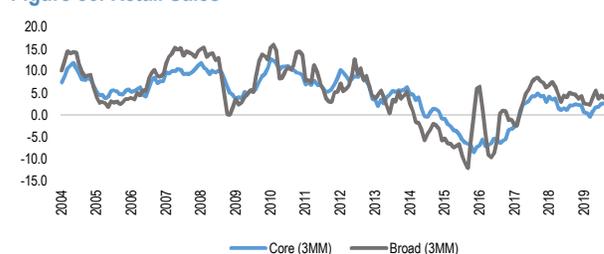
Figure 85: Consumer Confidence



Source: FGV

Retail sales: In 2019, the narrow definition of retail sales, which excludes autos and construction material, increased by only 1.77%, which is lower than the 2.48% registered in December. However, the broad reading, which includes autos and construction material advanced by 11.2%, after a strong 16.2% reading in 2018.

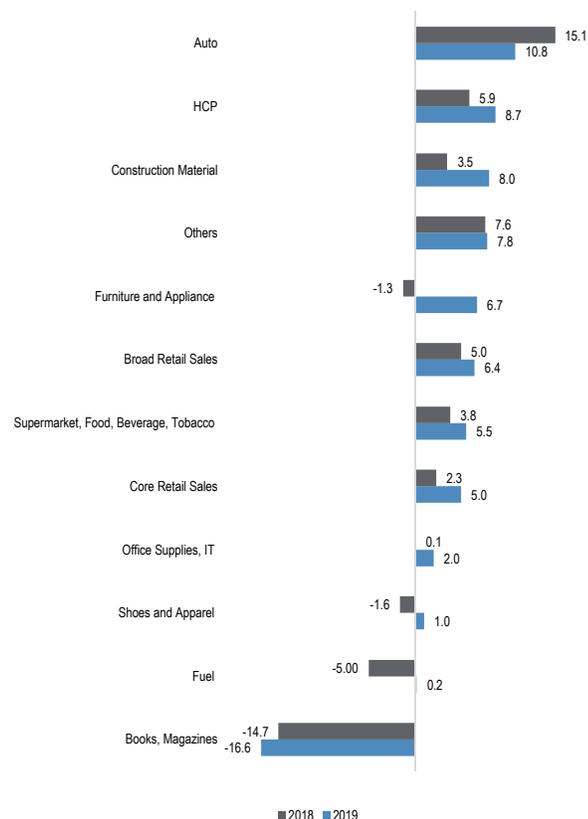
Figure 86: Retail Sales



Source: IBGE.

In our view, retail sales are being driven mostly by categories that are more associated with credit than with income. It is true that the decline in inflation has helped to increase disposable income, but the category breakdown of the retail sales data indicates that the ones that grow the most are the ones that consumers buy on credit, such as autos, appliances and furniture. It is also important to mention that the release of a small portion of the FGTS accounts (R\$500/ person at least) has allowed for some lift off in consumption during 2019.

Figure 87: Retail Sales by Category (y/y)



Source: IBGE

Brazil has one of the largest consumer markets in the world, ranked 10th out of 141 countries by the World Economic Forum. The country ranked 8th in the 2018 report. The top five markets by size are China, the US, India, Japan and Germany. Brazil has the largest domestic market in Latin America.

Table 27: Ranking of Domestic Market Size - Brazil Is 8th

Rank	Country	Rank	Country
1	China	9	France
2	US	10	Brazil
3	India	11	Mexico
4	Japan	13	Turkey
5	Germany	34	Argentina
6	Russia	37	Colombia
7	Indonesia	46	Chile
8	U.K.	49	Peru

Source: World Economic Forum

The **auto market**, despite its importance and huge size in Brazil, is still underpenetrated relative to developed countries. In previous years it was rising fast, but this is not the case anymore. From 2005 to 2015, the Brazilian fleet expanded by 81.3% and today is the 7th largest in the world, from the 8th one year before.

Table 28: Brazilian Auto Fleet: 7th Largest

Country	2005	2008	2011	2014	2015
U.S.	237.7	249.8	248.9	258.0	264.2
China	31.6	51.0	93.6	142.4	162.8
Japan	75.7	75.5	75.5	77.2	77.4
Russia	31.2	38.3	42.9	50.5	51.4
Germany	49.2	44.2	46.0	47.6	48.4
Brazil	23.0	27.5	34.7	41.7	42.7
Italy	38.9	40.9	42.1	41.9	42.2
France	36.3	37.2	38.1	38.4	38.7
U.K.	34.4	35.5	35.6	37.1	38.2
Mexico	21.6	28.2	32.0	35.8	37.4

Source: Anfavea

Brazil is still a laggard in terms of vehicles per capita. There are 4.9 inhabitants per vehicle in Brazil, while in Mexico there are 3.5, and in the US there is almost one vehicle per person. But the progress made in recent years is admirable, as the rate dropped from 8 inhabitants per vehicle in 2005.

Table 29: Inhabitants per Vehicle

Country	2005	2008	2011	2014	2015
U.S.	1.2	1.2	1.2	1.2	1.2
Italy	1.5	1.5	1.4	1.5	1.4
Japan	1.7	1.7	1.7	1.6	1.6
Spain	1.6	1.6	1.7	1.7	1.7
U.K.	1.8	1.7	1.7	1.7	1.7
Germany	1.7	1.9	1.8	1.7	1.7
S. Korea	3.2	2.9	2.6	2.5	2.4
Argentina	5.7	4.7	3.7	3.1	3.2
Mexico	5.0	3.8	3.6	3.5	3.4
Brazil	8.0	6.9	5.7	4.9	4.8

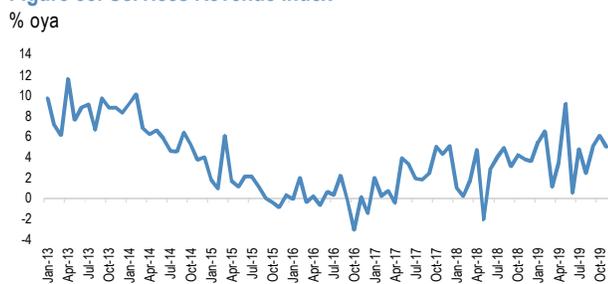
Source: Anfavea

Digital Penetration: According to the IBGE, 74.9% of households had access to the internet in 2017, up from 69.3% in 2016. The expansion on rural areas has been twice as fast as in urban areas. Among people who are 18 to 24 years old, is 88%. Of those that use internet, 97% do so on a smart phone, and 56.6% on a computer, 16.3% on a TV, and 14.3% on a tablet. Moreover, 95.5% use it

to send and receive text and image on apps such as WhatsApp. Overall, there are 78.2% of the population that have a mobile phone for personal use.

Services: Services make up over 60% of Brazil’s GDP and this share has been expanding. Services increased by 4.5% y/y, sa in 2019 (revenue terms). In 2018, the category jumped 2.7%/y/y, sa. In recent years Brazilians have been switching from goods to services. It is no wonder that one of the most relevant sources of inflation in recent years has been services. Indeed in the recent deflationary period, the price of services was one of the last categories to slow down.

Figure 88: Services Revenue Index



Source: IBGE

The caveat of the index is that it is in nominal terms, but even so, one can observe a recovery trend also on the categories breakdown.

Table 30: Services Index, Breakdown

% change year-over-year	Dec-16	Dec-17	Dec-18	Dec-19
Hotel, restaurant, others	1.6	-1.1	0.2	2.6
IT and Telecom	-0.1	-2.0	-0.5	3.3
Administrative	3.1	-7.3	-1.9	0.7
Transportation	1.9	2.3	1.2	-2.5
Others	-1.4	-8.9	1.6	5.8

Source: IBGE

Consumption allocation: According to a survey conducted by IBGE, called Pesquisa do Orçamento Familiar (POF), the most representative item in the consumption basket of an average family in Brazil is housing. On average 36.6% of total consumption is destined for housing, which encompasses rent, furniture, appliances, water, gas, electricity and taxes. The second main item is transportation, composing 18.1% of total consumption, followed by food, responsible for 17.5% of consumption expenses. These three main items correspond to 72.2% of total consumption. The survey shows some share increase in the housing segment, since the last survey 2007/2008. However, transportation and foods lost share in the same period.

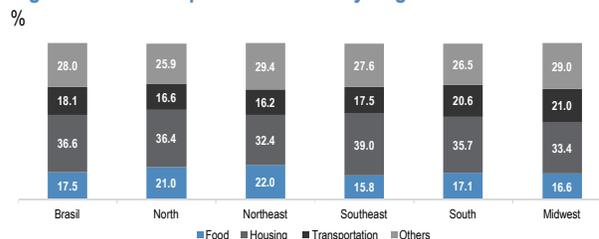
Table 31: Consumer Spending Breakdown as a % of Total Household Consumption (2018)

Items	%
Housing	36.6
Transportation	18.1
Food	17.5
Health Care	8
Education	4.7
Apparel	4.3
Hygiene and Personal care	3.6
Others	3
Culture	2.6
Personal Services	1.3
Smoke	0.5

Source: POF – IBGE.

Also, it is interesting to note that consumption is allocated differently among the regions. The poorer the region, the higher the share of food consumption in the total expenditure basket, as resources are scarcer. In the North, for example, food consumption represents 21% while in the Northeast this percentage is 22% of total household consumption.

Figure 89: Consumption Allocation by Region



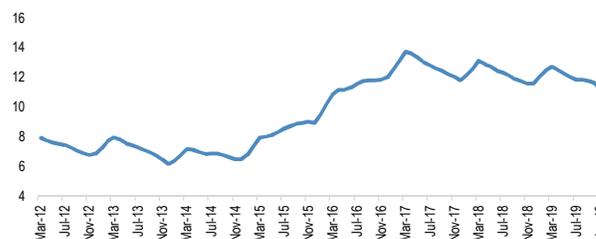
Source: POF – IBGE.

Labor

The Brazilian unemployment rate has been at double digits since the crisis in 2015, and should take more time to recover to single digits. The puzzle of the Brazilian labor market was one of the most discussed issues of the past few years. In 2008/09, companies that fired workers quickly hired them back as it became evident that a strong rebound was going to take place and there was a shortage of skilled workers. Indeed, in 2010, Brazil grew by 7.5%, the strongest level in recent history. After that, growth started to go downwards. In the first couple of years, companies were pretty much hoarding workers: they didn't want to fire them on the view that the economy was going to turn around. They remember well the boom years when it was very difficult to find workers, especially skilled ones. Still, even as companies started to fire workers (2013), the level of unemployment was not climbing. This is because the size of the labor force was not growing either. In other words, the number of people who were looking for jobs didn't increase much. There are several thesis on why this was the case but some of the more accepted ones are that household incomes were high enough to allow college-aged people to delay entrance in the labor market. Also, mothers decided to stay home to take care of their children. One way or another, there wasn't a rush to find jobs. However, this started to change severely once the economic slowdown turned into a true recession.

Since the end of 2013 it started to become evident that job creation was decreasing and in some months, it was negative. The manufacturing industry was the precursor of this move, but it was followed by construction and to some extent retail and services. The payroll started to decline and the unemployment rate also followed. Still, the jobless levels were still acceptable. It is striking how quickly the labor market deteriorated from 2015 onwards. Not only did people start to lose their jobs in greater numbers, but that forced those who were at home or outside of the labor market to also try to find a job, to help the falling family income. The result was that at a time of job restriction, the labor force was expanding, thus leading to higher rates of unemployment. A very incipient recovery of the labor market started in 2Q17, after peaking at 13.7%. Still, improvement has been slow and the unemployment rate has closed 2019 at 11%.

Figure 90: Unemployment Rate (%)



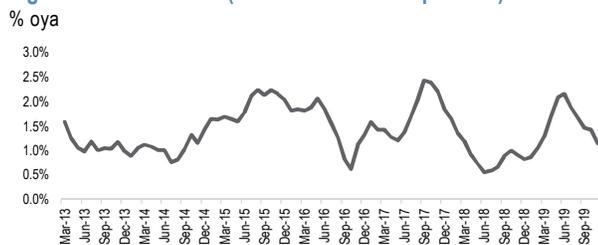
Source: IBGE

Labor market measures

Unfortunately, there are no long data series on unemployment in Brazil. The methodology has changed a couple of times over the past 20 years and this has led to a discontinuation of the series. There are two main labor market measurements: (1) The household survey is represented by the “PNAD continua”: It replaced the old PME (monthly employment survey). The PNAD is a wider household survey, encompassing 3500 municipalities across all Brazilian states (PME covered 6 metropolitan areas). The results refer to data collected in the prior three months rolling. There are monthly and quarterly releases. It is considered a more thorough household survey than the previous PME. However the available data goes back to 2012 only. (2) The payroll number, known as CAGED, is released by the Labor Ministry and shows how many people were hired and fired in the formal labor market, that is, those that have been registered with the social security institute. The data goes back to January 1995.

The household survey: For a few years up to 2014, the big puzzle in Brazil was why the country was undergoing an economic slowdown and unemployment was declining. The answer was that the labor force was shrinking for different reasons: people were postponing their entrance to the labor market as household wages were robust, many started to go to college, women stayed home as it was cheaper for them to take care of their kids instead of hiring outside help. Also, there was an estimated contingent of 5 million people aged 18 to 25 years old that didn't study or go to college (what became known as the generation “neither nor”). The decline in the labor force led to a decline in the unemployment rate, even when economic activity was starting to show the first signs of a slowdown. In 2019, there were two different moments in terms of the labor force. During the first half of the year it increased a lot, and it fell on the second half of the year.

Figure 91: Labor Force (Economic Active Population)

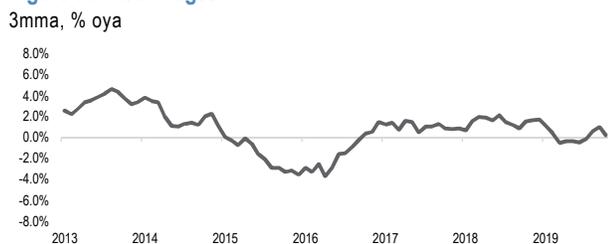


Source: IBGE

The increase in the labor force in 1H led the unemployment rate to almost not register any level of improvement, even though the level of jobs being created also improved. On the other hand, the labor force declined in 2H, but employment growth also decelerated. In the end, the recent trends allowed the unemployment rate to decline more rapidly by the end of 2019. All in all, the unemployment rate closed 2019 at 11%, compared to 11.6% at the end of 2018 and 11.8% at the end of 2017. According to the government, the unemployment rate should reach one digit only in 2022.

Real wages, as measured by the PNAD Continua, after suffering during the recession (2015-until mid-2016), started to experience an upward trend, mostly due to a decline in inflation and also the stickiness of wages on the formal market. All in all, in 2019 real wages increased 1.2%/y relative to 2018 and correspond to R\$2.332/month.

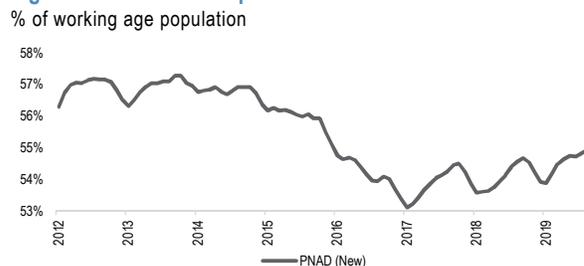
Figure 92: Real Wages



Source: IBGE

Occupation rate: The occupation rate is the percentage of people working relative to the size of those who are at working age. The occupation rate bottomed in 2017 (53%) after the crisis and started an upward trend reaching characterized by ups and downs on the data. The latest data shows that it recovered some ground and is running at 55.1% in November 2019.

Figure 93: Level of Occupation



Source: IBGE

At the end of 2019, there were 94.4 million people in Brazil with a job, the majority of which were working as formal workers in the private sector (33.4 million people, an increase of 1.4% y/y). In comparison, there were 11.8 million informal workers in the private sector (up 1.1% y/y). About 24.5 million people were self-employed workers and 6.3 million were domestic workers (housekeeping, etc). There were 11.6 million public sector workers.

Table 32: Occupation Position

	Millions of people	% Y/Y
Private sector - formal	33.7	1.4%
Self-Employed	24.5	3.3%
Private sector - informal	11.8	1.1%
Public Sector	11.6	-0.7%
Domestic worker	6.3	1.5%
Employer	4.4	0.1%
Family Helper	2.0	-7.0%

Source: IBGE; J.P. Morgan.

Most of those who have a job in Brazil work in the service sector. Commerce and auto services lead, with 17.8 million people at the end of 4Q. The sector is followed by public administration, health, education and defense, which make up 16.5 million people.

Table 33: Occupation Activity

	Millions of people	% Y/Y
Commerce, auto services	17.8	0.7%
Public services, health, education, defense	16.5	0.6%
Industry	12.1	2.7%
Banking, IT and Real Estate	10.5	2.5%
Agriculture, Cattle	8.3	-1.5%
Construction	6.9	2.0%
Domestic Services	6.4	2.4%
Lodging and Restaurant	5.6	3.4%
Other Services	5.0	2.5%
Transportation	4.9	5.3%

Source: IBGE; J.P. Morgan. Note: as of November 2019

CAGED – The Payroll Data: The CAGED data records the total number of (formal) payroll additions and subtractions on a monthly basis. This data is taken from information sent by companies to the Labor Ministry about jobs created and terminated each month. The CAGED is a reliable barometer for the market, once the high number of net hires is correlated to good performance of economic activity, much like in the US. For example, when in 2010 Brazil grew by 7.5%, more than 2 million net new jobs were created, a record high. In 2016, on the other hand, with the economy contracting 3.6%, job destruction amounted to 1.4 million workplaces closed. After three consecutive years of negative readings, 2018 and 2019 showed a rebound on net formal job creation of ~1.2 million.

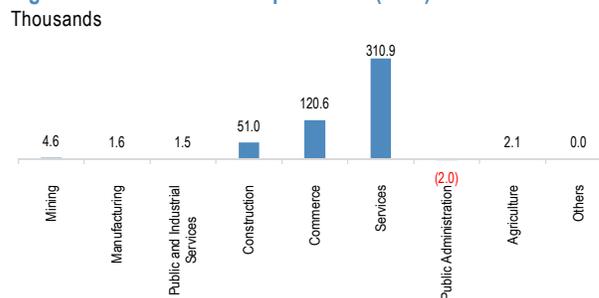
Figure 94: Net Formal Job Creation (Hires minus Fires)



Source: Labor Ministry. Note: Until November 2019

The breakdown of the data (non-seasonally adjusted) indicates that the payroll varies enormously within sectors. Services has added 310K jobs in 2019 (up to November), followed by commerce (121K) and construction (51K). The only sector to post a contraction shed 2K jobs in the period. The only sector to post a contraction in 2019 was public construction (2K).

Figure 95: Net Job Creation per Sector (2019)

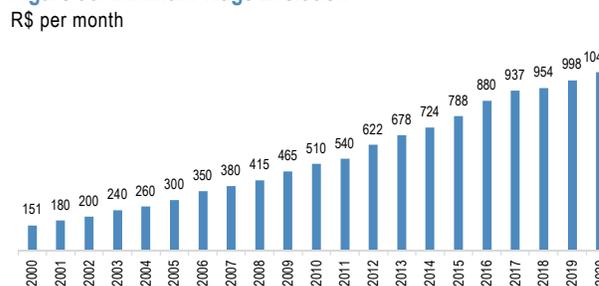


Source: CAGED. Note: Until November 2019

Minimum wage

Since 1995, the minimum wage has grown 945%. In real terms, this is a very significant evolution, considering that in the same period inflation rose 173%. The minimum wage was always a much politicized issue and in the late 1990s one of the most common claims of workers and unions was a minimum wage equivalent to US\$100/ month. Now, the minimum wage is equivalent to around US\$250/ month.

Figure 96: Minimum Wage Evolution



Source: Portal Brasil

The Dilma administration stipulated a formula for the fixing of the minimum wage. It establishes that the minimum wage is readjusted by the prior-year inflation plus the level of GDP growth from two years back, if positive. This logic of readjustment should occur at the beginning of every year. This rule expired in 2019 and was not renewed by the President Bolsonaro administration. From 2019 onwards the minimum wage will be adjusted considering only the inflation in the previous year, without the addition of level of GDP growth two years back. It is estimated that about 70% of wages are readjusted taking into account the minimum wage.

An important aspect of the minimum wage is that there are a series of government obligations that are tied to it. An increase in the minimum wage immediately triggers a chain of higher government spending. It is estimated that each R\$1 increase in the minimum wage triggers R\$325 - 375 million in extra government spending as the

minimum wage is tied to the following benefits: 1) Social security: The floor of social security benefits is the minimum wage, so once it goes up, so does government spending to finance these benefits (about 65% of private sector retirees receive one minimum wage as monthly retirement payment). 2) Wage bonus: The government gives one minimum wage a year to all formal sector workers who are paid up to two minimum wages a month. 3) Elderly and disabled benefit: Elderly and disabled people who have an income of less than one minimum wage per month receive an extra minimum wage every month from the government.

Labor Reform:

In July 2017 the government approved a long overdue labor reform. The labor laws in Brazil are governed by laws that were established in the 1940s and are very strict, not allowing for any freedom of negotiation between employer and employee. The result is that Brazil is the world record holder of labor lawsuits. Not only that, but the labor courts have a bias in favor of the employee and this ends up being a relevant cost for companies. Still the large amount of regulation ends up making the Brazilian worker extremely uncompetitive from a remuneration point of view. It is estimated that the cost of a laborer to the company is two times the worker wage. This is because it is mandatory to pay a bonus for vacation, a 13th wage in December, not to mention the high payroll taxes and the FGTS, which is a compulsory retirement contribution of 8% made by the employer.

Given this context, it was with great relief that Brazilian companies received the Labor Reform. It basically introduced significant flexibility in labor relations, which should end up making it cheaper to hire and also decrease the level of lawsuits. The new bill established 13 points that can be freely negotiated between employer and employee such as vacation, hours worked, etc. Also, it regulates outsourcing, which until now was not possible for the main line of work in a business (for example, a bank could not outsource a teller). Last but not least, the reform extinguished the mandatory union contribution. This mandatory tax is equivalent to one day of work of every employee in the country and feeds the unions, even if one doesn't want to be formally unionized.

Two years after the reform was approved, the results are mixed. The number of labor complains and requests for indemnity at the labor court decelerated due to the change on the regulation, as the employee has to pay for all the costs in the process in case he loses the action. According to the government, the lawsuits dropped 27.3% between 2017 and 2018, coming from 3.4 million lawsuits to 2.5 million. There was a significant drop on

the mandatory contribution for unions. In 2017, when the union contribution was mandatory, the amount collected was of R\$3.6 billion. In 2018, the first year after the labor reform, the collection dropped by 90%, to R\$500 million, and should be below R\$100 million in 2019. On the flipside, the reform did not create the jobs expected at the implementation, even though the number was positive in the past two years.

Table 34: Main Aspects of Labor Reform

Negotiations between employers and employees will prevail over the labor laws for definition of vacation periods, working hours banks, career planning and wages
Creates new types of labor contracts: irregular intervals, with workers paid by hours worked and remote work/home office opportunities
Working hours may be negotiated up to 12 hours/day and 48 hours/week
Vacation division in up to 3 periods of no less than 5 days
Part-time work increased to 30 hours/week, with the possibility of 6 extra hours for less than 26 hours/week
End of the mandatory contribution to unions for non-unionized workers
Termination of contract will not have to be overseen by union
Workers who terminate contract may not go to the Labor Justice
Time limit of 8 years for lawsuits in Labor Justice
Allows for consensual termination of labor contract, with the payment of fees
Forbids a company from rehiring an employee fired by that same company as outsourced

Source: Lower House, CLT; J.P. Morgan

Green-Yellow Program: The program was launched in November 2019, by the Bolsonaro administration. The objective is the creation of 4 million jobs between 2020 and 2022. Low income young people aged between 18 and 29 that never had a formal job are the main focus of the program. The goal is to foment the market through the reduction of hiring costs for the companies. The main highlights of the measure is to provide (1) payroll tax cut (lowering the cost of hiring), (2) reduction of the FGTS fine (in case the employee is dismissed, the employer has to pay 40% for the FGTS, with the new measure, this ratio would be 20%), (3) social security contribution reduced from 20% to 0%. Still, these measures are valid only for new job opening, so the employee cannot dismiss an employee and hire another person through this program to exercise the same function. The program also allows labor journeys on Sundays and holidays and established individuals agreements to decide the number of hours to be worked.

There is also another sphere in the program, out of the labor market, which is an incentive to microcredit for low income segment, allowing *fintechs* to lend to individuals and small companies. The program was presented as a provisional measure (MP) and is in place since it was announced by the president, pending approval of congress.

Inflation

History

Inflation performance over the years tells us a lot about Brazil's history. Until 1994 the country's economy suffered periods of extremely high inflation, which were only overcome by the introduction of the Real Plan and the Brazilian Real (R\$), the current currency. Today, Brazil works with the inflation-targeting system to keep inflation under control.

Inflation-targeting system: The inflation-targeting regime was adopted in 1999, giving the central bank the responsibility of conducting monetary policy. The BCB's objective is to reach the center of the inflation target and maintain financial stability. The target is determined by the National Monetary Council (CMN), which is composed of the Economy Minister, the Finance Secretary and the Governor of the Central Bank. The IPCA is the inflation index that benchmarks the process. The CMN sets not only an inflation target but also an interval tolerance band for inflation. This particular CMN meeting usually takes place in June of each year, and its members set the target for two years after (for example, in 2018 the target for 2020 was set at 4%). In 2019, the CMN also started to establish the target for three years after as a way to introduce more predictability to the system, lowering 25bps of the target to 3.75% in 2021 and 3.5% in 2022 with tolerance intervals of 1.5% above and below.

Table 35: Inflation-Targeting System – History

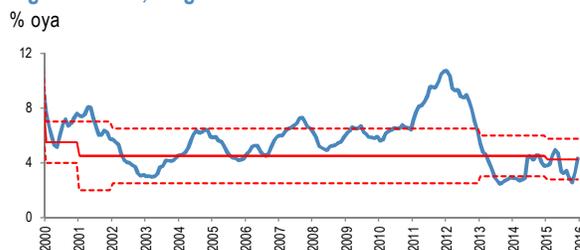
Year	Target	Tolerance Interval (%)	IPCA %oya
1999	8.0	6.0 - 10.0	8.94
2000	6.0	4.0 - 8.0	5.97
2001	4.0	2.0 - 6.0	7.67
2002	3.5	1.5 - 5.5	12.53
2003 ¹	3.3	1.25 - 5.25	9.30
	4.0	1.5 - 6.5	
2004 ¹	3.8	1.25 - 6.25	7.60
	5.5	3.0 - 8.0	
2005	4.5	2.0 - 7.0	5.69
2006	4.5	2.5 - 6.5	3.14
2007	4.5	2.5 - 6.5	4.46
2008	4.5	2.5 - 6.5	5.90
2009	4.5	2.5 - 6.5	4.31
2010	4.5	2.5 - 6.5	5.91
2011	4.5	2.5 - 6.5	6.50
2012	4.5	2.5 - 6.5	5.84
2013	4.5	2.5 - 6.5	5.91

2014	4.5	2.5 - 6.5	6.41
2015	4.5	2.5 - 6.5	10.67
2016	4.5	2.5 - 6.5	6.29
2017	4.5	3.0 - 6.0	2.95
2018	4.5	3.0 - 6.0	3.75
2019	4.25	2.75 - 5.75	4.31
2020	4.0	2.5 - 5.5%	3.7
2021	3.75	2.25 - 5.25%	3.75
2022	3.5	2.0 - 5.0%	NA

Source: Banco Central do Brasil; ¹A bill of Jan-21-2003 established adjusted target of 8.5% for 2003 and 5.5% for 2004. JPM forecast for 2020 and 2021.

Deterioration (2010-15): The inflation target system has worked well for Brazil, but from 2010 onwards the monetary authority deviated somewhat from trying to reach the center of the band, which was widely understood to be the central bank's goal. Instead, the BCB gave itself significant latitude within the tolerance bands. Political scrutiny over administrated prices was wildly used to keep inflation artificially under control. To this matter, the government capped utility prices, gasoline prices, and even some food items. By 2015 it became evident that the strategy was costly and did not lead to lower inflation. Indeed, CPI in 2015 reached 10.67%, much higher than the upper tolerance level of 6.5%. This partly happened because the government started to release price freezes. Also, the BRL depreciated over 40% in 2015, contributing to the rise in prices (every 10% depreciation of the BRL leads to a ~55bp rise in inflation over 12 months, according to J.P. Morgan economists). Note that Brazil was experiencing high inflation even in a period of recession, thus a real stagflation.

Figure 97: CPI, Target and Bands



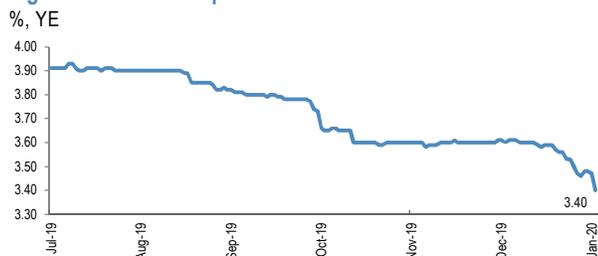
Source: IBGE.

Regaining confidence (2016-18): The appointment of Ilan Goldfajn to the central bank following the impeachment of President Dilma started the process of confidence rebuilding in the inflation targeting system, and this became quickly evident with the retrenchment of inflation expectations. Higher confidence in the system, combined with appreciation of the BRL as well as the

continued economic recession, has put into motion a disinflationary process. Inflation in 2016 closed the year at 6.29%, a 4.4% decline from 2015 and within the tolerance limits of the inflation target for the first time in two years. In June 2017, the CMN set inflation targets of 4.25% for 2019 and 4% for 2020 in a move to reinforce the credibility and predictability of the system. The disinflationary process was a product of a stronger BRL, lower food inflation and the recession in 2015.

Inflation in line or below targets: Inflation has been at or below the target since mid-2016 allowing for a record drop in interest rates, and the slow rebound of the economy. The very large GDP gap is partly due to the disinflation process, as well as tame food and energy prices. In any case, it is interesting to observe that inflation expectations have been consistently below the inflation target. For 2020, the target stands at 4% and expectations are at 3.4%. For consequent years, inflation expectations match the target.

Figure 98: Inflation expectations for YE2020



Source: Banco Central do Brasil

Inflation timeline

1920: Inflation started to be measured in Brazil.

1945: Brazil's economy reached considerable stability, with inflation at 3% per year.

1960s: Period of economic growth and industrialization promoted by President Juscelino Kubitschek. Inflation rates increased to 90% per year.

1964-85 (military regime): During the whole military regime, inflation remained at high levels. However, a mechanism of inflation correction created in 1964 for government debt, which was later used for all prices and salaries, dubbed "*correção monetária*," allowed people to withstand higher inflation. The authorities used to manipulate data in order to keep the rates low. Hence, data from that period are not reliable.

1986-94: After re-democratization, Brazil went through its most turbulent period of inflation. The rate jumped from 80% in 1986 to 1,973% in 1989. During this period, prices often rose every day. Many economic plans were introduced (Bresser, Cruzado, Collor, among others), but all attempts were unsuccessful. The middle-income segment was hardest hit: wages lost value very quickly, and in 1990 President Collor confiscated banks' savings.

1994-99: In 1994, then-Finance Minister Fernando Henrique Cardoso announced the Real Plan, putting into circulation a new currency in an effort to finally reach price stabilization. In this period, the inflation rate fell dramatically, from 916% in 1994 to 22% in 1995, and the country started to rescue its credibility in the international arena. The fixed exchange rate was the main anchor of price stability, which over time became extremely costly and unsustainable for the government. The successful introduction of the Real Plan and lower inflation led to the election of President Cardoso in November 1994.

1999-Now: With the floating of the exchange rate in January 1999, inflation fears rose. The government acted quickly, increasing taxes, cutting spending and, more importantly, introducing the inflation-targeting regime. This regime remains in place currently. Targets weren't met in the period between 2001 and 2003. Also, during the Dilma presidency, the government gave itself more flexibility within the system, informally making the ceiling of the target the target itself (instead of the center). From 2010 until 2016 inflation was consistently hovering around 6%, with the CPI surpassing the double-digit mark in 2015. With the advent of a new central bank board following the impeachment of President Dilma, the inflation targeting regime was reinforced and inflation once more migrated to the center of the target and has been undershooting the target since 2017. After several years when the target remained set at 4.5%, in 2018 the central bank started to reduce the inflation target.

Indexation: One of the key problems with rising prices in Brazil is that the economy is still indexed to inflation to some degree. For example, the formula of minimum wage readjustment has a price component, the mandatory returns of pension funds is inflation plus 5%, rents are indexed to inflation, and so are some public tariffs, transportation prices and a number of other contracts. The current administration has the willingness to de-index the economy in all the spheres.

Main Inflation Indices

Brazil is well known for having a myriad of inflation indices, many times leading to significant confusion. There are two families of indices that we view as the most important: the **IGPs**, collected by Fundação Getulio Vargas (FGV), and the **IPCs**, collected by Instituto Brasileiro de Geografia e Estatística (IBGE).

The IPC family (IBGE)

IPCA: The IPCA is today the benchmark consumer price index of Brazil, mostly because it is the inflation index used for inflation-targeting purposes by the central bank. The survey of prices usually takes place during the calendar month and is released before the 10th of the next month. It takes into account costs for families that earn between to 1 and 40 times the minimum wage per month in 11 metropolitan regions. The IPCA-15 has a similar methodology as the IPCA (with fewer cities of coverage), and with different price collection date, which is the 15th of the reference month, with the prices reflecting changes since the 15th of the prior month. In 2019, the IPCA closed the year at 4.31% y/y, while the IPCA-15 was 3.91%.

Table 36: IPCA Weight per Category and Metropolitan Region

%, January 2020

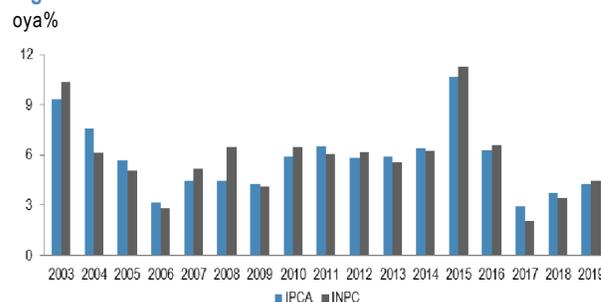
Components	Weight (%)	Area	Weight (%)
Transport Costs	20.6	São Paulo	32.28
Food & Beverage	19.3	Belo Horizonte	9.69
Housing	15.6	Rio de Janeiro	9.43
Health Care	13.5	Porto Alegre	8.61
Personal Expenses	10.7	Curitiba	8.09
Education	6.1	Salvador	5.99
Communication	5.7	Goiânia	4.17
Apparel	4.6	Brasília	4.06
Furniture	3.8	Belém	3.94
		Recife	3.92
		Fortaleza	3.23
		Vitória	1.86
		São Luís	1.62
		Campo Grande	1.57
		Aracaju	1.03
		Rio Branco	0.51

Source: IBGE.

INPC: The INPC has the same methodology as the IPCA but takes into account households that earn between one and five times the minimum wage monthly, which represents approximately 50% of the Brazilian households (instead of up to 40 minimum wages, as in the IPCA). Therefore, the weights for each category are different from the IPCA's. Food, for example, has a heavier weight in the INPC calculation (30%) than in the

IPCA (24.5%). In 2019, the INPC closed the year at 4.48% y/y, higher than the IPCA considering that food inflation experienced a strong increase in December due to meat prices.

Figure 99: IPCA vs. INPC



Source: IBGE.

The IGP family

The IGP family is composed of three main indexes: the IGP-DI, the IGP-M and the IGP-10. All of them have the same composition but differ by collection and release dates. The IGP-M has two previews before the final monthly number is released. It is the most common FGV index, because it is the one used to readjust contracts, for example, rents. In 2019, the IGP-M closed the year at +7.31% y/y, flat relatively to the same reading considering the same period of 2018.

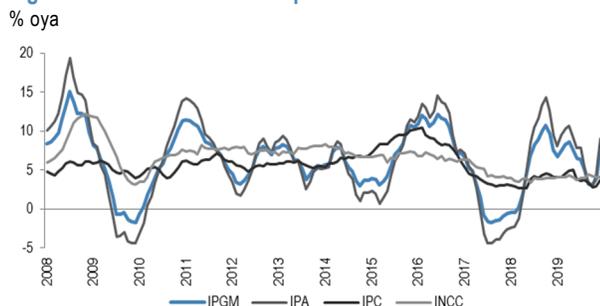
Table 37: IGP Price Index Calendar

Index	Collection Date	Releases Date
IGP-M	From the 21 st of the previous month to the 20 th of the current month	End of the month with two earlier previews
IGP-10	From the 11 st of the previous month to the 10 th of the current month	Around the 20 th of each month
IGP-DI	Calendar month	Around the 10 th of each month

Source: FGV.

The IGPs have an interesting composition: 60% of the index is made up of wholesale prices (IPA), 30% of the index is consumer prices (IPC) and the remaining 10% covers construction costs (INCC).

Figure 100: IGP-M and Its Components



Source: Bloomberg.

The **IPA** (wholesale prices) was until recently the closest matrix that Brazil had for producer prices (PPI). It is in the IPA that one can measure the price pressure emanating from commodity prices. It is also the IPA that captures changes in the exchange rate more intensely, as many commodities that are part of the index are priced in USD. The IPA-M was reporting an inflation of 9.08% at the end of December, as a reflection of the depreciation of the BRL in the year.

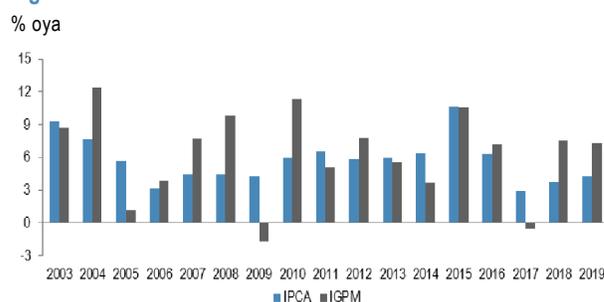
The **IPC** (consumer prices) surveys households that earn between 1 and 33 times the minimum wage in 7 major capital cities. It classifies products in eight categories (food, housing, clothing, health/personal expenses, education/recreation, transportation, communication, others). The IPC-M increased 3.79% in December 2019, down from 4.12% in December 2018.

The **INCC** (construction costs) takes into account construction costs and subdivides the index into labor costs and materials/services. It is calculated considering the prices in 7 major capital cities. The INCC-M increased 4.13% y/y in December 2019, slightly up from 3.97% in December 2018.

IPCA vs. IGP-M

Over time, the IGP-M and the IPCA tend to converge. Still, major changes between the indexes happen at times of large commodity price variation (which is stronger in wholesale prices than in retail) and at times of wide FX variation. Note in the chart below that the IGP-M surpassed by far the IPCA in 2004, 2007, 2008 and 2010, when the BRL and/or commodity prices oscillated most. On the other hand, in 2018 and 2019, the IGP-M came out well above the IPCA, considering strong commodity prices and a weaker average BRL than in the previous years.

Figure 101: IPCA vs. IGP-M

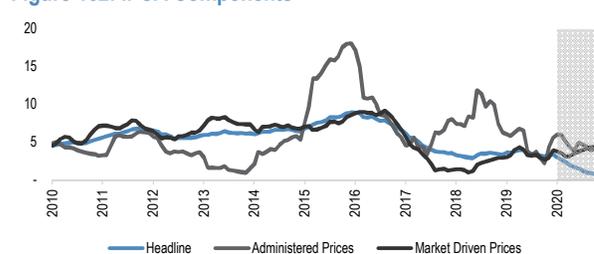


Source: FGV; IBGE; J.P. Morgan

Recent Inflation Behavior

Inflation in 2020 is likely to remain below the target. Consensus forecast inflation for 2020YE is 3.4%, while the target is 4%. In 2019, the IPCA closed at 4.31%oya, only 6bps above the central bank's target (4.5%). However, our preferred metric of core inflation remained well behaved at 3.4%. Discounting for food inflation, prices were mostly tame in 2019. For 2020, the supply shock that made the core IPCA jump at the end of 2019 (meat prices) should start fading. Still, administrated prices should decelerate during the year (down from 6% to something around 3.5%).

Figure 102: IPCA Components



Source: IBGE and J.P. Morgan.

Our economists believe that inflation will remain at or below the targets for both 2020 and 2021, as per the table below. Categories pushing prices higher are mostly associated with services such as health, education, and personal expenses. Food and transportation prices, each responsible for 20% of the inflation index, are expected to decline relative to 2019 levels.

Table 38: IPCA Weight and Variations

% oya, data and forecasts

Components	Weights in 2020 (%)	2016	2017	2018	2019	2020	2021
IPCA headline	100	6.3	2.9	3.7	4.3	3.4	3.75
IPCA core		6.5	3.5	3.4	3.4	3.6	3.9
Food and beverages	19.3	8.6	-1.9	4	6.4	3.1	3.7
Food at home	13.5	9.4	-4.9	4.5	7.8	2.8	3.5
Food outside home	5.9	7.2	3.8	3.2	3.8	3.9	4.3
Housing	15.6	2.8	6.3	4.7	3.9	3.3	3.6
Home appliances	3.8	3.4	-1.5	3.8	-0.4	3.4	-1.7
Apparel	4.6	3.5	2.9	0.6	0.7	2.5	0.5
Transport costs	20.6	4.2	4.1	4.2	3.6	2	3.1
Health care	13.5	11	6.5	4	5.4	5	5.9
Personal expenses	10.7	8	4.4	3	4.7	4.8	5.6
Education costs	6.1	8.9	7.1	5.3	4.8	5.5	6
Communication	5.7	1.3	1.8	-0.1	1.1	2.5	1.7

Source: IBGE and J.P. Morgan estimates

Table 39: IPCA per Category

% oya, data and forecasts

Components	Weights in 2020 (%)	2016	2017	2018	2019	2020	2021
IPCA headline	100	6.3	2.9	3.7	4.3	3.4	3.75
IPCA core	-	6.5	3.5	3.4	3.4	3.6	3.9
Administered	26.1	5.5	8	6.2	5.5	3.4	4.4
Market driven price	73.9	6.5	1.3	2.9	3.9	3.4	3.5
Goods	36.7	6.6	-1.4	2.5	4.2	2.5	2.1
Non-durable	20.7	9.3	-2.7	3.3	6.7	2.9	3.5
Semi-durable	6	4.1	2.3	0.8	0.6	2.9	0.8
Durable	10	1.4	-1.2	1.7	0	1.5	-0.1
Services	37.1	6.5	4.6	3.4	3.5	4.3	4.8
Cyclical services	25	6.6	4	3.2	3.4	4.1	4.7
Trend services	12.1	6.1	6.5	4	3.9	4.5	4.9

Source: IBGE, J.P. Morgan estimates

Central Bank and Monetary Policy

The Banco Central do Brasil (BCB) was created in 1964 and is the monetary authority in the country. Since its creation, the central bank of Brazil has had more governors than years of existence. Remaining more than a year as the governor of the central bank was a challenge due to problems related to economic stability until the mid-90s and publicly perceived credibility. Recently, however, there has been a lot more stability. Henrique Meirelles stayed in office during the entire tenure of President Lula. Alexandre Tombini was in office during the entire tenure of President Dilma Rousseff. When Michel Temer became president, he nominated Ilan Goldfajn for the post. After the election of Jair Bolsonaro in October 2018, Roberto Campos Neto was appointed central bank president. He took office in February 2019. He holds a post-graduate degree in economics from University of California and has worked his whole career in the private sector. Prior to becoming the central bank's governor, Campos Neto was treasury director of Banco Santander (since 2010).

The classic monetary policy instrument in Brazil is the basic interest rate, the SELIC, with the eventual move in reserve requirements. In 2010 and 2011, the

central bank made ample use of hybrid instruments of monetary policy, the now famous macro-prudential measures. These were first used to cool down credit markets at the end of the 2010 boom. The use of these measures was reduced, and they haven't really been used since at least 2013.

BCB independence/autonomy: The BCB is not *de jure* independent from the government and is in fact a kind of sub-arm of the Economy Ministry. However, since the Cardoso years, the central bank has enjoyed *de facto* operational autonomy, having the freedom to decide on interest rates without having to answer to political pressure. This autonomy has given credibility to the institution and, therefore, to the interest rate decisions of the past few years, for the most part. Having said that, it is important to note that the BCB's autonomy was questioned during the Dilma years, as the central bank was more tolerant with inflation, deviating from the center of the inflation target and testing extremely low levels of interest rates on the premise that the neutral rate for Brazil was lower than previously thought. Formal central bank autonomy needs to be approved in Congress (simple majority vote). The idea has resurfaced during the Temer administration but it is gaining steam. At the time of this writing, Lower House President Rodrigo Maia said that one of his legislative priorities for 2019 was to approve central bank independence. That would entail, among other things, fixed mandates of 4 years with a possibility for another consecutive 4-year term for the president and the board of the entity, which are not coincidental with the presidential term.

Table 40: Brazil Central Bank Governors Since 1985

Central Bank Chairman	Period	Brazil's President
Antonio Carlos Lemgruber	Mar-85 to Aug-85	
Fernão Bracher	Aug-85 to Feb-87	
Francisco Gros	Feb-87 to Apr-87	
Lício de Faria	Apr-87 to May-87	José Sarney
Fernando Milliet	May-87 to Mar-88	
Elmo Camões	Mar-88 to Jun-89	
Valdico Bucchi	Jun-89 to Mar-90	
Ibrahim Eris	Mar-90 to May-91	
Francisco Gros	May-91 to Nov-92	Fernando Collor
Gustavo Loyola	Nov-92 to Mar-93	
Paulo Cesar Ximenes	Mar-93 to Sep-93	
Pedro Malan	Sep-93 to Dec-94	Itamar Franco
Gustavo Franco	Dec-94 to Jan-95	
Persio Arida	Jan-95 to Jun-95	Fernando Henrique Cardoso
Gustavo Loyola	Jun-95 to Aug-97	

Gustavo Franco	Aug-97 to Mar-99	
Armínio Fraga	Mar-99 to Jan-03	
Henrique Meirelles	Jan-03 to Jan-11	Lula
Alexandre Tombini	Jan-11 to Jun-16	Dilma Rousseff
Ilan Goldfajn	Jun-16 to Feb-19	Michel Temer
Roberto Campos Neto	Feb-19 -	Jair Bolsonaro

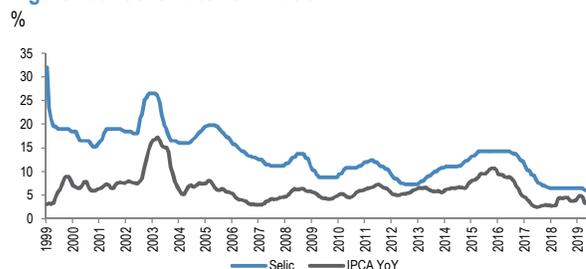
Source: Brazil Central Bank.

The COPOM: Brazil operates under an inflation-targeting system, and it is the responsibility of the central bank to manage the interest rate so as to achieve the convergence of inflation to the set targets. The interest rate level is set by the Monetary Policy Committee (COPOM), which was established in 1996 with the objective to conduct monetary policy. There are monetary policy meetings every six weeks for a total of eight meetings per year. The COPOM meetings take place over two consecutive days (Tuesday and Wednesday), with a decision being released at the end of the second day (around 6pm local time). The COPOM typically has nine voting members who decide interest rates: the governor of the central bank as well as the directors of monetary policy, economic policy, regulation, international affairs, surveillance, administration, institutional relations, and organization of the financial system. If there is a tie vote, it is up to the governor to break it.

Easing Cycle: When Ilan Goldfajn took over as president of the central bank in mid-2016, he immediately adopted a hawkish rhetoric, even though inflation was already on a declining path and inflation expectations were improving. Indeed, market participants were starting to become nervous that the central bank was taking too long to start a much needed easing cycle, especially considering that the economy was in deep recession. It was only in October 2016 that the COPOM started to lower interest rates. The first two moves (October 19 and November 30) were timid 25bp cuts. However, in January 2017, the easing was accelerated to 75bps. Not only was inflation falling, but at the time the BCB noted that it was taking into account economic activity in the rate decision process. In April, the central bank accelerated the easing to 100bps, as inflation started to surprise to the downside and inflation expectations corrected along the way, and closed the year at 7%. This first phase of the easing cycle terminated in March, putting rates at 6.5%. They remained for 16 months at this level, with the second phase of the easing cycle being reconvened in July 2019, already under the tenure of Campos Neto, with a cut of 50bps. The second phase aimed to support the recovery of the economy, which was continuously failing to show a solid rebound. In

2019, the central bank cut rates by an additional 200bp and in February 2020 it performed a cut of 25bp, leaving the Selic at 4.25% and indicated that the easing cycle was over. One of the reasons cited was that monetary policy now has a greater impact than in the past due to changes in credit and capital markets. Still, the central bank left the door open for additional cuts, should data point in that direction.

Figure 103: Selic Rate vs. Inflation



Source: Bloomberg

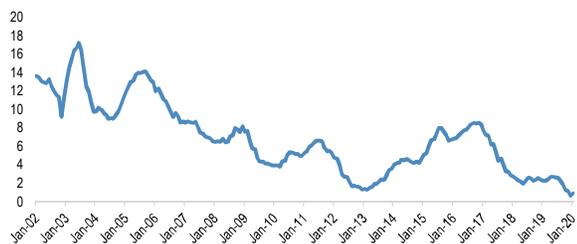
The TLP – increasing monetary policy impact:

In September 2017, Congress approved the TLP, which will be the new BNDES interest rate. The bill establishes that in five years’ time, the BNDES subsidized interest rates, the TJLP, will be fully substituted by the TLP, an interest rate that will be similar to and fluctuate in line with the 3-month moving average of the 5-year NTN-B (inflation-linked bond). The idea here is to remove the implicit subsidized rate of the development bank. It is thought that by making the BNDES rate more in line with market rates, the power of monetary policy will be stronger, allowing for rates to be lower over the medium run. This is because about 25% of credit in Brazil is tied to the subsidized BNDES interest rate, or the TJLP. The government forecasts savings of R\$54 billion in the next 30 years with the substitution of the TJLP. Still, it forecasts savings of R\$22 billion per year, for each 100bps of cut in the Selic rate, on the payment of interest.

Real interest rates: Brazil used to be the world record holder of real interest rates. Some of the reasons behind this were related to the large amount of subsidized credit in the economy, which ended up forcing the central bank to have a higher nominal rate than required to have the needed effect on prices. The poor level of investment rate was also to blame (16% of GDP), pretty much the lowest of all EMs. There was a supply shortage to meet consumer demand, and the economy quickly and often overheats, forcing the central bank to hike rates. The other side of this coin is the low savings rate, both in the private and especially public sectors. The weak fiscal stance forced monetary policy to be the main economic

policy anchor. Due to the easing cycle, real rates are running close to zero percent, a mark never seen before. We estimate that the current ex ante real interest in Brazil (12 mo rates – 12 mo inflation expectations) is hovering at 0.9%. Ex post selic-ipca, real rates closed 2019 at 0.2%.

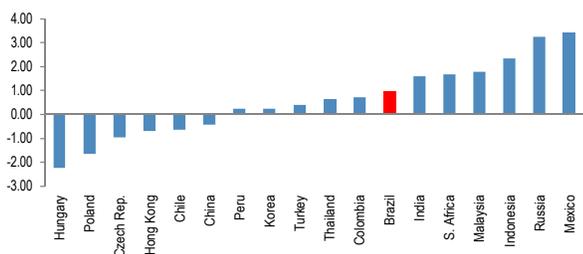
Figure 104: Real Interest Rate Ex-Ante (%)



Source: Bloomberg; Banco Central do Brasil, J.P. Morgan.

International comparisons: Three years ago, Brazil used to have the highest real interest rate among all emerging markets (5%). After the easing cycle started in 2017, nominal rates came down from 14.25% and are running currently at 4.25%, allowing real rates to decline to record lower levels.

Figure 105: Emerging Market Real Interest Rates (%)



Source: J.P. Morgan. Assumes current inflation and interest rates, as of January 2020

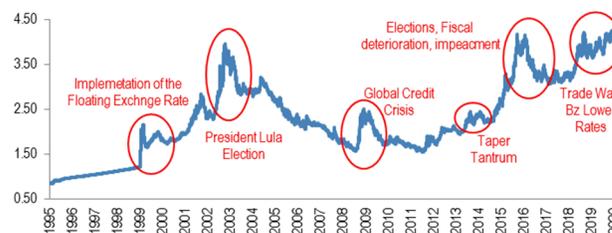
Exchange Rate Policy

The introduction of the Real Plan in early 1994 culminated six months later with the introduction of a new currency, the Real (BRL), which substituted the Cruzeiro Real. The new currency was born under a managed, pegged regime of bands. At the time of its introduction, the BRL was valued below 1 USD, and for several years it depreciated very slightly.

In January 1999, when the BRL was around 1.2/USD, the government finally allowed the BRL to float after 4.5 years of a pegged regime with horizontal bands. The Brazilian currency was under attack after the Asia and Russia crisis, and international reserves, which were around US\$70 billion in mid-1998, fell 37% in six months. Thus, the BRL was allowed to float. Since the

introduction of the floating exchange rate system in 1999, the economy has undergone several critical periods, leading to significant volatility in the BRL, especially in times of crisis.

Figure 106: Exchange Rate in Context Since the Real Plan R\$/US\$



Source: Bloomberg; J.P. Morgan

1999: The introduction of the floating exchange rate regime led to a significant depreciation in the BRL, taking it from R\$/US\$1.2 in December 1998 to R\$/US\$0.98 in January 1999, a depreciation of about 64% in just one month.

2002/2003: Brazil was facing a severe confidence crisis, triggered primarily by uncertainties regarding the presidential election. The main candidates were Luis Inácio Lula da Silva (PT) and José Serra (PSDB). The market was concerned that Lula, the opposition candidate, would win the election and make good on the populist themes that marked his previous electoral attempts. Markets were unsure if Lula would follow the economic policies in place during the Cardoso administration and if he would fulfill the commitments on public debt. During this period, the dollar came close to 4 R\$/US\$, the highest value since the implementation of the BRL.

2008: The most serious global economic crisis since the Great Depression of 1929 generated a global confidence crisis. The collective uncertainties led foreign capital to leave Brazil, searching for what it hoped were relatively safer havens, thereby causing BRL weakness.

2010/2012 – “Currency wars”: A world of negative real interest rates and plenty of liquidity led to very high inflows to Brazil, attracted by strong economic recovery post the crisis and high interest rates. The currency strengthened and led Finance Minister Guido Mantega to declare in 2010 that Brazil was in a currency war against other nations. The main concern of the authorities was avoiding the de-industrialization of the country, which could be caused by a lack of competitiveness of the Brazilian manufacturing industry in light of the strong

exchange rate. Exchange rate controls were put into place.

2013/2014 – Taper tantrum/daily intervention policy:

Government efforts to weaken the currency started to pay off in mid-2013, but not in the way it imagined. The BRL started to weaken once it became evident that macro data were not rebounding and investor sentiment towards Brazil soured once more. China woes in 1H13 and the taper tantrum of midyear exacerbated the weakness. The BRL and the currencies from the so-called Fragile 5 were the worst performing in 2013, with the BRL depreciating 13%, the TRY down 17%, and the ZAR and IDR losing 19% versus the USD. **FX Swaps:** In August 2013 the central bank introduced a policy of “daily interventions.” It would provide USD to the markets via derivatives at the rate of US\$500 million per day in FX swaps, with an additional US\$1 billion in repos on Fridays. The BCB goal was to provide hedges for economic agents and FX liquidity. The central bank renewed its daily intervention policy in December 2013, June 2014 and December 2014. J.P. Morgan estimates that the level of the BRL in 2014 was 10-15% stronger due to the intervention policy.

2015/2017 – Economy and politics unravel:

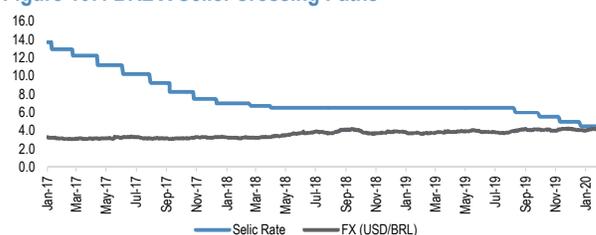
The effect of the economic policy choices of the Dilma administration started to become apparent in 2013/2014 once the global search for yield faded. However, it was not until 2015 that the deterioration became evident. Growth slowed exponentially and a tentative implementation of better fiscal policy found the Congress averse to it. The central bank announced in March 2015 an end to the daily intervention policy in an effort to allow the BRL to float more freely. The daily intervention program of the BCB generated a total liability of US\$114 billion in FX swaps. Country risk continued to climb as a result of faltering economic policies. By mid-2015, S&P removed its Investment Grade rating for Brazil, accelerating the BRL downfall. Currency deterioration remained in place until the time of the impeachment of President Dilma. Once there was a change in economic policy with the impeachment, the BRL appreciated and was by far the best-performing currency in the world in 2016, gaining 22%, despite the losses provoked at the time of President Trump’s election.

2018-20: Lower rates, Weaker FX:

The BRL embarked on a depreciation trend in 2018. At the time, the broad dollar started to strengthen and, locally, concerns escalated with the truckers' strike of May 2018 and the general elections of October. After the election of Jair Bolsonaro, the currency strengthened, but that was only temporary. There have been several discussions on why

the BRL weakened when there has been so much institutional progress locally, especially vis-à-vis the approval of a bold social security reform. On one hand, low growth doesn’t induce capital flows. But, the most important explanation appears to be the vast reduction of interest rates, which led the BRL to be a currency with practically no carry, contrary to what happened in the past. Lower rates have been leading Brazilian companies to pre-pay their USD debt and issue locally, with a surge in the demand for spot USD. A one-time unthinkable event happened in February 2020, which is that the level of the currency was, for the first time ever, higher than interest rates:

Figure 107: BRL X Selic: Crossing Paths

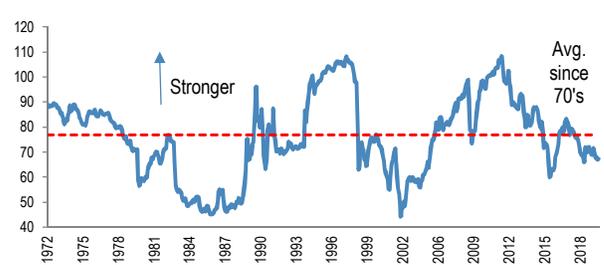


Source: Banco Central do Brasil, J.P. Morgan

Real exchange rate:

The BRL is a volatile currency and very correlated to commodity prices. It used to be a carry currency, as it is was a vehicle for foreign investors to profit from Brazil’s high local rates. At times of domestic stress, a heightened risk perception hits the currency perhaps more abruptly than any other asset. Looking at the real exchange rate for the domestic currency, these fluctuations become very clear. Since mid-2017, the REER has been below its long-term average, as a reflection of a weaker BRL. Still, the weakness level is not very pronounced and the REER is today only 3% below the average.

Figure 108: Real Effective Exchange Rate (CPI based) since 1970 index

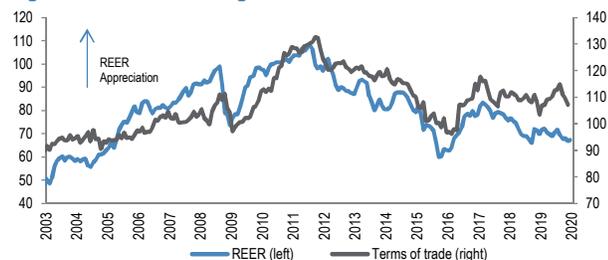


Source: J.P. Morgan with Central Bank Data

To gauge the BRL level, it is also important to monitor terms of trade. It is interesting to note that while terms of trade improved in 2019, the currency did not, and today

there is a gap between the two measures. It appears that they will meet again because terms of trade are worsening, not because of BRL appreciation.

Figure 109: Real Exchange Rate and Terms of Trade



Source: Funcex; J.P. Morgan

External Sector

Brazil is one of the most closed economies in the world. The International Chamber of Commerce found that Brazil is the most closed economy of the G20, and among 75 countries researched, Brazil is in the 69th position, still one better than in 2015 and only ahead of Venezuela in Latin America.

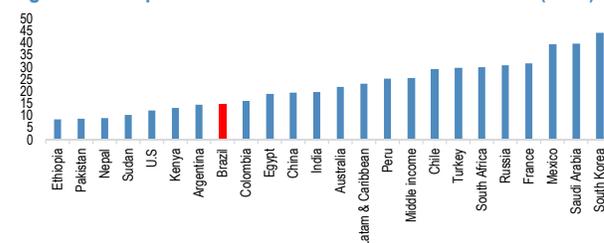
Table 41: Open Markets Index Country Ranks, 2017

Rank	Country
1	Singapore
2	Hong Kong
3	Luxembourg
22	Germany
24	Chile
28	United Kingdom
34	Peru
35	France
37	Japan
39	Korea
40	United States
46	Mexico
49	South Africa
51	Colombia
53	Turkey
56	China
58	Russia
64	India
68	Argentina
69	Brazil
75	Venezuela

Source: International Chamber of Commerce

The World Bank data indicates that Brazil was the country with the 8th lowest proportion of exports of goods as services as a percentage of GDP in 2018, at a modest 14.8%. However, it improved one position from the previous year, when it was ranked 9th. Still, the country lags all the greatest economies in Latin America, with the exception of Argentina, ranked as the 9th lowest proportionally.

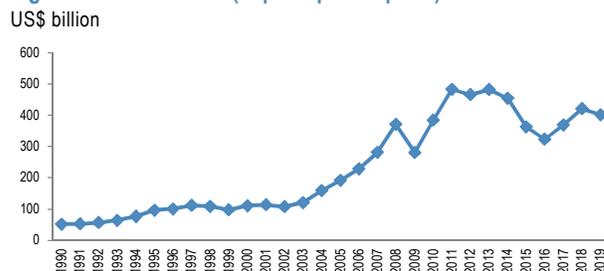
Figure 110: Exports of Goods and Services as % of GDP (2018)



Source: World Bank.

One could argue that Brazil's growth performance during the Lula years was mostly a consequence of higher commodity prices. The Chinese hunger for commodities boosted prices and dramatically increased Brazilian exports in the first decade of the millennium. High commodity prices were a boon for Brazil, which had very positive terms of trade, allowing the currency to appreciate and imports to pick up strongly. This happened at a time when credit was abundant and real wage gains were the norm, as the labor market was very tight. In 2009, the global financial crisis broke the growth trend, and in 2011 the European and American soft patches led trade to cool down some. Again in 2014, the total trade failed to grow. The years of the recession (2015-16) were marked by low international trade activity, as the recession made imports collapse and export growth failed to pick up. Also, as the domestic economy started to recover at some extent, total trade resume in the growth trend in 2017 and 2018, increasing 14%/y in both years. Still, in 2019, the total amount traded was 5%/y down, led by a decrease in exports (-6%/y) and imports (-2%/y).

Figure 111: Total Trade (Exports plus Imports)

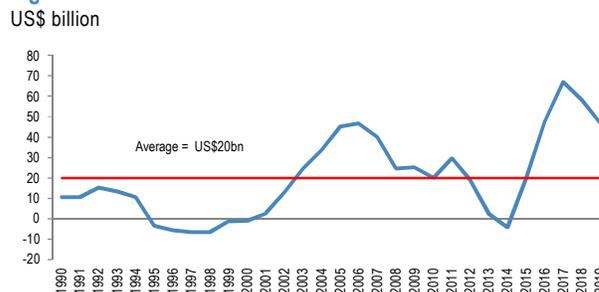


Source: MDIC.

Since Brazil opened its doors to imports in 1990, deficits in the trade balance were observed just seven times – in the years when the crawling peg exchange rate regime was in place and also in 2014. Between 1995 and 1999, when the Real Plan was in place, the BRL was strong against the dollar, encouraging imports over exports. Beginning in 1999, after the implementation of the floating exchange rate regime, trade deficits started to shrink, and between 2001 and 2013 the balance presented surpluses. The increase in commodity prices observed since the end of 2002 was a very important factor behind the increase in Brazilian exports. However, with the exception of 2011, the trade surplus declined from 2007 to 2014, when it actually posted a deficit, mostly due to a sharp decline in commodity prices, which negatively impacted exports. In 2015 and 2016, the trade balance posted a strong surplus. But this move was mostly caused by very weak imports (recession) instead of strong exports, which continued to decline on a year-on-year basis. In 2017 and 2018, the trade balance posted a surplus and increased 41%/y/y in 2017, but then declined -13%/y/y in 2018, given the strengthening from the imports side. In 2019, the trade balance posted a surplus of US\$46.6bnn, a decrease of 20%/y/y. The reason is that albeit exports and imports both decreased in the period, exports decreased at a greater pace (-6%/y/y) than imports (-2%/y/y).

On average (1990-2019), Brazil has had a trade surplus of US\$20 billion per year, with the best year being 2017 (US\$67 billion surplus) and the worst being 1997 (-US\$6.54 billion deficit). The decline in the trade balances from 2006 onwards was mostly a product of a larger increase in the rate of import growth in lieu of exports. However, from 2012 to 2016, both exports and imports decreased on a year-on-year basis. In 2017 and 2018, imports did start growing again, helped by the appreciation of the BRL and the beginning of a recovery in economic activity. As a result, trade surplus has been in a downward trend and decreased both in 2018 (-13%/y/y) and 2019 (-20%/y/y). The central bank projects that the trade balance will post a US\$32billion surplus in 2020, 31% less than in 2019.

Figure 112: Trade Balance



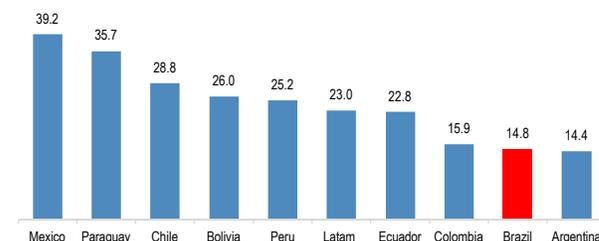
Source: MDIC.

A More Open Economy? One of the key objectives of Economy Minister Guedes is to open up Brazil to international trade. After years of negotiation, Mercosur and the EU have signed a free trade agreement in June 2019. The deal is very ample and foresees, among other things, the almost complete elimination of agricultural tariffs in the EU, while the Mercosur will bring to zero the import tariff on autos in 15 years. The deal also makes it mandatory for members to comply with the targets of the Paris Climate Agreement. The Bolsonaro administration also wants to work on a free trade agreement with the US. Beyond that, Brazil is pressuring its Mercosur members to lower Common External Tariff, which on average is 12% (for autos is 35%), one of the highest in the world. Still, considering the new administration in Argentina, the political challenges became more difficult on that front.

Exports

Compared with other countries in Latin America, Brazil has the second lowest export share relative to GDP, according to the World Bank calculations. In Mexico, exports represent 39.2% of GDP, and in Paraguay 35.7%. The silver lining is that Brazil's GDP ends up being relatively insulated from international crises, as seen in 2008-09.

Figure 113: LatAm – Exports of Goods and Services as a % of GDP (2018)



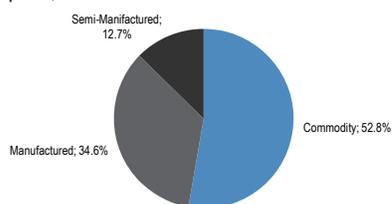
Source: World Bank

Despite diversification attempts, Brazil is still one of the largest commodity exporters in the world. Indeed, the

participation of commodities in the Brazil export basket stood at 52.8% in 2019. However, the data don't take into account those products that are industrialized but have commodities as the main input, such as sugar and pulp, both important export products. If one considers industrialized products that are mostly made of commodities, the participation of commodities rises to more than 60% of total exports. Manufactured goods, which represented about 60% of exports in 2000, declined to 34.6% in 2019. Semi-manufactured products remained practically unchanged in the last two decades and are responsible for around 12.7% of total exports.

Figure 114: Brazil's Export Composition by Category

% of total exports, 2019.

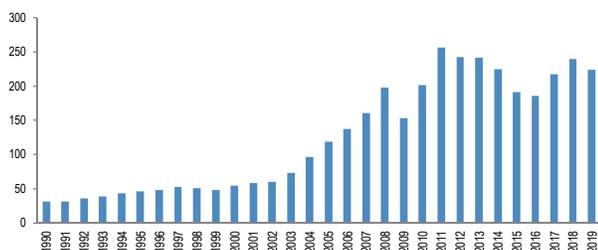


Source: MDIC

In 2019, exports reached US\$223.9 billion, a 6% decrease relative to 2018 and down 7% from the peak in 2011. The breakdown of the data indicates that 6 out of the 10 most relevant exported products increased y/y, spearheaded by corn (+87.4%/y/y). On the flip side, the “soya complex,” which accounts for 12% of total exported, declined 21%/y/y. Still, all categories decreased in 2019, led by manufactured, which plunged 10%/y/y.

Figure 115: Brazil Exports

US\$ billion



Source: MDIC. Note: 2019.

Traditionally, the top three export products in Brazil have been soy, crude oil and iron ore, responsible for 35% of total exports in 2019. In the past couple of years, the soy “complex” surpassed iron ore and crude oil as Brazil’s largest export. The top ten export products are responsible for about 54% of total exports, and, in general, almost all of them are commodities, with the exception of other manufactured products.

Table 42: Top 10 Brazilian Exports

% of total exports

Rank	Products	2019 (%)	Products	2018 (%)
1	Soy "complex"	14.3	Soy "complex"	16.6
3	Crude oil	10.7	Crude oil	10.6
2	Iron ore	9.9	Iron ore	8.5
4	Pulp	3.3	Pulp	3.5
5	Corn	3.3	Corn	1.6
6	Beef	2.9	Beef	2.3
7	Poultry	2.8	Poultry	2.5
8	Other manufactured products	2.6	manufactured products	2.2
9	Coffee	2.0	Coffee	1.8
10	Sugar Cane	2.0	Sugar Cane	2.3
	Others	53.9	Others	51.7

Source: MDIC. Note: 2019.

Brazil’s largest trade partner is China, which received 29.3% of total exports in 2019, 4.5% higher relative to 2018. In 2009 China took the leading position from the US, and that situation prevails, with the US currently in second place, accounting for 14.35% of total exports. Among Latin America countries, Argentina is an important trade partner (third in the rank), taking 3.9% of Brazilian exports. Important to flag that, despite the economic and political turmoil in the 2H19, the exports to Argentina increased by 1%. Interestingly, as LatAm countries’ economies grow, so do exports of Brazilian manufacturing products, mainly destined to the region

Table 43: Destination of Brazilian Exports

% of total exports

Rank	Country	2019 (%)
1	China	29.3%
2	US	14.4%
3	Argentina	3.9%
4	Japan	3.6%
5	Netherlands	2.8%
6	Chile	2.3%
7	Mexico	2.1%
8	Germany	1.8%
9	South Korea	1.5%
10	Belgium	1.5%
	Others	36.8%

Source: MDIC.

It is also relevant that Brazil has intensified the international trade relations with its main commercial partners. The 10 main destinations of Brazilian exports increased their combined stake to above 63% from 2019 from around 50% in 2015.

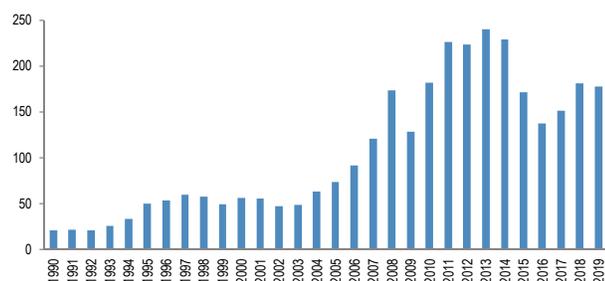
Imports

When Brazil started to combine strong economic growth with a strong currency, imports began to rise. However,

as the economy started to decelerate, the trend reversed: since 2012 (ex 2013), imports have posted negative year-on-year growth. In 2015, imports declined 25.2%/y and 20% y/y in 2016. However, this trend reversed again in 2017 and 2018, when it increased by 10%/y/y and 20% y/y, respectively. In 2019, the data were down by 2%/y/y.

Figure 116: Brazilian Imports

US\$ billion

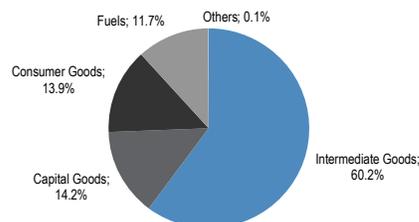


Source: MDIC.

In 2019, two out of three categories decreased on year-over-year terms. Commodities led the negative performance, posting a 7% decrease y/y, followed by manufactured products, which declined 2%/y/y. On the flip side, manufactured products edged up by 1% in the same period. In addition, the bulk of imports is comprised of intermediate goods (60% of total), which rose 1.65%/y/y. The bad news, however, is that capital goods, which is a key proxy for economic growth, contracted (11.77%/y/y). It is currently responsible for 14.22% of total imports (versus 15.8% in 2018). Consumer goods represent 13.9% of total imports and also printed a negative performance, decreasing -3.3%/y/y.

Figure 117: Imports by Category

% of total, 2019



Source: MDIC.

Brazilian imports are well diversified in terms of country of origin. China and the US are the main sources for imports to Brazil, with Argentina and Germany as distant third and fourth partners (~6% each). From 2012 onwards (ex 2016), China lead as the main origin of Brazilian imports, a place previously held by the US.

Table 44: Origin of Brazilian Imports (2019)

% of total imports

Rank	Country	% of total
1	China	19.9%
2	United States	17.0%
3	Argentina	6.0%
4	Germany	5.8%
5	South Korea	2.7%
6	India	2.4%
7	Mexico	2.4%
8	Japan	2.3%
9	Italy	2.3%
10	Russia	2.1%
Others		37.3%

Source: MDIC.

Despite the rise in Chinese imports, the trade balance between Brazil and China was US\$29.12 billion in 2018 (Brazil exported more to China than it imported), 45% higher from the previous year. In 2019, exports to China declined by 1.65%/y/y, mainly driven by soya (-25%/y/y). On the other hand, exports to the US increased 3% in the same period, led by gasoline (+67.5%/y/y).

Table 45: Brazil – China Trade (2019)

Exports to China			
	US\$ (billion)	% of Total	y/y%
Soy	20.50	32.61	-24.72
Crude Oil	15.40	24.49	6.97
Iron Ore	13.10	20.84	19.84
Pulp	3.30	5.25	-4.88
Beef	2.68	4.26	80.07
Total Exports	62.87	100.00	-1.65
Imports from China			
	US\$ (billion)	% of Total	y/y%
Other manufactured products	6.15	17.45	13.07
Receptors	3.94	11.16	5.64
Mining equipment	2.09	5.91	-43.44
Power generator and motors	1.23	3.48	45.72
Chemicals	1.20	3.41	11.91
Total Imports	35.27	100.00	1.56
Trade Balance (Exports - Imports)			
	27.60	NM	NM

Source: MDIC.

Table 46: Brazil – US Trade (2019)

Exports to US			
	US\$ (billion)	% of Total	y/y%
Crude Oil	3.19	10.80	5.29
Semi-Manufactured Steal	2.84	9.61	-9.33
Aircrafts	2.18	7.36	12.21
Other manufactured products	1.58	5.33	33.64
Gasoline	1.20	4.06	233.87
Total Exports	29.56	100.00	3.01
Imports from US			
	US\$ (billion)	% of Total	y/y%
Fuel	5.53	18.37	3.38
Other manufactured products	3.40	11.29	-10.37
Gasoline	1.40	4.64	67.51
Other basic products	1.33	4.44	-4.58
Medicine	1.11	3.69	2.62
Total Imports	30.09	100.00	3.86
Trade Balance (Exports - Imports)			
	-0.53	NM	NM

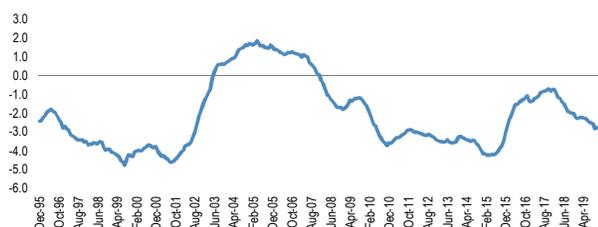
Source: MDIC.

External Accounts

Current account: From a historical point of view, Brazil is a current account deficit country. From 1947 until 2018, there were only 12 years when Brazil registered a current account surplus. The longest stretch took place between 2003 and 2007, when the country was profiting from a commodity super-cycle. A record surplus as a percentage of GDP was registered in 2004 (1.76%), when commodity prices were high and the BRL was weak, boosting exports and inhibiting imports. The oil shock of the 1970s was the low point in terms of the current account, with a deficit of 6.8% of GDP in 1974. Since 2008 the current account turned to a deficit and reached a low of -4.24% of GDP in March 2015. The data posted a significant improvement up to October 2017, with the current account at -0.7% of GDP. However, since then, the data have been worsening, and as of November 2019 they stood at -3% of GDP, the lowest figure since December 2015.

Figure 118: Current Account

12 months accumulated as % of GDP

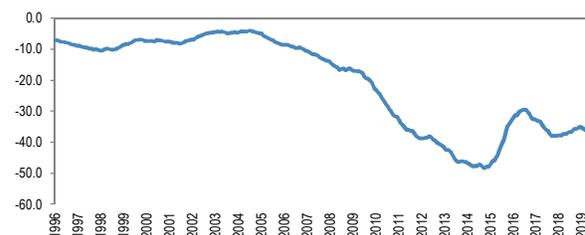


Source: Banco Central do Brasil.

The two main important drivers of the current account are the trade and the service balances. First, the trade surplus has been growing since 2014, from a deficit of US\$6.6 billion in that year to a surplus of US\$64bn in 2017, but decelerated in 2018, to US\$53bn, and then again in 2019 to US\$39.5bn, a 26% decline. Second, the service deficit has narrowed significantly over the past few years, improving from around US\$48.5 billion in January 2015 to US\$35.1 billion as of December 2019 (12-month rolling), a 28% improvement over the period. We note that despite the weaker BRL, Brazilians continue to increase travel spending. Spending in that category stood at US\$11.7bn in 2019, two times higher than levels registered in 2009 of US\$5.5bn. As the economic activity rebounds, the trends in both trade and services balance should start to even out as imports are likely to rise. This of course would change if commodities were to enter another super cycle.

Figure 119: Service Account

12 months rolling, US\$ billion



Source: Banco Central do Brasil.

In September 2019 there was an important methodological change in Brazil's current account, which added 0.63% of GDP to the deficit. The main change was related to revenues from exporters that are left outside of the country.

Table 47: Current Account by Country

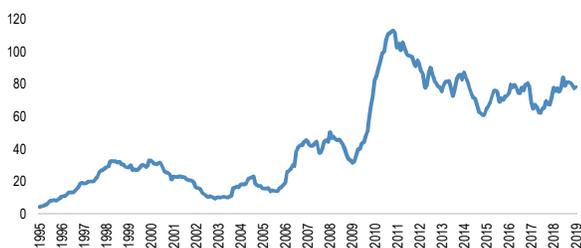
Country	2018	2019	2020E	2021E
Korea	4.4	3.2	3.0	2.8
Japan	3.5	3.5	3.7	3.7
Euro Area	3.1	2.7	2.6	2.6
Russia	6.9	4.2	2.8	2.1
China	0.4	1.3	0.7	0.3
Brazil	-1.2	-2.8	-3.4	-3.8
India	-2.1	-1.5	-1.8	-1.9
Chile	-3.1	-2.9	-0.9	-0.6
Mexico	-2.0	-0.5	-1	-1.5
United States	-2.4	-2.4	-2.3	-2.4
Peru	-1.5	-1.7	-1.8	-2.1
South Africa	-3.5	-3.3	-3.6	-3.6
Argentina	-5.4	-1.3	0.9	1.3
Colombia	-3.8	-4.4	-4.4	-4.1
Turkey	-3.6	0.3	-0.5	-0.7

Source: J.P. Morgan.

Foreign direct investment: FDI has been one of the bright spots in Brazil, even during times of recession. Other than the period of high current account deficit, FDI has been more than enough to finance the external gap. From 2010 to 2019, FDI was on average US\$80.5bn. This underscores the good quality of Brazilian assets and the fact that companies are often interested in putting or expanding operations in the country to serve its 200 million-plus population. In 2019 total net FDI stood at US\$78.5bn, 1% higher relative to 2018. In 2019, 87% of total FDI was in equity investments. The remainder corresponds to intercompany loans. This compares with 73% of total FDI in 2018 invested in equity. It is important to note that FDI is at 4.3% of GDP, more than enough to offset the current account deficit.

Figure 120: Annual Brazilian FDI

12 months rolling, US\$ billion

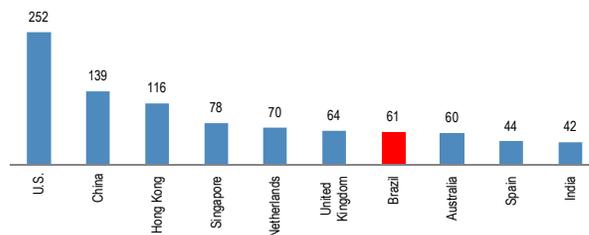


Source: Banco Central do Brasil.

According the UNCTAD World Investment Report 2019, Brazil was, as of 2018, the seventh largest recipient of FDI in the world. Still, per its methodology, FDI to Brazil in 2018 declined by 10%, below the 13% decrease in the global FDI and a 27% fall in FDI to developing countries.

Figure 121: Main FDI Destination by Country (2018)

US\$ billion

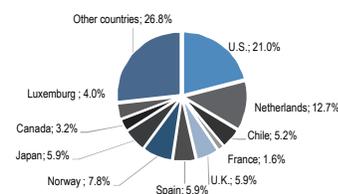


Source: UNCTAD.

According to central bank data for 2019, the U.S. and the Netherlands sent the most direct investment to Brazil corresponding to a share of 21% and 13%, respectively, of total investment into equities (excluding intracompany loans). Luxemburg and Switzerland came in the third and fourth places with 5% and 2%, respectively. In 2018, the Netherlands was responsible for the largest stake in the Brazilian FDI in equities (20% of total), followed by the U.S. (16%). The data in terms of FDI origin are misleading, however, because the parent company is often housed elsewhere. For example, China is not featured as a major originator of Brazilian FDI; however, between 2003 and 1Q19, it invested US\$71 billion in Brazil, ahead of the US with US\$58 billion.

Figure 122: Participation of Key Countries in Brazilian FDI

% 2019



Source: Banco Central do Brasil. Note: Doesn't include intracompany loans.

Looking at a sectorial breakdown of FDI inflows, services represented the largest investment destination in 2019, with almost 52.5% of FDI. In addition, this reading is an improvement over 2018, when it stood at 44.6%. Agricultural & Mineral followed, with 27%, and industry received 20%.

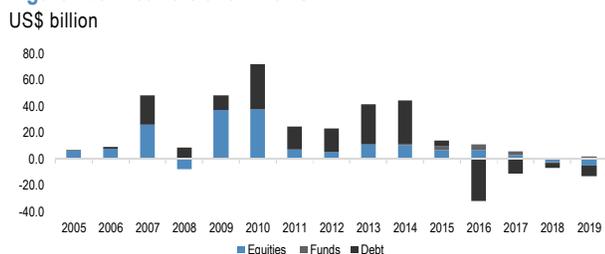
Table 48: FDI Distribution per Sector

% of total			
	% of Total 2018	% of Total 2019	2019/2018 % Change
Agricultural, Mineral Extraction	18.5%	26.8%	45.0%
Oil and Natural Gas Extraction	11.3%	20.2%	78.3%
Mineral Extraction	3.3%	2.6%	-21.8%
Min. Extraction Support	2.6%	1.5%	-44.3%
Industry	36.5%	20.3%	-44.4%
Auto	9.8%	5.1%	-47.8%
Non-metallic products	2.3%	2.6%	10.7%
Pulp	4.3%	2.6%	-40.9%
Service	44.6%	52.5%	17.8%
Utilities	5.4%	10.2%	88.4%
Retail, ex-auto	6.8%	8.7%	26.6%
Financial Services	6.8%	7.2%	6.3%
Transportation	2.3%	5.8%	152.1%
Real Estate	2.3%	3.5%	53.3%
Warehousing services	3.6%	2.8%	-21.3%
IT services	4.1%	2.4%	-42.5%

Source: Banco Central do Brasil. Note: Doesn't include intercompany loans.

Portfolio investment: Foreign portfolio net flows have been negative since 2016. In 2019, flows were negative at -US\$11bn, dragged down mainly by debt (-US\$8.4bn). Only mutual funds were in positive territory (US\$2 bn) in 2019.

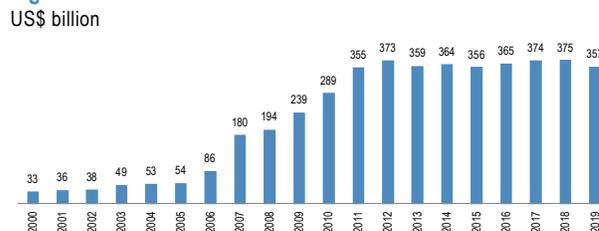
Figure 123: Net Portfolio Inflows



Source: Banco Central do Brasil, DataStream.

International reserves: **Brazilian international reserves reached US\$356.9 billion at the end of 2019.** This is US\$17.8 billion less than the level of reserves in the same period of 2018. The decline in the international reserves was led by BCB interventions (US\$34.6bn).

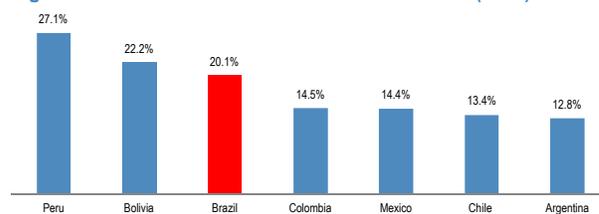
Figure 124: Brazil International Reserves



Source: Banco Central do Brasil. Note: 2019 December.

Brazil's reserves have been consistently equivalent to around 20% of GDP. In the past, it used to be the LatAm country with the highest reserve as a share of GDP, but it has been superseded by both Peru and Bolivia.

Figure 125: International Reserves as a % of GDP (2018)



Source: World Bank.

External Debt

By September 2019, total external debt in Brazil excluding inter-company loans reached US\$325.6 billion, or approximately 17.5% of GDP. This is pretty much the same level that has been in place since 2016. In addition to that, there are US\$250 billion in intercompany loans, which increased by US\$30 billion over the past three years.

The profile of Brazilian external debt has changed significantly since the 1980s. Previously, the public sector was the greatest external debtor (in 1985, for example, it was responsible for about 82% of total external debt). Nowadays, the general government and the central bank account for 24.5% of total debt, a level that has been stable over the past few years. Other state-owned companies account for an additional 14.7% of total external debt, with public sector banks responsible for the greatest share.

Table 49: External Debt Stock

External Debt by Debtor	US\$ Billion	% of Total
Public Sector	127.8	39.2%
Private Sector	197.8	60.7%
Gross External Debt Ex-intercompany loans (A)	325.6	48.4%
Short Term	73.2	22.5%
Long Term	252.4	77.5%
Intercompany Loans (B)	240.2	35.7%
Local Debt Held by Foreigners (C)	106.8	15.9%
Total Debt (= A + B+C)	672.7	100%

Source: Banco Central do Brasil; Note: As of September 2019

In February 2008 the central bank announced that, for the first time in history, Brazil had enough resources to cover its external debt. This means that international reserves were higher than total public external debt, making the country a **net external creditor**. This continues to be the case, as the ration of international reserves to gross external debt is currently at 115.6%, that is, international reserves surpass all of the gross external debt by 15.6%.

Figure 126: Gross External Debt as a % of GDP

% of GDP



Source: Banco Central do Brasil, J.P. Morgan. 2017 as of June.

Corporate Debt: Brazil used to be the largest issuer in EM, a position that was overtaken by China in 2014. In 2018, Mexico took the second place away from Brazil, which now stands in the third position. At YE2019 Brazil had US\$161.8 billion of external corporate bonds outstanding, or 6.8% of the total.

Figure 127: Top 10 EM Countries: External Bond Stock



Source: J.P. Morgan

Brazil's share has declined (it was almost 15% at the end of 2012) for a few reasons: 1) There were virtually no new issuances during the recession (just US\$8 billion in 2016 and US\$18 billion in 2016). Indeed, the current level of Brazilian external corporate bonds outstanding is today at the same level as in 2012. 2) China issuances increased exponentially, and today China is the biggest factor responsible for the full increase in total EM external bond stock (US\$2.38 trillion, of which 33% is Chinese, up from only 9% in 2013). And 3) due to the reduction in interest rates in Brazil, many companies are retiring their dollar debt and issuing locally instead. JPM estimates that Brazilian companies retired US\$27.6 billion in bonds in 2018 and US\$17.5 billion in 2019.

Table 50: Brazil Corporate external bond retirement (US\$ mil)

Brazil	2013	2014	2015	2016	2017	2018	2019
Buy back	-	-	-	-	1,150	1,512	228
Tender	2,925	5,941	3,183	11,580	9,349	18,608	11,942
Call	-	-	-	185	4,235	7,500	5,332
Total	2,925	5,941	3,183	11,765	14,735	27,620	17,502

Source: Source: J.P. Morgan. Notes: includes Buyback, Tender and Call

It is interesting to note that the central bank has been pointing out the retirement of USD debt by Brazilian companies as one of the reasons why the BRL depreciated in the course of 2019.

CEMBI: Brazil is also the second largest country in the CEMBI Broad (J.P. Morgan Corporate Bond Index), representing 11.76% of the index, behind China at 25.09%. In terms of sector composition of the CEMBI Brazil Broad, oil & gas lead with a 26% share followed by financials at 22%.

Figure 128: CEMBI Broad Brazil Sector Breakdown

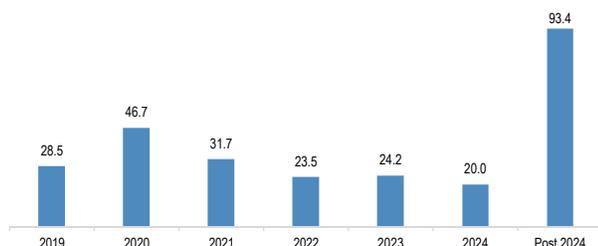
Consumer	13.7%
Diversified	2.0%
Financial	22.0%
Industrial	8.4%
Infrastructure	0.3%
Metals & Mining	11.3%
Oil & Gas	26.2%
Pulp & Paper	7.6%
TMT	1.8%
Transport	2.9%
Utilities	3.8%

Source: J.P. Morgan

The amortization schedule for Brazilian companies in the next few years will decline significantly from the levels observed in 2020. Of the total US\$270 billion of external debt outstanding (excluding short-term interbank loans), US\$46.7 billion will mature in 2020 80% of which is long-term debt. The heaviest month in terms of re-payment of both principal and interest is July, followed by February and January.

Figure 129: External Debt Amortization Schedule

US\$ billion



Source: J.P. Morgan, Banco Central do Brasil. Note: As of September 2019.

Local corporate debt market: Development of a local corporate bond market: In the past, there was an important incentive for Brazilian companies to issue abroad as the cost of capital was a lot lower than it is internally. Not only that, but the availability was greater as well, considering that local banks, other than the BNDES, were always reticent to lend long term to corporates. Recently, there have been efforts to deepen the local corporate bond market, with the issuance of tax free bonds in selected sectors. Considering the deep decline in rates, this market is becoming more interesting, gaining liquidity and more options in terms of issuers. Issuance of local corporate debt has been increasing since 2017, reaching R\$174 billion in 2019, up 13% oya. Tax free debentures, which are tax free for retail investors and directed to infrastructure projects, reached R\$33.2 billion in 2019, up 52% oya.

Fiscal Policy

Brief history: During the 1980s and first half of the 1990s, inflation was the big problem for the Brazilian macro story. Since the relative stabilization of prices with the advent of the Real Plan and later with the inflation-targeting system, the Achilles' heel of the Brazilian macro story became the fiscal accounts, although there were bouts of high inflation during the Dilma administration. The first serious efforts on the fiscal front took place with the advent of the Asia crisis in 1997. This was the first time that the government started to work with the concept of establishing a fiscal target, and the

chosen measure (which remains to this day) became the primary fiscal target, which is the public sector budget balance excluding interest payments. It became consolidated in the late 1990s and 2000s as a key fiscal metric and, slowly but surely, it became more robust, rising from 0.2% of GDP in 1997 to 1.8% of GDP in 1999. In May 2000, the Cardoso administration was able to pass the **Fiscal Responsibility Law** in Congress, which among other things established limits of spending on personnel and the prohibition of creating new permanent spending without matching revenue, among others. If the law is not complied with, the heads of the executive branch in each of the three levels of government can be found criminally liable.

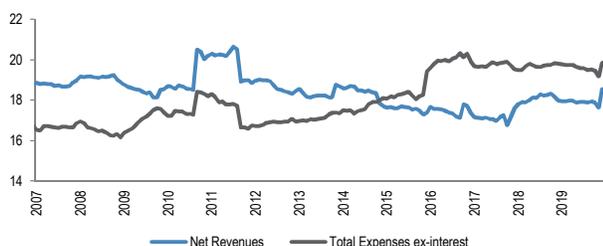
When President Lula won the 2002 elections, one of the first economic measures of the new administration headed by Finance Minister Antonio Palocci was to increase the primary surplus target to 4.25% of GDP (was 3.75%), thus promoting an important fiscal effort and boosting confidence in the incoming administration. The primary fiscal target was increased once more in 2004, this time to 4.5% of GDP. The solid fiscal results led to an increase in confidence in macroeconomic stability and, ultimately, to Brazil being awarded investment grade by the three large rating agencies in 2008 and 2009. It is difficult to pinpoint exactly when the fiscal effort started to deteriorate, but the 2008 financial crisis was without question a turning point. Then, the government started to take the first dives into a countercyclical fiscal policy by enacting tax cuts and increasing social expenditures. It also boosted the role of the BNDES, allowing it to extend loans to companies and promote Brazilian champions (large companies that had the potential to be leaders in their sectors in Brazil and abroad).

While Brazil exited the **2008/09 crisis** relatively unscathed, the waning of Chinese stimulus in **2009/10**, combined with lower commodity prices and a general global economic deceleration, led the government to deepen the countercyclical measures. By **mid-2011** the Dilma administration embraced fiscal stimulus to boost domestic demand and GDP growth via a variety of measures: tax relief, increased government spending, subsidies, delays in some payments, and quasi-fiscal measures in the form of loans from the Treasury to public banks, which had no impact on the primary budget balance but implied subsidized interest rates as the Treasury issues bonds at market rates and lends to public banks at much lower levels most of the times linked to the TJLP long-term interest rate, increasing interest expenditures and gross debt. Those measures failed to boost economic growth but sharply lowered the fiscal

balance and significantly reduced fiscal policy transparency. The deterioration of the fiscal accounts during the Dilma administration was, breaching the fiscal responsibility law and providing the legal grounds for her impeachment process. **By November 2014, the primary surplus turned into a deficit for the first time since the mid-1990s, and it has continued to be on the red since then.**

Figure 130: Federal Government Revenues and Outlays

% of GDP, 12-month rolling



Source: National Treasury; Note: The difference between the two lines is the primary surplus/ deficit.

Investment grade loss: On September 9, 2015, Brazil lost the status of investment-grade rating. Standard & Poor’s downgraded the country’s long-term foreign currency debt rating to BB+. Brazil initially became investment grade in May 2008 following years of fiscal consolidation. The S&P move followed two consecutive downward revisions in Brazil’s primary fiscal targets (July and August 2015). More importantly, it reflected the sheer incapacity of Congress and the Executive to agree on getting a fiscal consolidation plan going. The situation continued to deteriorate a great deal as policy making came to a halt in 1H16, when the impeachment process of President Dilma was ongoing. By the end of 2015, the debt to GDP ratio in Brazil was 65.5%, up from 56.3% at the end of 2014. The primary fiscal budget closed 2015 with a deficit of 1.86% of GDP (original target was +1.2%), from -0.56% in 2014.

Table 51: Metrics of BBB/BB rated EM countries at the time of Brazil’s IG loss

	Gross debt	Govt. Balance	Primary balance	C.A. balance	Reserves / C.A. (months)
Russia	17.0	-3.4	-2.1	1.0	6.5
Peru	19.0	-2.0	-1.0	-5.1	10.1
Indonesia	25.0	-2.0	-0.7	-2.8	4.9
Colombia	32.0	-2.4	-0.1	-5.2	5.3
Turkey	35.0	-2.4	-0.1	-5.1	5.4
Mexico	41.0	-2.7	-1.1	-2.4	4.6
South Africa	48.0	-3.8	-3.8	-4.7	4.3
Brazil (S&P)*	64.3	-4.8	0.2	-4.3	12.6
Brazil (J.P. Morgan)	65.9	-7.5	0.1	-4.3	-
India	66.0	-6.4	-1.7	-1.1	5.9
Hungary	76.0	-2.6	1.6	3.3	3.9
BBB+ median	37.5	-2.0	0.6	-2.4	4.6
BBB median	37.0	-3.0	-0.9	-4.4	3.4
BBB- median ex-Brazil	50.0	-2.8	-0.6	-1.0	5.1
BB+ median	29.0	-2.6	-0.7	-1.5	4.4

Source: S&P; J.P. Morgan. 2015 estimates were released in March 2015, except for Brazil, which was released in July 2015.

Following the impeachment of President Dilma and the appointment of VP Temer (2016), the economics team was totally changed. **Henrique Meirelles took over as Finance Minister and with him a dream team of economist and policymakers**, many with PhDs from the best American universities and with experience in government. They started to try to turn around the fiscal accounts, an effort that continues under Economy Minister Paulo Guedes. Indeed, the primary deficit of 2019 was the lowest since 2014.

Spending Ceiling Law

At the start of 2016, officials at the Finance Ministry under President Dilma Rousseff were already talking about a plan to create a constitutional ceiling for government spending. Also, there was talk about social security reform, but the political events that took place from March 2016 onward halted any progress on the macro agenda. After the impeachment process was voted in the Lower House (April 2016), VP Temer took over the country’s highest executive office. He was able to put together a very strong and credible macro team, headed by Ilan Goldfajn at the central bank and Henrique Meirelles at the Finance Ministry. The most important economic policy measure enacted in 2016 was the approval of a law that established a spending ceiling. Constitutional Amendment 95 established that spending could go up in real terms for the next 20 years. The readjustment of all government spending would be in line with the inflation reading based on the 12-month accumulated CPI reading of June of the previous year. Because total spending is limited by the ceiling, the real increase in expenses on one particular item must, by default, translate into the reduction of spending on another item.

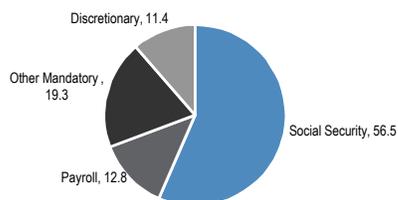
The budget of each year is normally produced so as not leave any room on the spending ceiling, but considering that not the entire budget is executed, there is a minimum gap between what is actually spent and the ceiling.

The Instituição Fiscal Independente (IFI), an independent entity within the Senate that monitors fiscal policy, estimates that the fiscal margin, that is, the difference between the ceiling and total mandatory spending is at R\$91.2 billion in 2020, which is 10% higher than the minimum level required for the functioning of the state. Thus, there is little risk of the ceiling of spending being breached in 2020. However, the 2021 fiscal margin is at R\$70.7 billion, with R\$80.2 billion required for the functioning of the public sector machine. Thus, there is a high risk of the ceiling of spending being breached next year. The conclusion is that even though there has been an improvement on the fiscal data, there remains a need to control mandatory spending.

In this context, the Economy Ministry has been working on measures that would overtime reduce the level of mandatory spending on the budget, considering that the level of discretionary spending is very small for adjustment.

Figure 131: Federal Government Expenditures by Category, 2019

% of total expenditures



Source: National Treasury.

Social Security Reform

As in many other countries, social security is a burden to state coffers. Brazil has been reforming or trying to reform it since the turn of the century, with different degrees of success. In 1998, the Cardoso administration tried to establish a minimum age of retirement, and it didn't go through by only one vote. In 1999, the Cardoso administration implemented the "retirement factor," which reduced the amount of benefits in case one were to retire earlier or save less. It was able to smooth the rising deficit and suffered many methodological changes over the years. In 2003, President Lula's social security reform implemented a minimum age of retirement for public sector workers that entered service after the law's approval. It also established less generous benefits. In

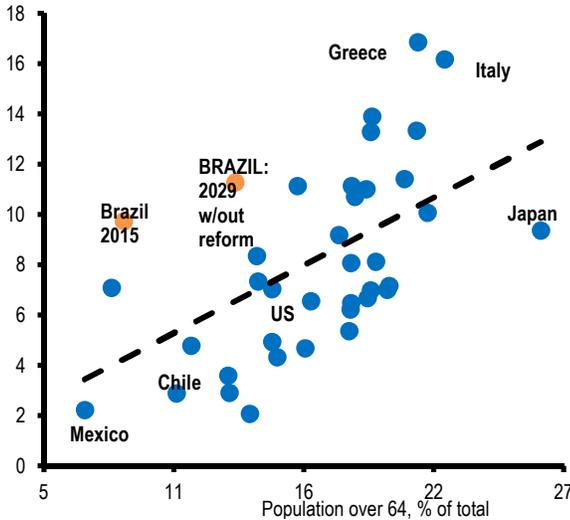
2012, President Rousseff approved the Funpresp, which established a complementary pension fund system based on individual accounts for civil servants who wished to save more than the ceiling. Finally, after approving the spending ceiling law, the Temer administration focused on getting social security reform done. As was notorious, the efforts failed politically after tapes involving the President in supposed wrongdoing were released to the press (May 17, 2017), and his Congressional support plummeted.

A short narrative of Social Security Reform under the

Bolsonaro administration: Social security was a key theme during the 2018 election campaign, with virtually all candidates supporting one kind or another of adjustment. With the victory of Jair Bolsonaro, there was great expectation that his economics team was going to pick up where the Temer reform was left, thus using the same proposal. However, in February 2019, Economy Minister Guedes announced that the administration would start the reform from scratch. Markets initially didn't like it, but when the proposal was presented, it was very well received because it envisaged a much more ambitious overhaul of the system, with projected savings at R\$1 trillion in 10 years. Markets were very skeptical that such a target would be achievable, and for most of 1H19 the market oscillated around views on the final result of the reform in terms of timing and amount saved. At the end of the day, the reform did deliver savings that were close to R\$1 trillion, according to the government's estimate, despite some modifications from the original proposal.

Why was Social Security Reform so crucial? Brazil is a relatively young country and already spends around 11% of GDP on social security. As the population is expected to age quickly, the projected expenditure with social security will increase. In 2018, about 58% of the federal government primary government spending was destined to social security. Relative to other countries, Brazil is the one that spends the most relative to the proportion of people that are aged 65 or more.

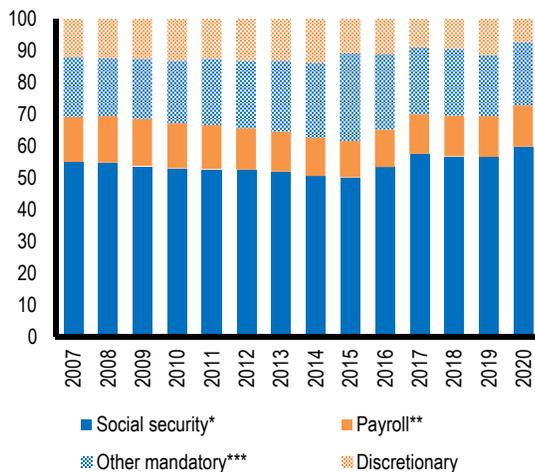
Figure 132: Social security spending, % of GDP, Selected Countries



Source: OECD, World Bank 2015 values. IB GE, National Treasury, J.P. Morgan

One of the main reasons for the explosive increase in social security deficit is that in Brazil there was no minimum age of retirement. This was one of the few countries in the world where this happens. The result is that people end up retiring earlier, thus increasing the burden of the state, especially considering that the life expectancy has been increasing.

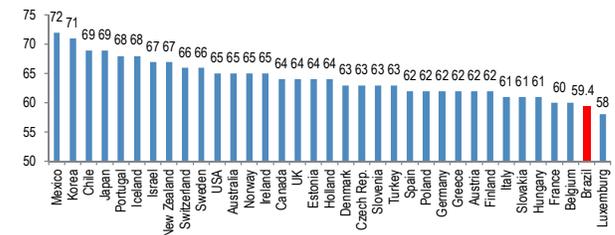
Figure 133: Central Government Primary Spending % of GDP



Source: National Treasury. Notes: * includes private and public pensions and LOAS transfers. ** Excludes civil servants pensions. *** Includes mandatory spending on health and education.

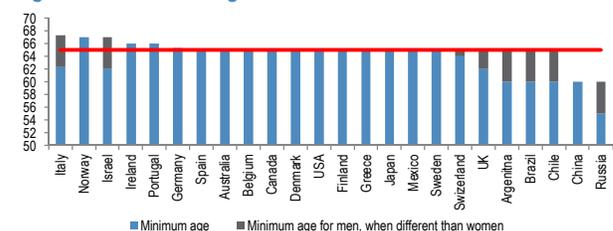
The objective of the reform was to reduce the speed at which spending on pension was growing, which could risk taking total expenditure past the spending cap in a few years. Considering that the Brazilian population is aging and that Brazilians retire at a very early age, the core of the reform consisted of establishing a minimum age of retirement (65 years old for men and 62 for women) and eliminating the possibility of retirement per years of contribution (which exists in only a small number of countries). These rules are to be valid for all new retirees already in 2020, but with a transition period that should last beyond 2030

Figure 134: Average age of retirement for men at OECD countries and Brazil



Source: Finance Ministry with OECD data (2012 average of the past 12 years) and MTPS

Figure 135: Minimum age for retirement



Source: Ministério da Fazenda; J.P. Morgan

Other than rules for the minimum age of retirement, transition, and the end of the retirement per time of contribution, the reform aimed to unify all the social security systems – that is, rural workers will have the same retirement rules as urban workers; civil servants will have the same rules as private sector workers; and also changes would be made in rules for retirement of the military. This was perhaps the biggest challenge of the reform as each interest group lobbies to have its special rules maintained in the new system. Last but not least, the reform aimed to change rules for survival pensions (one cannot accumulate the benefit above the ceiling of the private sector social security, today at R\$5531/month) and for the BPC benefit, which grants one minimum wage for the elderly and disabled who earn less than one-fourth of a minimum wage per month, but did not succeed in all areas.

Figure 136: Social Security Reform Impact in 10 years

BRL billion, prices of 2019, excluding impact of parallel bill

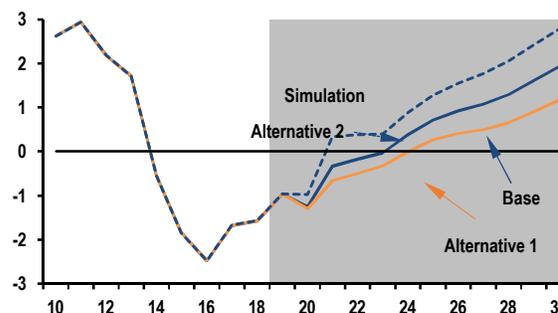
Aspects of reform	Senate	
	J.P.Morgan	Approved
Private workers (RGPS)	569.6	651.6
Urban ²	482.4	547.3
Rural ²	0.0	0.0
Survivors' benefits	87.1	104.3
Changes in RGPS tax rates	-27.8	-28.4
Public servants (RPPS)	132.7	123.0
Changes in RPPS tax rates	27.2	25.7
Assistance and wage bonus	0.0	0.0
Continued benefits (BPC)	0.0	0.0
Wage bonus	0.0	0.0
Fiscal impact - excl. revenues	701.7	771.9
Increase in CSLL tax rate for banks	-	19.2
Fiscal impact	701.7	791.1

Source: Economy Ministry, Senate/ IFI estimates, J.P. Morgan. Notes: 1) with real gain in minimum wages from 2023 onwards; 2 – excluding survivors' benefit.

Impact on fiscal accounts: JPM economists did a few simulations for the debt path. In the longer term, debt dynamics will depend on reforms to both recover the primary surpluses but mainly to maintain the confidence of market agents in fiscal sustainability, thus allowing inflation to remain anchored and reduce the structural interest rate. If we assume GDP growth of 2.2%, GDP deflator at 4.0%, real interest rate at 3% in the coming years and privatizations of BRL16bn in 2020 and BRL55bn in 2021 (“Base case”), we should expect the gross debt to continue to rise slowly towards a peak of 77.5% of GDP in 2024 and start a very mild declining trend afterwards. In a more negative scenario (dubbed “Alternative 1”) of longer-term growth at 1.5%, real interest rates at 3.5% and half the amount of privatizations each year, debt would continue to grow, reaching 89% of GDP in 2030. Conversely, a more positive scenario (dubbed “Alternative 2”) of both longer-term growth and interest rate at 3.0% and double the amount of privatizations than in the “Base case,” debt would quickly embark on a falling trend and reach nearly 60% by 2030.

Figure 137: Primary Fiscal Balance in Different Social Security Scenarios

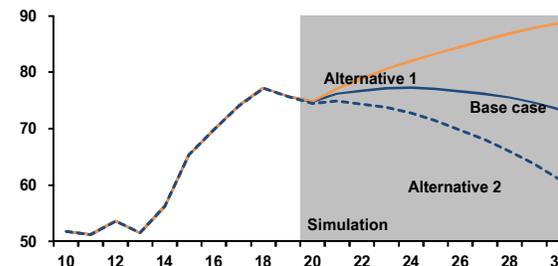
% of GDP



Source: J.P. Morgan. Note: For “base case”, GDP will grow 2.2% and real rates will be at 3%. For “alternative one”, GDP grows 1.5% and real rates stand at 3.5%. In “alternative 2”, GDP will grow 3% and real rates will be 3%.

Figure 138: Gross Debt Simulation in Different Social Security Scenarios

% of GDP



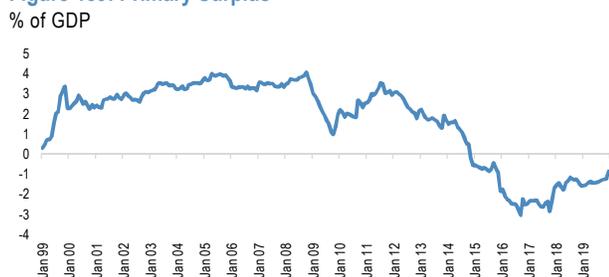
Source: J.P. Morgan. Note: For “base case”, GDP will grow 2.2% and real rates will be at 3%. For “alternative one”, GDP grows 1.5% and real rates stand at 3.5%. In “alternative 2”, GDP will grow 3% and real rates will be 3%.

Fiscal Indicators

Primary surplus: The primary surplus gained importance in the late 1990s when Brazil signed a rescue program with the IMF. The primary surplus became the main fiscal target, and to this day the government sets its fiscal goals in the annual budget by establishing a primary surplus target. In the late 1990s the target was relatively modest, at around 2.0-2.5% of GDP, but later it was increased. In January 2003, when former President Lula took office, Finance Minister Antonio Palocci implemented a new round of fiscal corrections, further increasing the primary surplus target to 4.5% of GDP from 3.75%. Since then, and especially during the first Dilma administration, the target was decreased towards aiming at deficits. In 2012-14, the government made ample use of creative accounting to boost the primary surplus result. These maneuvers or “pedaladas” ended up being the legal rationale behind the impeachment of

President Dilma. Examples include state companies having to advance dividend payments to the government to boost the primary surplus. Also, it was determined that the government wasn't going to be responsible for whether states and municipalities actually complied with the primary fiscal surplus. Expenses with the infrastructure PAC program were also excluded from the target. The result of all this is that the primary surplus quickly eroded and turned into a deficit. By mid-2016, the primary deficit peaked at 3% of GDP. Then, in the post-Dilma impeachment period, Finance Minister Henrique Meirelles and his team started to work to reduce the deficit. Stagnant growth has not helped, and a lot of the improvement comes from extraordinary events. In 2019, the primary deficit closed at 0.85% of GDP, and it is not forecast to return to a surplus before 2022. The 2019 result, however, was R\$41 billion better than targeted, partly due to non-recurring revenues coming from Petrobras's Transfer of Rights auction. On the spending side, the government froze part of the budget for most of the year, freeing up resources only in November, thus not giving enough time for the different entities to actually spend, which thus reduced planned expenditures.

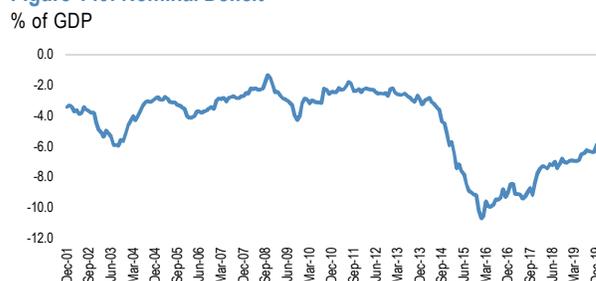
Figure 139: Primary Surplus



Source: Banco Central do Brasil.

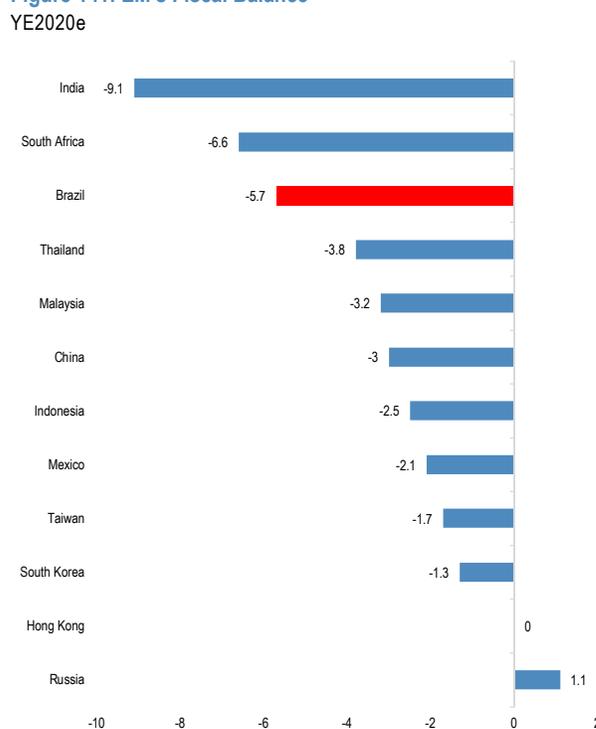
Nominal deficit: The nominal deficit reflects the overall fiscal status of the country. The nominal deficit reached its best point at the end of 2008, at -1% of GDP. The first Lula administration had a plan to lock in gains in the fiscal accounts by establishing rigid spending controls, but the adjustment faced opposition even within the Lula administration. Still, at the time, there was even talk of a balanced budget in Brazil. The advent of the 2008 crisis led the government to open its coffers, more than doubling the nominal deficit. The 2015-16 recession led the deficit to balloon, reaching a high of 10.7% of GDP in January 2016. Since then, the nominal deficit as a percentage of GDP has been in a downward trend, mainly driven by lower interest rates and a slightly better primary result. At the end of 2019, the nominal deficit stood at 5.91% of GDP.

Figure 140: Nominal Deficit



Source: Banco Central do Brasil.

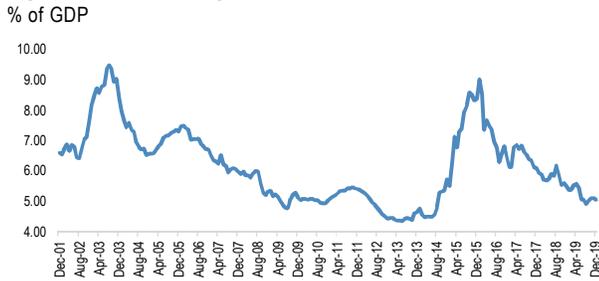
Figure 141: EM's Fiscal Balance



Source: J.P. Morgan

Interest payments: Economy Minister Paulo Guedes likes to say that Brazil pays in interest “one Marshall Plan per year.” In 2019, Brazil paid R\$367 billion in interest payments, or 5.06% of GDP. While this is high, it has been coming down over the past five years, since the central bank started to cut interest rates.

Figure 142: Interest Payments

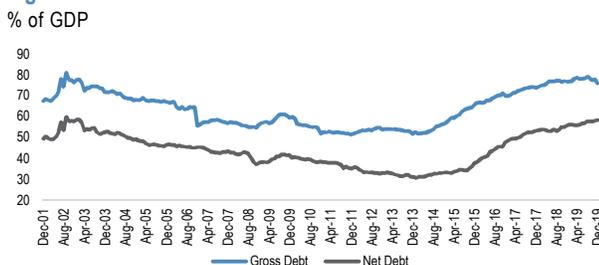


Source: Banco Central do Brasil.

Public Sector Debt

Brazilian public sector debt has come full circle in a little over a decade. Prior to the global credit crisis in 2008, markets concentrated on the net measure of public sector debt. In 2002/2003 the net debt-to-GDP ratio reached over 60% as a great deal of the debt was denominated in foreign currency at a time when the BRL suffered a significant devaluation due to fears related to the election of President Lula. With the appreciation of the exchange rate, economic growth and large primary surpluses, net debt started to decline and remained between 30% and 35% until 2015, when actual debt started to climb. At the end of 2019, the net debt to GDP ratio stood at 55.7%. However, **net debt is no longer considered a useful way to look at the overall debt of the country.** This is because the government issued a lot of debt to capitalize BNDES and other government entities from 2010 onwards, but this does not show up in the net debt accounts: debt issuances (liabilities) are matched by credits against BNDES assets. Therefore, the **focus has shifted to gross debt**, which provides a more realistic picture of the problem. In December 2019, it stood at 75.8% of GDP, some improvement from the 2018 reading of 76.5%. Nonetheless, it is well above the levels seen in December 2013, when it registered 51.5% of GDP.

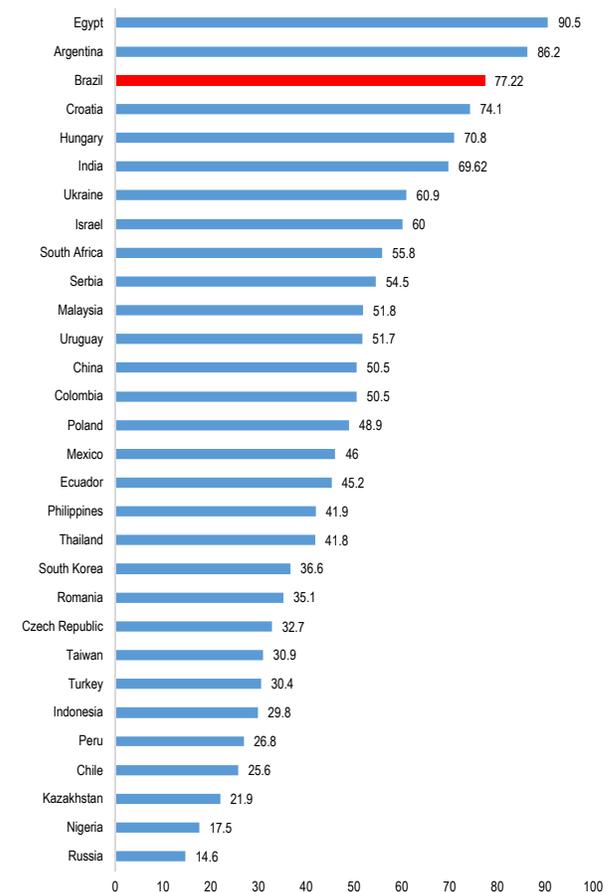
Figure 143: Gross Public Sector Debt



Source: BCB, Finance Ministry and J.P. Morgan estimates.

After years of increase, it now seems that the debt is starting to stabilize, and with prospects that it could go lower, considering the approval of the social security reform, the spending ceiling, and the overall fiscal effort. Also, the Economy Ministry seeks to allocate a good part of the resources from the privatizations to retire debt.

Figure 144: General Government Gross Debt YE2018



Source: Trading Economics, J.P. Morgan.

Internal (domestic/local) public sector debt: In December 2019, Brazil's internal debt stood at R\$4.8 trillion, or 66.2% of GDP, corresponding to 87.3% of the total debt of the country. Almost all of this amount comes from Treasury debt. Over the past 10 years or so, there have been important changes in the composition of Brazil's internal debt:

- There was a successful effort to decrease the level of floating rate debt at the time when rates were high, but more recently, this modality has increased in

importance, while fixed rates and inflation-linked rates fell some.

- The level of FX-linked debt was greatly reduced, which makes Brazil less vulnerable to exchange rate variations.

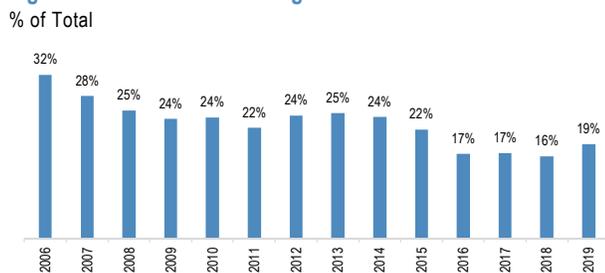
Table 52: Composition of the Federal Public Debt

% of total	2017	2018	2019
Federal Public Debt Stock (R\$ Billion)	3,559.3	3877.06	4248.91
Composition (%)			
Fixed rate	35.3%	33.0%	31.0%
Inflation linked	29.6%	27.5%	26.0%
Floating rate	31.5%	35.5%	38.9%
FX linked	3.6%	4.0%	4.1%
Maturity structure			
Average maturity (years)	4.3	4.1	4.0
% expiring in 12 months	16.9%	16.3%	18.7%

Source: Tesouro Nacional.

The average maturity of the overall domestic debt held by the public sector has increased from less than one year at the end of 1999 to about 4 years by December 2019. Currently, 18.7% of the Brazilian federal debt matures in less than 12 months, down from nearly a third in late 2006.

Figure 145: Total Debt Maturing in Less than 12 Months



Source: Tesouro Nacional.

In terms of maturities, inflation-linked instruments have longer maturities, reaching about 12.08 years on average as of December 2019, and have contributed most to the lengthening of the average maturity for total debt. Average maturity for fixed-rate instruments (LTN) is around two and a half years.

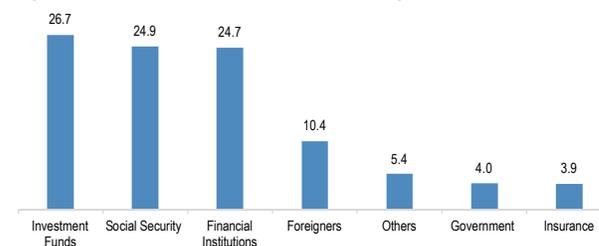
Table 53: Average Debt Maturity by Type

	Dec-12	Dec-19
Total Debt	6.4	5.4
Internal Debt	6.2	5.2
Fixed Rate	2.2	2.3
Inflation Linked	13.1	12.1
Floating Rate	2.1	3.1
FX	10.3	4.8
External Debt	12.4	11.8

Source: Tesouro Nacional.

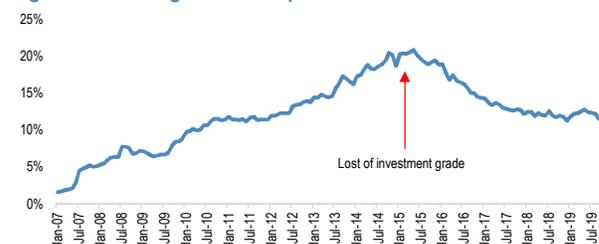
Although the great majority of local Brazilian debt is owned by Brazilians, foreigners have moderate participation, which peaked at 20% of total outstanding debt held by the public in mid-2015, up from 5% in December 2008 and 15% in mid-2013. From 2015 onward, after Brazil lost investment-grade status, foreign investors have been reducing their participation in the country's debt, reaching 10.4% in December 2019. Foreigners own mostly instruments that are fixed rate linked.

Figure 146: Distribution of Internal Debt by Creditor (% of total)



Source: Tesouro Nacional. Note: Data as of December 2019.

Figure 147: Foreigners Participation in the Internal Debt Stock



Source: Tesouro Nacional.

Sovereign Credit Ratings

Way up: Until 2006 the core rating agencies rated Brazilian public debt securities speculative. In 2007 the less-known R&I rating agency was the first to rate Brazil credit as investment grade. But the upgrade was only fully recognized by the market on April 30, 2008, when Standard & Poor's gave Brazil a BBB- rating, meaning

that the country was joining the select group of countries with investment-grade ratings. In May 2008 Fitch Ratings upgraded Brazil to investment grade, citing that fiscal consolidation combined with healthy GDP growth would continue to improve the country's debt profile. The last agency to announce an investment-grade rating for Brazil was Moody's, in September 2009. In April 2011, Fitch upgraded Brazil to one notch above the IG threshold. Moody's followed the move in June 2011, and S&P did the same in November 2011.

Way down: From 2011 onward, the upward trend of Brazil's ratings began to reverse. In 2014 S&P downgraded Brazil one notch (to BBB-), placing it at the lowest investment-grade level. The creative accounting of the first Dilma term and low growth were the main reasons behind the downgrade. But the outlook was maintained at stable, which was a sign of relative comfort. In 2015 the changes in fiscal targets and political struggles in Congress to advance the fiscal agenda led the rating agency to put Brazil on negative outlook, establishing that the possible next move could be the loss of the investment-grade rating, which finally happened in **September 2015 (BB+)**. At the start of 2016, S&P downgraded Brazil one more notch to **BB**. Finally, on January 2018, the rating was downgraded once more to **BB-**, thus three notches below investment grade. Moody's, on the other hand, was more conservative in its actions. It held Brazil at one notch above investment grade until August 2015, when it finally downgraded the country's to Baa3, still investment grade. The loss of the investment grade came only in February 2016, when Brazil was classified Ba2, and it remains at that level at the time of this writing. At this point, Brazil's sovereign credit rating is considered speculative by all three rating agencies. **On December 11, 2019, S&P put Brazil on a positive outlook** mostly due to the approval of the social security reform, which should improve Brazil's fiscal position over time.

Table 54: Brazil Sovereign Ratings History

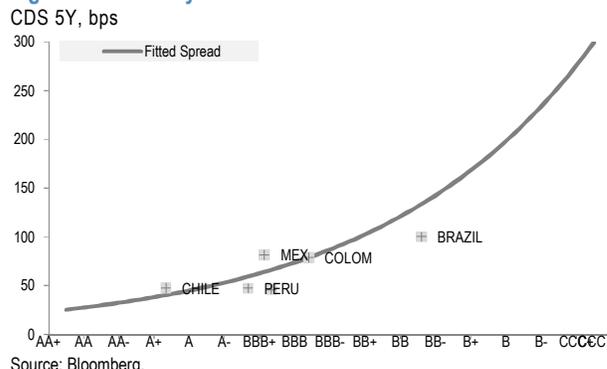
	2009	2010	2011	2012	2013	2014
S&P	BBB-	BBB-	BBB	BBB	BBB	BBB-
Fitch	BBB-	BBB-	BBB	BBB	BBB	BBB
Moody's	Baa3	Baa3	Baa2	Baa2	Baa2	Baa2
	2015	2016	2017	2018	2019	Outlook
S&P	BB+	BB	BB	BB-	BB-	Positive
Fitch	BB+	BB	BB	BB-	BB-	Stable
Moody's	Baa3	Ba2	Ba2	Ba2	Ba2	Stable

Source: Bloomberg. Note: highlighted cells are investment grade rating

Even though Brazil is far from an investment-grade rating, the country's credit default swaps are today at a level that would be almost investment grade. The next

chart shows the fitted 5 year CDS spread of the average sovereign spread rating of LatAm countries compared with their current rating. Brazil today has a spread that would be more in line with a BB+ rating (one notch below investment grade) than the BB- that it holds currently.

Figure 148: Country Risk around Investment Grade



Tax System

Brazil is known to have one of the most complicated and expensive tax systems in the world. The main reason for this is that Brazil has many taxes, several of which are indirect and cascading, functioning in a system without unified legislation at any government level. The precarious tax system is blamed for inhibiting business activity and, consequently, harming development.

Table 55: Complexities of the Brazilian Tax System

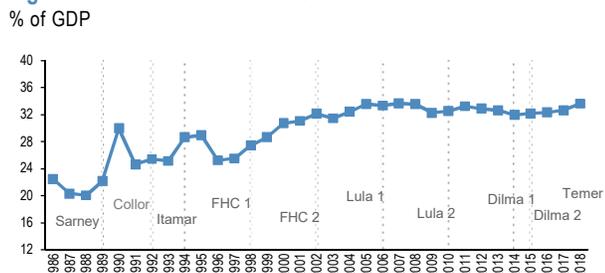
Main Complexities
- Different taxes are levied on the same product
- Six indirect taxes on goods and services; most countries have one or two
- Constantly changing legislation
- At the federal level, four taxes and three tax systems
- At the state level, 27 different legislations (one for each state), different rates and criteria
- Two taxes on business profits (CSLL and IRPJ)
- High bureaucratic costs
- Disputes with the tax authority

Source: "Tax Reform," Brasilia, D.F., February 28, 2008.

Tax burden in Brazil is high: Taxes in Brazil started to go up at around 1997/98, at the end of the first Cardoso administration. At that time, the Brazilian government promoted a fiscal shock, trying to counteract the effects of the Asian crisis that were fast making their way to Brazil. President Cardoso's government increased taxes and tried to cut spending. However, it was successful only in the first goal. Total tax collection in

Brazil increased from 25% of GDP in the mid-1990s to the low to mid-30s%. Over the past few years, it has been fluctuating around 32 and 34% of GDP, impacted by activity level and specific policies. For example, during the first mandate of President Dilma, several tax subsidies were granted. It was an attempt to boost economic activity, favoring local companies, mainly from the industrial sector. The protectionist tax policy did not yield good results, as growth didn't improve and the fiscal accounts worsened. Subsequent Presidents have been consistently trying to reverse some of these subsidies, but this has been more difficult than expected as it needs congressional approval. Within total taxes, almost 68% is from the central government, 25% is related to states and 6.3% are municipal taxes.

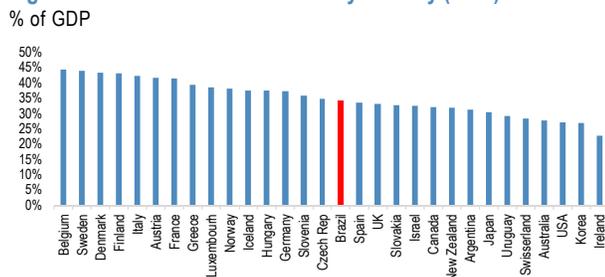
Figure 149: Total Taxation as a % GDP



Source: Instituto Brasileiro de Planejamento Tributario (IBPT), Tesouro Nacional. Data until 2002 is from IBPT, from 2002 to 2010 data is from the National Treasury. From 2010 it is from the National Treasury with a new methodology.

Not only are taxes high in Brazil, they are also among the highest in the world. Indeed, if Brazil were an OECD country, it would have the 16th largest tax burden among this group.

Figure 150: Tax Burden/GDP Ratio by Country (2017)



Source: OECD and Instituto Brasileiro de Planejamento Tributário for Brazil data.

In 2019, the IBPT produced a study indicating that among 30 countries with the highest tax rates, Brazil has the worst return for taxes, that is, what the population gets in terms of public service for the money it paid the government. The methodology of the study takes into account the level of tax collection compared with GDP and the HDI (human development index) calculated by

the U.N. The #1 on the list was Belgium, followed by Sweden and Denmark.

Figure 151: Ranking: Level of Human Development relative to Taxes

1	Ireland	16	Slovakia
2	Australia	17	Slovenia
3	Switzerland	18	Uruguay
4	USA	19	Argentina
5	Korea	20	Luxembourg
6	Japan	21	Austria
7	Canada	22	Denmark
8	New Zealand	23	France
9	UK	24	Sweden
10	Israel	25	Greece
11	Norway	26	Finland
12	Spain	27	Hungary
13	Germany	28	Belgium
14	Iceland	29	Italy
15	Czech republic	30	Brazil

Source: Instituto Brasileiro de Planejamento e Tributação, "Índice de retorno do bem estar à sociedade"

One interesting aspect of the Brazilian tax structure is that over 42% of revenues (14% of GDP) come from taxes on goods and services, which is among the highest in the world. On the other hand, while the rest of the world usually has income tax revenues of around 40%-50% of total revenues, in Brazil these represent around 30% (personal and income tax combined).

Table 56: General Government Tax Profile - 2018

	R\$ billion	% of GDP	% of Total
Taxes	1662.44	24.4%	72.5%
Income Tax	489.86	7.2%	21.4%
Labor Tax	43.61	0.6%	1.9%
Property Tax	109.79	1.6%	4.8%
Good and Services Tax	978.31	14.3%	42.7%
Trade Taxes/ Tariffs	40.70	0.6%	1.8%
Others	0.17	0.0%	0.0%
Social Contributions	602.78	8.8%	26.3%
Private Sector Social Security	373.84	5.5%	16.3%
Public Sector Social Security	80.96	1.2%	3.5%
FGTS Contribution	124.43	1.8%	5.4%
PASEP Contribution	12.27	0.2%	0.5%
Others	11.28	0.2%	0.5%
Other revenues	27.59	0.4%	1.2%
Administrative taxes	27.48	0.4%	1.2%
Others	0.12	0.0%	0.0%
TOTAL	2292.82	33.58%	100.0%

Source: Tesouro Nacional, J.P. Morgan

The worst tax system in the world? One of the most common issues regarding Brazilian taxes has to do with their complexity. A number of surveys indicate that Brazil's tax system is close to the worst in the world.

This means that companies have to allocate a great deal of resources and/or personnel to be up to date with their tax obligations and the constantly changing laws and regulations. According to the World Bank's "Doing Business," Brazil stands at 184 out of 190 in its Paying Taxes rank.

Table 57: Tax System Is Among the Worst in the World

Paying Taxes rank	184 out of 190
Payments (# per year)	10 (avg = 23.1)
Time (hours per year)	1501 (Avg = 234)
Total tax and Contribution rate (% of profits)	65.1% (avg = 40.5%)

Source: Global Competitiveness Report 2019, J.P. Morgan.

Tax reform

The problems surrounding the Brazilian tax system have been diagnosed for a long time, and over the last 20 years different administrations have tried to approve tax reform. Because of the political complexities involved in this endeavor, the government usually chooses to change taxes in line with its own interests, promoting bits-and-pieces changes in the legislation that end up complicating the system even more. Now, it is not different. The Bolsonaro administration, along with congressional leaders are looking to introduce a major overhaul of the Brazilian tax system. At the time of this writing, there is no consensus on what tax reform would entail, and a commission composed of members of the Lower House and Senate is to gather for 30 or 60 days to find consensus on the reform that is going to be voted on. It is interesting to note that while politicians are adamant that this reform is going to be approved in 2020 (some even say 1H), markets are skeptical about it.

Despite the different views on tax reform, a consensus has emerged over the past few years: First and foremost, the aim of the reform is to simplify the system without incurring less revenues (no tax cuts). Second, less is more. **The current focus is to reform tax on consumption. This would be done by creating a VAT** that would unify different taxes that are now in place and, in time, transfer the tax from where the good is produced to where the good is consumed. While the government has not yet presented its own proposal, there are two version of that in Congress:

- **Lower House – PEC 45:** This proposal has been idealized by Bernard Appy from the Centro de Cidadania Fiscal (CCIF). The main idea is the creation of a VAT tax that would bring together five different

taxes: PIS, Cofins, IPI, ICMS and ISS. The VAT would be called IBS, which stands for Tax on Goods and Services. The proposal also contemplates a federal tax on those products that generate negative externalities, such as cigarettes. There is a long (slow) transition period with the new tax substituting for others, starting with a 2% rate applicable for two years and progressing for full substitution in a total of 10 years. The transfer from the tax levy of where the good is produced to where it is consumed would take 50 years. IN the first 20 years of the transition, states that would eventually lose revenue with the new system would receive resources from a tax compensation fund to be created by the federal government. Exports would be completely exempted from the VAT, there would be immediate tax credits when due, and it would be non-cumulative. There will be only one VAT reference rate that would be valid across all goods and services. States and municipalities would be able to calibrate the VAT (sub-tax rate) on the % of the tax that belongs to them (if the VAT is set at 25%, 13.8% is managed by states and 2% by municipalities).

- **Senate – PEC 110:** This reform has been initially idealized by former Federal Representative Luiz Carlos Hauly. As in PEC 45, the objective is to simplify the tax on consumption by creating a VAT tax. The difference is that while the Lower House proposal contemplates the unification of federal, state and municipal taxes, the one in the Senate is a state and municipality tax that would substitute 9 taxes (instead of 5): IPI, IOF, PIS, PASEP, COFINS, CIDE - Combustíveis, Salário Educação, ICMS, ISS. There will be only one rate that is valid across the board, with some goods and services qualifying for different rates. Indeed, there would be fiscal benefits for food, medicine, public transportation, sanitation, and education. The proposal in the Lower House doesn't contemplate fiscal benefits. The transition would be a test rate of 1% for one year and then full implementation in 5 years. The transition in terms of where the tax is to be charged would take 15 years.

Market view on the tax reform: While the market is sympathetic to the idea of simple taxes, it fears that the system will end up with more distortions than it started, considering powerful lobbies and interests present in the National Congress. Moreover, the unification of all taxes into a single-rate VAT has the potential to create distortions. Because the VAT is non-cascading, it would generate tax credits in the different stages of production, which might end up benefiting those sectors that have a long production chain. On the other hand, services have no inputs, thus they do not generate credits and would be

paying higher taxes than they do now (around 3% for services compared with 9% for goods, depending on the tax regime). Another way to look at this is that sectors that have a very large payroll are more impacted than others considering that it is not deductible. These include transportation, telecom, software, healthcare.

Eliminating the Payroll Tax: The one way that the economics team thought about softening the impacts to services described above is to completely eliminate the payroll tax, which in its view also is one of the main factors that constrain job creation. For the payroll tax to be extinct, however, a new tax would need to be put in its place. The initial idea was the re-creation of the **CPMF tax**, a tax on financial transactions, that is very powerful in revenue generation and that was in place in Brazil from the mid-90s to 2007, when its renewal was voted down in Congress. However, the tax is very unpopular and President Bolsonaro repeatedly said that the idea is a no go. Still, speculation about its return always floats around. Another idea to finance that extinction of the payroll tax is the creation of a **digital transaction tax**. That would incur, for example, transfers/payments from mobile apps.

Income tax cuts? While the tax reform has been centered on tax on consumption, it is widely believed that the next step will be a re-organization of the income tax. Not much has so far been discussed on the matter, but Minister Guedes has expressed several times that he believes corporate income tax in Brazil is too high (34% rate) and should be a lot lower.

End of the IOC and Financial Markets Tax Changes: Income on own capital allows companies to deduct from taxable income a percentage of pre-tax earnings to be distributed to shareholders. Many companies chose to use this instrument as it provides them with a tax shield. The interest on own capital (IoC) was created in 1995 becoming a new instrument to remunerate shareholders. Brazil is the only country to adopt this way to distribute income to shareholders. Different from the payment of dividends, where the company pays for taxation (shareholders don't pay tax on dividends), IoC is taxed at the rate of 15% after being distributed. Over the past several years there have been constant discussions on the possibility that IOC will be eliminated. We estimate that the impact of a reversal in IOC would be an extra R\$14 billion in taxation for companies. Sectors that have a lot of IOC distribution include banks and food and beverages, but it is of common use across all sectors. Beyond the IOC, there is also significant discussion to establish a **tax on dividends** in Brazil and also to **eliminate the tax exemption for some investment**

vehicles like REITs, notes that finance agriculture and real estate, exclusive investment funds, among others.

Main taxes

An ordinary Brazilian is subject to several taxes and may not know where all the money is going. The complexity of the system makes understanding it difficult. Perhaps the greatest complication is the fact that Brazil doesn't have a single VAT on consumption (yet). What would be a VAT is divided into three spheres (union, states, and municipalities) and each one has its own legislation and tax rate.

Listed below are some of the main taxes grouped by the jurisdictions responsible for collection. A brief explanation of the taxes with the highest contributions to the country's overall revenues follows.

Table 58: Main Taxes Charged in Brazil

Federal Taxes	% of Federal Tax Collection in 2019
Social Security Tax (INSS)	29.46
Income Tax (IR)	29.2
Contribution for Social Security Financing (COFINS)	17.2
Social Integration Program (PIS/PASEP)	4.6
Tax on Industrialized Products (IPI)	3.9
Social Contribution on Net Profit (CSLL)	5.9
Financial Transaction Tax (IOF)	2.8
Imported Goods Tax (II)	2.9
Contribution on Economic Domain – Fuel Tax (CIDE)	0.2
Other Important Taxes	
Federal Taxes	
Rural Land Tax (ITR)	
Length of Service Guarantee Fund (FGTS)	
State Taxes	
On the Circulation of Goods and Services (ICMS)	
Vehicle Tax (IPVA)	
Municipality Taxes	
On Property and Urban Land (IPTU)	
Services Tax (ISS)	

Source: Instituto Brasileiro de Planejamento Tributário, LCA Consultores. Note: % of Federal tax collection is yearly average per tax.

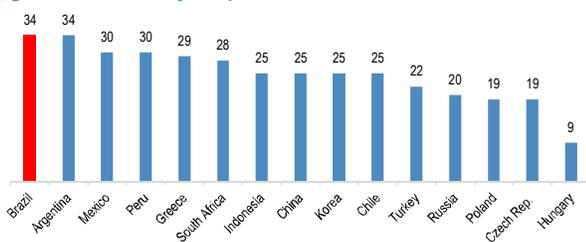
Federal taxes

Corporate income tax: Companies in general pay 15% of taxes on profits, plus an additional 10% if profits are above R\$240K per year. Companies that have sales of less than R\$78 million in a calendar year qualify for the

calculation of income taxes over estimated profits (rather than observed). In this case, rates differ for different activities, ranging from 8% for cargo transportation to 32% for services in general. Companies that have gross revenues of less than R\$4.8 million qualify for a simplified tax regime (SIMPLES), which combines 8 different federal taxes. Rates differ depending on the business: 19% for commerce, 30% for industry and so on.

A study from the OECD shows that Brazil has one of the highest corporate tax rates in the world, just behind France and India. It is interesting to note that there is a kind of race to the bottom when it comes to corporate income taxes: An OECD study shows that in 2019 there were only 18 countries with taxes above 30%, compared with 58 in 2000.

Figure 152: Statutory Corporate Tax Rate in Selected Countries



Source: OECD, J.P. Morgan

Social Contribution Tax on Profits: The CSLL is imposed on profits at a rate of 9% for most companies. For financial institutions, the CSLL is 15%. **The CSLL and the income tax together result in an effective tax on corporate profits of 34%.** In 2015, as part of the fiscal adjustment, the government sent to Congress legislation proposing an increase in the CSLL for financial institutions from 15% to 20%. **The effective tax rate for financial institutions is therefore 40%** (income tax + CSLL).

Personal income tax: All personal income earned in Brazil is subject to federal income tax. The country has a progressive taxation system under which individuals are taxed up to a maximum of 27.5% of their income. Brazilian taxpayers must present an annual income tax declaration, to be delivered by the last day of April each year. It is interesting to note that anyone that makes above R\$4,664 per month pays the same amount of income tax. The government tried to implement a higher income tax rate for higher earnings, but as soon as this was vented, it was met with significant opposition. Below is the income tax rate table. Note that for the past four years it has not changed, not even to compensate for inflation.

Table 59: Income Tax Contribution by Income Level for FY2019

Monthly Income	Tax Ratio
Up to R\$ 1903.98	Exempt
From R\$ 1903.99 to R\$ 2826.65	7.50%
From R\$ 2826.66 to R\$ 3751.05	15.00%
From R\$ 3751.06.6 to R\$ 4664.68	22.50%
Above R\$ 4664.69	27.50%

Source: Receita Federal.

PIS/COFINS: This is a federal tax charged on a company's gross receipts and destined to finance social security. The current COFINS rate is 7.6% and the PIS is 1.65%. There are two main regimes for this tax: 1) Cumulative, which doesn't contemplate tax credits and is used mostly by service companies. The rate is 3% and for banks it is 4%. 2) Non-cumulative: Companies (usually industries with a production chain) can claim tax credits in each step of the production process. The rate in this case is 7.6%. The PIS/ COFINS underwent legal changes in 2004 and is the core part of the tax reform being proposed in Congress.

Taxes on security investments: In a nutshell, locals pay 15% capital gains tax on equities and no tax on dividends. For fixed income investments, the tax rate depends on how long the investment is held: for fixed income investments of less than six months, the tax is 22.5%, and it falls to 15% for period of two years or more. Foreigners in general are exempted from capital gains and dividend taxes in Brazil, unless they come from countries that do not tax income or tax income at a rate of less than 20%. Foreigners investing in fixed income instruments are exempted from capital gains taxes. Foreign exchange transactions are usually taxed at a rate of 6%. Certain instruments in Brazil are tax free, such as real estate and agriculture incentive bonds, infrastructure bonds, among others.

Table 60: Financial Product Taxes for Non-Residents

	Income Tax
Government Bonds	Exempt
Funds carrying 98% of portfolio in government bonds	Exempt
Funds carrying 85% of portfolio in infrastructure bonds	Exempt
Private Bonds and Fixed Income Funds	15%
Swaps	10%
Equity Investment Funds	10%
	Capital Gains
Stocks or stock indexes on exchanges	Exempt
Stocks or stock indexes over the counter	15%
Derivatives on exchanges	Exempt
Derivatives over the counter	10%
	Dividends
Stocks	Exempt

Source: ANBIMA, J.P. Morgan

Table 61: Financial Product Taxes for Residents

Income tax	
Government Bonds	-up to 180 days: 22.5%
Private Bonds	-181 to 360 days: 20%
Fixed Income Funds - Long Term	-361 to 720 days: 17.5%
Swaps	-more than 720 days: 15%
Structured Notes (COE)	
Income tax	
Fixed Income Funds - Short term	-up to 180 days: 22.5%
	-more than 180 days: 20%
Income tax	
Equity Investment Funds	15%
Capital Gains	
Stocks or stock indexes on exchanges	15%
Stocks or stock indexes over the counter	15%
Derivatives on exchanges	15%
Derivatives over the counter	15%
Day trade	20%
Dividends	
Stocks	Exempt

Source: ANBIMA; J.P. Morgan

Federal Contributions: The difference between taxes and contributions is that the former needs to be split with states and municipalities while the latter does not.

INSS (Social Security): Both employers and employees are subject to social security contributions. The employee contribution depends on level of income, and varies from 8.0% to 11% of the gross wage. There is also a limit to contribution (R\$608.44, equivalent to wages of R\$5,531.31 or more). Generally, the employer contribution is between 26.8% and 28.8% of the monthly salary. To try to stimulate the economy, the government temporarily eliminated the payroll tax for around 50 sectors in 2012 and instead levied a tax on gross revenues that varied between 1% and 2%. This has cost the government R\$25 billion a year. In 2015, some of this subsidy was removed, with the tax increasing to about 4% for most sectors. Still, the government is aiming to completely reverse the payroll tax subsidy, but this has been met with fierce rejection in Congress. There is an estimated 6 million household helpers in Brazil (housekeepers, nannies, etc.). Employees pay a contribution that varies from 8 to 11% (depending on the salary) while the employer contributes 8%, an additional contribution of 8% for the FGTS, and some other contributions, for a total tax on domestic workers of around 25%.

Table 62: INSS (Payroll) Contribution by Wage Level (2019)

Wage Range	Monthly Employee Contribution
Until R\$ 1,830.29	8%
From R\$ 1,830.29 to R\$ 3,050.52	9%
From R\$ 3,050.53 to R\$ 6,101.06	11%
Contribution Limit	R\$ 608.44

Source: Social Security Ministry.

FGTS (Worker's Severance Fund): Under the FGTS, employers make a deposit of 8% of a worker's wage in the Caixa Econômica Federal. The balance is released when a worker retires or in some special circumstances. For example, if a worker is fired without a justified reason, the FGTS is released and the employer must pay a penalty of 40% of the FGTS total balance. Also, the FGTS can be released in special cases such as the purchase of a first home, in case of some illnesses (cancer, HIV, among others). Nowadays, the FGTS is one of the most important sources of real estate credit. It is also a key component of the BNDES's annual financing. In 2015, Congress passed legislation stipulating that domestic workers will have the right to receive the FGTS. Early in 2017, in an effort to stimulate growth, the government released the FGTS of workers' inactive accounts, that is, the balance of the FGTS accumulated in previous jobs. The FGTS release lasted from March to early August 2017. More than 24 million people received resources equivalent to R\$43.5 billion (0.7% of GDP) BRL, which probably helped to boost the economy in 2Q, albeit it is unknown how much of these resources were spent and how much were used to pay debt. In 2019, the Bolsonaro administration decided once more to free up FGTS resources. Each individual with an FGTS account had the right to withdraw R\$500 from their FGTS balance. In addition, individuals can also opt to withdraw a percentage of their FGTS balance on a yearly basis according to the rules in the table below.

Table 63: FGTS Withdrawal Rules from 2020 onwards

FGTS balance	Yearly Withdraw	Additional Pay (R\$)
500 or less	50%	0
From 500 to 1000	40%	50
From 1000 to 5000	30%	150
From 5000 to 10,000	20%	650
From 10,000 to 15,000	15%	1150
From 15,000 to 20,000	10%	1900
More than 20,000	5%	2900

Source: Caixa, J.P. Morgan

Table 64: Federal Tax Collection per Type of Tax
 % of total federal collection, average per tax

	2019
Personal Income Tax	2.67
Corporate Income Tax	11.08
Withholding Income Tax	15.43
Tax on Industrialized Products	3.88
Tobacco	0.37
Beverages	0.21
Autos	0.30
Import related	1.30
Others	1.70
Tax on Financial Operations	2.79
COFINS	17.15
CSLL (on corporate profits)	5.88
PIS/PASEP	4.62
Import Tax	2.37
CIDE (fuel)	0.19
Others	3.92
Total ex social security	70.54
Social Security	30.01
Total	100.00

Source: LCA Consultores.

State taxes:

ICMS: This is the tax on the circulation of goods and services. It is a state tax and thus there are 27 different legislations (one for each state). The tax rate varies depending on where the product is produced and where it will be consumed. It also varies according to different products. Every manufacturer, distributor, retailer or provider of almost every type of merchandise or service pays the state ICMS and passes the cost along to the consumer. ICMS in Brazil is basically a hidden tax, meaning that the tax is embedded in the product price. Therefore, most Brazilians are unaware of how much the ICMS actually costs them. One of the main ideas of the Tax Reform that is currently in the Senate is to incorporate the ICMS in the VAT that is to be created. However, there is a lot of controversy on whether this would be feasible considering the different interests of each state.

Estate tax: This tax is established by each state and is relatively low for the international standard, averaging around 4%. While there have not been recent discussions on the estate tax, at some point this is likely to be also one that will see higher rates in the future.

Municipal taxes:

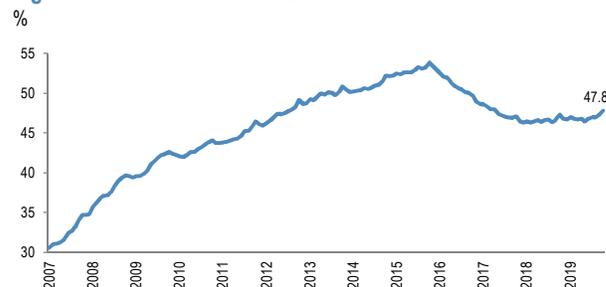
The main city taxes are the tax on property (IPTU), the tax on services (ISS) and the 3% tax on transfer of property.

Credit

The credit boom in Brazil was launched in 2004, when interest rates started to come down to more affordable levels. There are three key issues that may explain the low level of historical credit penetration in Brazil. First, high interest rates acted as inhibitors for credit, due to its prohibitive cost for individuals and companies. Second, banks didn't need to go into the credit business as it was very profitable to finance the government's debt, considering the high rates of return. Finally, it was only in 2004 that it was clear that the Brazilian economy had stabilized on a sustainable path, allowing for more jobs, higher wages and, therefore, more demand for affordable credit. The advent of credit has been a key factor propelling domestic consumption. Indeed, the credit expansion in Brazil is largely due to consumer credit and less due to corporate credit.

In 2004 total credit represented about 25% of GDP and in December 2015 this ratio peaked at 53.8%. However, today credit as a % of GDP stands at 47.8%, a result of the recession of 2015/16 and the de-leveraging process that took place since 2013. The issue was not only on the demand side: banks also remained a lot more cautious in terms of loan growth during the past few years and only started to accelerate credit in 2018/19, even so in single-digit growth.

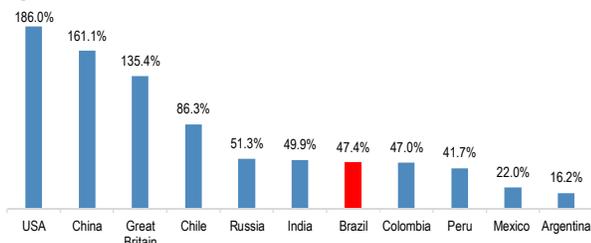
Figure 153: Credit as a % of GDP



Source: Banco Central do Brasil.

Relative to other LatAm countries, at the end of 2018 Brazil had the second-highest credit/GDP ratio, behind only Chile.

Figure 154: Credit as a % of GDP – Selected Countries (YE2018)

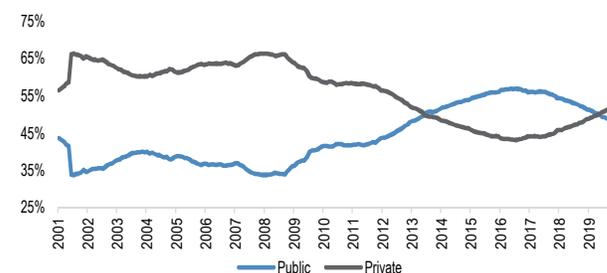


Source: J.P. Morgan: Latin American Banks: Credit and Market Share Bible Volume – July 2019.

The rise of public sector banks: With the advent of the European crisis in 2011 and questionable policy choices domestically, growth started to slow down considerably in Brazil. Banks became more reticent to lend at a time of uncertainty. At the same time, non-performing loans started to deteriorate, considering the credit boom of 2010. The deceleration was mostly felt in non-directed loans (issued by banks at market interest rates), to which most consumers usually have access. Public banks came to the rescue. First, this was done through significant expansion of the BNDES, with about R\$500 billion from Treasury loans used to capitalize the bank and increase its lending power. By 2012, the boosting of public sector banks as the main conductor of loans in Brazil became an official policy. The Dilma administration adopted a somewhat belligerent stance to the financial system starting in April 2012. The President argued that while interest rates were falling, there was no decline in spreads. This happened at a time when the economy was showing few signs of a rebound and credit was seen as a major growth booster. In order to foster lower spreads, the government adopted a strategy that relied on public sector banks (especially Banco do Brasil and Caixa) greatly expanding loans at lower rates, which would force private sector banks to do the same or risk losing market share. However, the strategy didn't work as private sector banks remained on the sidelines. All in all, one of the primary structural changes in the Brazilian banking system over the past ten years has been the rapid growth of government-controlled banks. Their collective market share increased to 57% of the total loan portfolio in 1H2016 from 50% in 1H2013 and just 34% at YE2007.

Figure 155: Evolution of Market Share

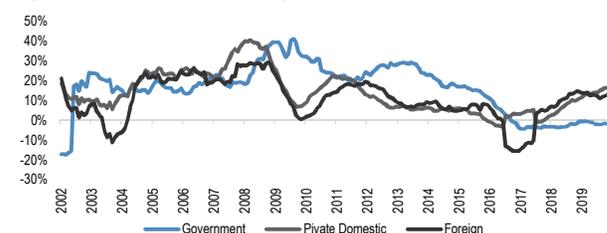
% of total loans per bank type



Source: Banco Central do Brasil. Note: 2016 data blip on private and foreign banks reflect the acquisition of HSBC by Bradesco.

Reversal: As with other areas of the economy, the administrations that came to power after the Dilma administration started to reverse the policy of boosting public sector banks. The Temer administration stopped intervening in the public banks, which started to lend at market rates, while the development bank BNDES became a lot more selective, lending less and at higher rates. This new policy continued with the Bolsonaro administration leaving the loan growth flat from the government sphere. Moreover, there is a clear privatization/divestment strategy that seeks to reduce the size of the banks by selling assets, equity and subsidiaries. At the end of 2019, the government share of total credit was still running at 47%, dropping from the high level of 56% at the beginning of 2016.

Figure 156: Loan Growth (%oya)

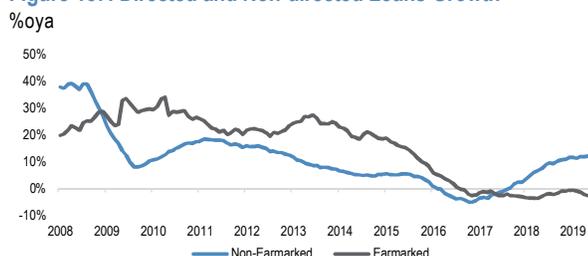


Source: Banco Central do Brasil. Note: 2016 data blip on private and foreign banks reflect the acquisition of HSBC by Bradesco.

Direct lending vs. non-direct lending: Brazilian credit data are classified as directed (lending that comes from BNDES sources, or agricultural or mortgage loans funded by savings and/or demand deposits mainly) or non-directed (lending which is freely lent out by banks at market interest rates and not beholden to directed lending requirements on some sources of funding.) As discussed above, public sector banks are mostly the carriers of directed loans, albeit mortgages are sometimes subsidized and fall within private sector banks. While the deceleration in non-directed/non-earmarked/free loans already started to take place following the high-growth

years of the beginning of the decade, deceleration in earmarked/directed loans took place over a year later, in mid-2013. From 2017 onwards the trend reverted and non-earmarked loans experienced a jump of 30% from January 2017 to nowadays while the earmarked loans remained relatively flat in the same period. This move was mostly due to the position adopted by the BNDES to decelerate the path of loans, pushing the demand to look up for options in the non-earmarked sphere. In 2018, the BNDES reduced by R\$43bn the credit available to corporates.

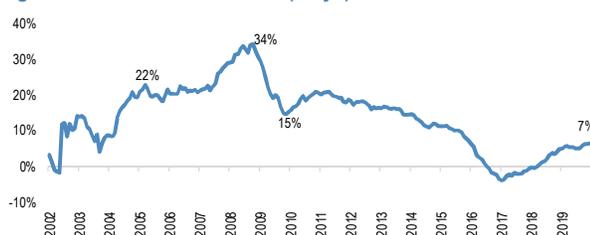
Figure 157: Directed and Non-directed Loans Growth



Source: Banco Central do Brasil.

Overall, total credit has been accelerating since 2Q18, after 16 months of contraction. For 2019, the guidance of loan growth from the three main banks in Brazil for 2019 was mixed. Itau had 8% to 11% for 2019, Bradesco had 9% to 13%, while the Banco do Brasil numbers were very little, of -2% to 1% in 2019. For 2020 the soft guidance from all the private banks is between 10% and 15%.

Figure 158: Total Loan Growth (% oya)

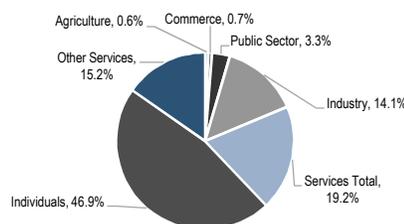


Source: Banco Central do Brasil.

Credit Markets' Main Aspects

The credit boom that Brazil experienced since 2004 was mostly a product of an expansion in credit to consumers, which today are responsible for almost 47% of total credit in Brazil.

Figure 159: Total Credit Destination by Debtor (Directed and Non-Directed)



Source: Banco Central do Brasil

Consumer credit: One of the key factors that allowed for a sharp expansion of loans for individuals was the creation of the payroll loan, extended to retirees, civil servants and formal sector workers. Banks like payroll loans as they can discount installment payments straight from the debtor's paycheck. In recent years, there was a general trend from financial institutions to reduce the risk in their loan portfolios, so auto loans, overdraft and personal loans are no longer favored. Note that autos were one of the main loan growth drivers in the boom years.

Table 65: Non-Earmarked Loans to Individuals + Mortgages

	% 2018	% 2019	% Total non-earmarked credit to individuals
Overdraft	1.0%	9.6%	2.2%
Personal credit	10.7%	16.7%	12.0%
Payroll	7.2%	15.2%	34.9%
Vehicles financing	13.6%	19.6%	18.5%
Credit card total	15.0%	16.7%	24.5%
Other Goods	8.3%	17.8%	1.1%
Leasing	-9.9%	-0.1%	0.1%
Check Discount	-3.0%	-0.1%	0.1%
Debt Composition	10.1%	16.4%	3.6%
Others	20.0%	20.3%	3.1%

Source: Banco Central do Brasil. % of total is for non-directed loans to individuals only.
* Mortgages are considered directed loans and the % of total for that category refers to % of total for directed loans to individuals.

As of December 2019, non-directed loans to individuals was rising by 17% YTD and 52% over the past 12 months. This category has been showing a soaring trend since 2018, as it is close to 2010 levels.

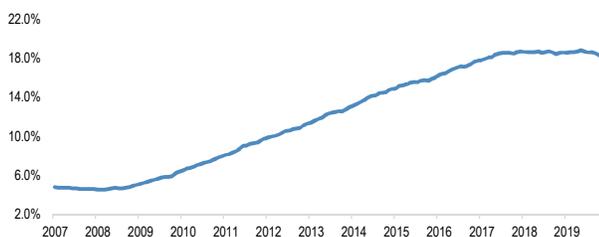
Figure 160: Non Directed Loans to Individuals



Source: Banco Central do Brasil

Mortgages: Mortgages are mostly associated with earmarked/ directed loans. Indeed, mortgages are responsible for almost 60% of total earmarked credit to individuals. While private sector banks have been expanding their penetration into mortgages, most of them are still within the domain of Caixa Economica Federal, as it offers subsidized loans and facilities to use the FGTS balance to buy a house. Still, while mortgages represent one credit category that has grown at the highest rates, they are still responsible for only 20% of total credit in Brazil, or 10% of GDP.

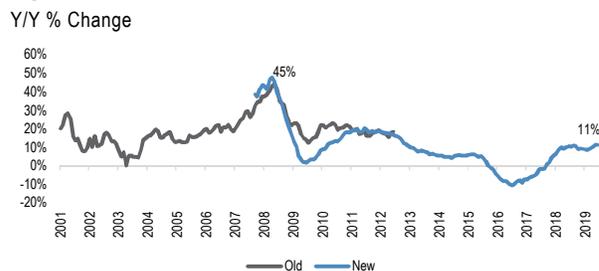
Figure 161: Mortgages as a % of Total Credit



Source: Banco Central do Brasil.

Corporate credit: In general terms, corporate credit has been in a tougher spot than consumer loans. Just like consumer credit, the corporate has been improving, but at a slower pace. At the end of 2019 it registered an increase of 11%/y, coming from a positive trend since 2018.

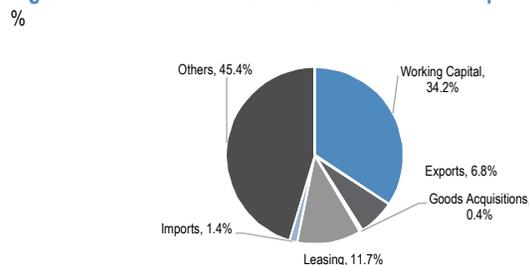
Figure 162: Non-Directed Corporate Loans



Source: Banco Central do Brasil.

In terms of distribution 34% of outstanding non-earmarked corporate loans are for working capital needs, and within that, the great majority are for terms of over 365 days. The second-largest category is leasing, responsible for 12% of total corporate loans (non-directed).

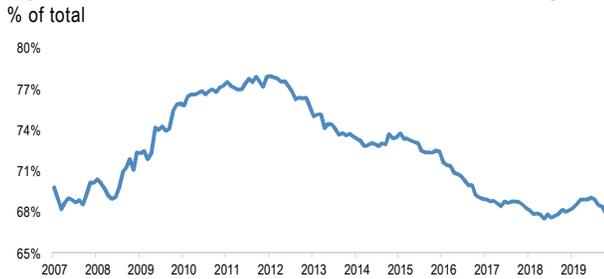
Figure 163: Non-directed Loans Breakdown for Corporates



Source: Banco Central do Brasil.

Within corporate directed loans, around 70% relates to investment financing and this comes mostly from BNDES. This line has decreased meaningfully from its peak in 2012, and is currently at its lowest reading since 2007. Following the end of the Dilma administration, the BNDES went through important changes. It became smaller and disbursements are more geared to good projects rather than applying a sectorial bias. Nowadays the bank is focused on the concession for small and medium companies as a means to foster the creation of jobs (these companies are responsible for more than 50% of the formal jobs in the country).

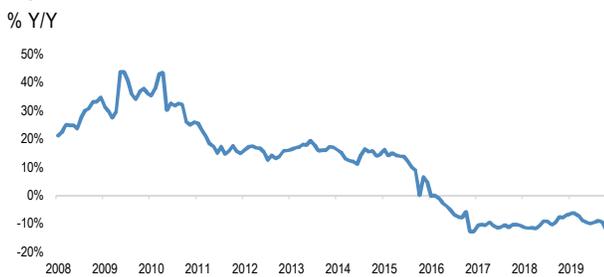
Figure 164: BNDES Share in Earmarked Loans Outstanding



Source: Banco Central do Brasil

In December 2019, BNDES credit has been contracting by 12% y/y. While working capital loans from the BNDES are up by 4.7% y/y, investment finance, which constitutes the bulk of loans, is actually decreasing by 14% y/y.

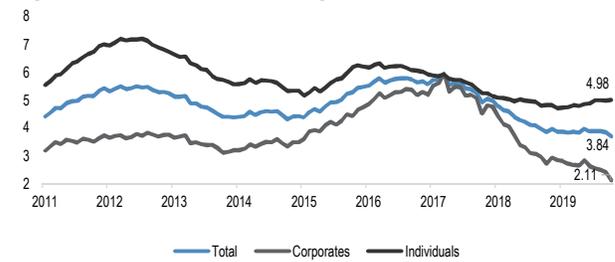
Figure 165: Credit with BNDES Resources



Source: Banco Central do Brasil

Non-performing loans: One could imagine that the two years of recession (2015-16) would lead delinquency rates to go through the roof. However, they slightly increased in the period post-crisis and are currently below the 2015 levels (4.3% vs. 3.8% today). This is a feat, considering that the unemployment rate has escalated from around 9% then to 13% in July 2017 (reaching a peak of 13.7% in March 2017), and is still running at double digits (December 2019 = 11% m/m). Most of the credit should go to the banks, which have been very cautious in lending since 2013. On the corporate side, the NPL also fell. They were strongly impacted by the economic contraction, which led the NPL to rise. However since mid-2017 there was a huge decline of 151% due to companies renegotiating their debts, a cautious selection from banks to lend money and also to the improvement of the macro environment. Data for December 2019 show the NPL for corporates running at 2.1%.

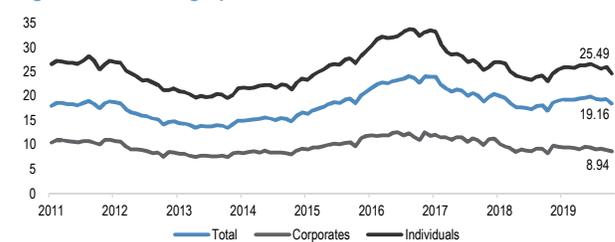
Figure 166: Non-Directed Lending NPL Ratios



Source: Banco Central do Brasil.

Spreads resilience: The benchmark interest rate Selic has been declining since October 2016. However, it is taking a long time to pass that to consumers. Spreads for individuals are now starting to decline and have fallen by 10 p.p. since the peak. On the flipside, spread to corporates fell by 8.6 p.p.

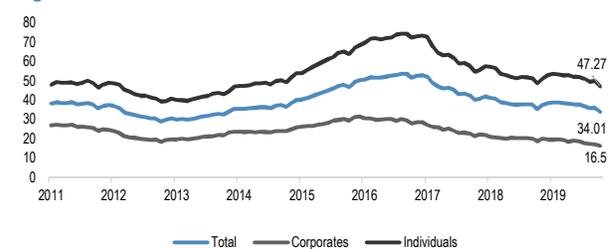
Figure 167: Lending Spreads



Source: Banco Central do Brasil

Interest rates: The level of interest rates used to be very high, despite the development of the Brazilian credit market. However since 2017, interest rates to corporates and individuals have been experiencing a downward trend due to the lower rates. This should certainly affect the bank margins, and to maintain profitability, banks will have to focus on new strategies.

Figure 168: Interest Rates on Non-Directed Loans



Source: Banco Central do Brasil.

Loan maturities: Non-directed loans in Brazil are inherently short term, albeit these have been lengthening somewhat (for consumers only). The risk associated with credit still makes banks worry about extending long-term

credit. Therefore, this pretty much falls into the job description of the public sector banks (mainly BNDES for corporate long-term loans and Caixa for mortgages). There is an ongoing effort to prompt private sector banks to engage more in long-term credit, and the effort has been bearing fruits on the mortgage side.

Table 66: Average Loan Maturity

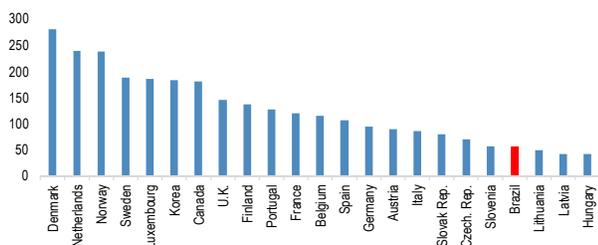
Months

	Total Loans	Non-Directed Loans	Directed Loans
Corporate	57.43	26.26	99.06
Consumer	169.85	57.63	270.58
Total	118.85	41.91	201.48

Source: Banco Central do Brasil

Consumer leverage: As credit starts to peak once more, one starts to look at leverage data again. While in developed markets household debt stock is very large (over 100% of annual income), in Brazil it hovers between 55% and 60% of annual income (net of taxes). However, in Brazil, the level of mortgages is small, while in other countries, especially in Europe and the US, and Chile in Latin America, mortgage liabilities make up the lion's share of household debt.

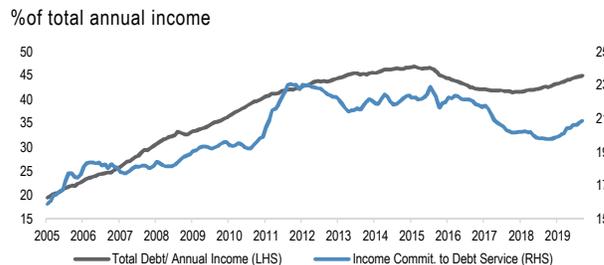
Figure 169: Household Debt as a % of Net Income (2018)



Source: OECD. For Brazil: Banco Central do Brasil as of YE2018.

What is unique about Brazil is that while the level of debt is low (as of December 2019 it stood at 44.8% of annual wages), debt service is considered high, at 21% of annual income. Note that while household debt has increased in recent years, the level of income committed to service debt has declined as interest rates fell. Thus, while leverage is up, so is affordability, at the same time that maturities are being extended.

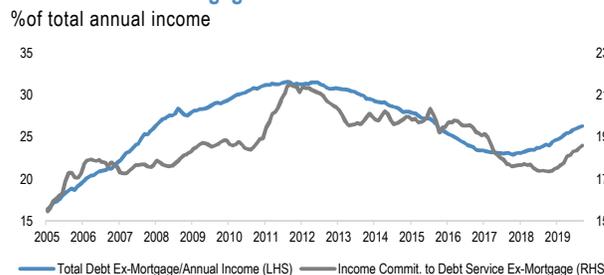
Figure 170: Household Leverage and Income Committed to Service Debt



Source: Banco Central do Brasil.

While mortgages are still a growing business in Brazil, this loan type continues to grow in terms of share of household indebtedness. As of December 2019, household indebtedness excluding mortgages was 26.2%, a jump of 15% comparing to January 2018, when the soaring trend began. Income committed to service debt ex-mortgage has been increasing as well, going back to 2017 levels, standing at 18.5%.

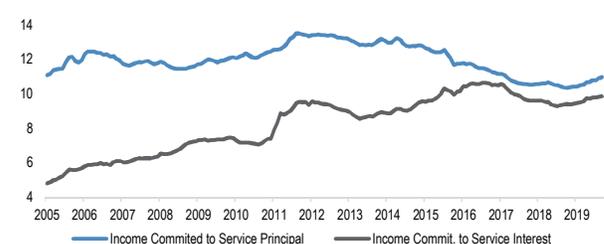
Figure 171: Household Leverage and Income Committed to Service Debt Ex-Mortgage



Source: Banco Central do Brasil.

It is interesting to note that of the total 20.8% of income committed to service debt as a percentage of total income, 9.8% relates to interest payments and 11% to principal.

Figure 172: Breakdown of the Income Commitment to Service Debt



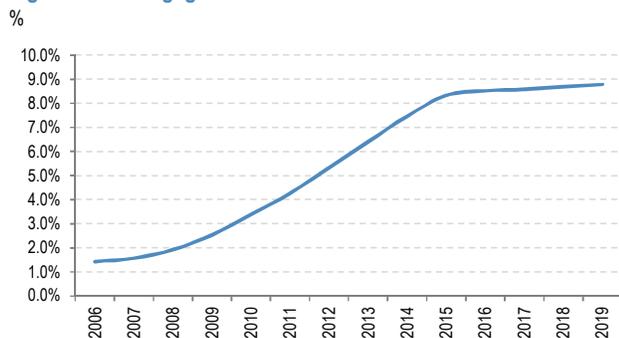
Source: Banco Central do Brasil.

Brazilian Mortgage System

Source: J.P. Morgan's Brazil Real Estate 101 by Marcelo Motta, Adrian E Huerta and Froylan Mendez (2019 edition) and author updates.

Historically, mortgages penetration in Brazil has been low. Getting credit to finance a house used to be a substantial challenge, and only a few Brazilians could own their own homes. Since 2006, and mainly after the implementation of fiduciary mortgages duty and programs like the Minha Casa, Minha Vida, mortgage issuance started to increase and in September 2019 stood closer to 10% of GDP.

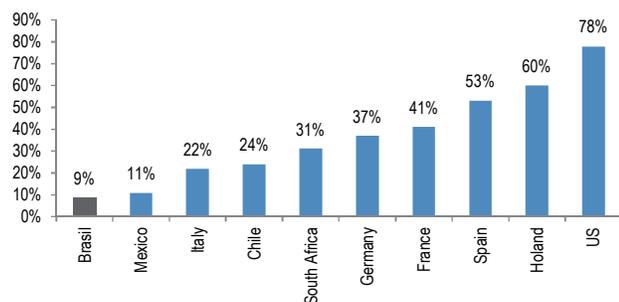
Figure 173: Mortgages as % of GDP



Source: Banco Central do Brasil, J.P. Morgan estimates.

Despite the evolution in the last few years, Brazil still has one of the lowest mortgages-to-GDP ratios in the world.

Figure 174: Mortgages as a % of GDP - Selected Countries



Source: MRV institutional presentation.

There are two main sources of funding in Brazil, savings accounts or SBPEs (Sistema Brasileiro de Poupança e Emprestimo) and the FGTS (Fundo de Garantia do Tempo de Serviço), which is a type of mandatory pension fund to which all Brazilian employees make mandatory contributions.

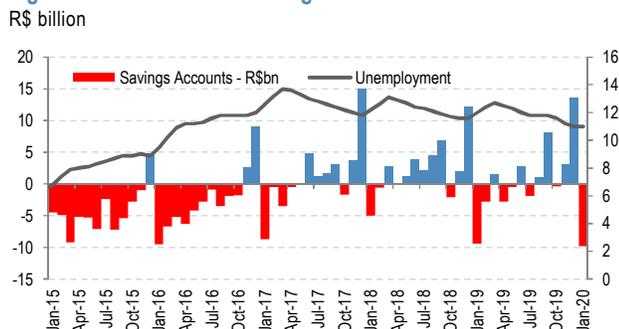
SFH: Sistema Financeiro de Habitação (Housing Financial System) was created in 1964 to develop the

mortgage market in Brazil. Its main sources of funding are savings deposits in the financial system, including deposits at government-owned Caixa Econômica Federal (CEF), which is the main vehicle for directed mortgage lending in the country, with a market share of almost 68% in June 2017 in mortgages to individuals. The participating banks constitute the Sistema Brasileiro de Poupança e Emprestimo or SBPE (Brazilian Saving and Loan System). The other source of funding for SFH is employee payments to FGTS.

SBPE: Traditionally, the SBPE has encompassed all public- and private-sector banks except those focused on the rural segment. In 2019 mortgages from SBPE amounted to roughly R\$78bn, representing a 43% increase versus 2018's R\$57bn and compared to a peak of R\$113bn in 2014. Banks in the SBPE have to devote 65% of savings deposits to mortgages, 30% stay as compulsory (regulatory reserves at the central bank) with 20pp remunerated at TR + 6.17% (or TR+ 70% of Selic if Selic is below 8.5%) and 10pp at Selic. Of the 65%, 80% has to be lent at no more than TR + 12% a year for units with prices below R\$1.5mn and the remaining 20% can be allocated to mortgages at market rates. However, banks are allowed to comply with this requirement through a variety of regulatory facilities. If banks have a shortfall in their directed lending requirement, they are penalized with a lower return on the shortfall amount (TR flat vs. the TR+6.17% or TR + 70% of Selic that they have to pay on the savings deposits).

Saving Accounts saw net inflows during 2019: The main drivers for saving accounts performance, in our view are: employment level, average income and Selic level, as these are the most traditional investments in Brazil. Therefore, given the slowdown in Brazil's economy over the past 5 years and the consequent increase in the unemployment rate, currently at 11% as of December-19, together with pressure on average income, saving accounts related to SBPE had net outflows of R\$66bn. In our view, savings accounts should continue to show a recovery, as the expected improvement in the unemployment rate materializes. However we believe it could still take a while for mortgage disbursements to return to pre-crisis levels again as saving account balances need to recover the past strong outflows seen during the crisis.

Figure 175: Net Flows for Savings Accounts

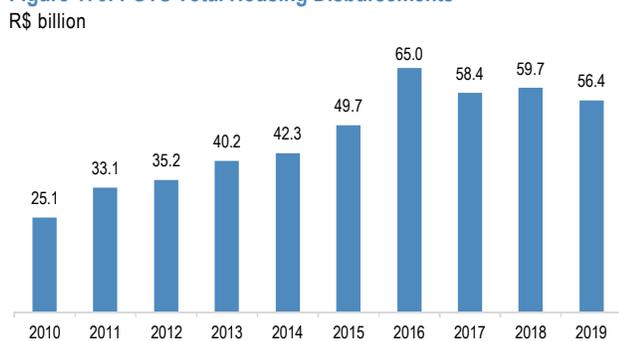


Source: Banco Central do Brasil.

FGTS: Provides funding through compulsory savings from employees. Originally conceived as unemployment insurance, it is now used for a variety of purposes, including providing support to workers who are terminally ill, helping workers purchase a house, providing financial assistance for employees who are laid off, and, more recently, infrastructure investments. Employees contribute 8% of their monthly salary deposited at Caixa Econômica Federal, which is the administrator of the fund. The money at FGTS yields TR+3% a year and recently the government approved the distribution of funds' profits which increased annual remuneration by around 1.5pp.

FGTS - Low Income funding: FGTS represents the main source of funding for the Minha Casa, Minha Vida program, which was introduced in 2009 as an attempt to reduce the housing deficit in Brazil which at that time was above 7.0mn units. Caixa Econômica Federal is the main operator of FGTS, receiving an annual fee from the fund for this service. Interest rates on MCMV loans vary between 5% and TR+8.5% depending on homebuyers' income level. The program has a price cap of R\$300k per unit.

Figure 176: FGTS Total Housing Disbursements



Source: FGTS.

BNDES

Since its creation in 1952, the Banco Nacional do Desenvolvimento Econômico e Social (BNDES) has performed different strategic roles in propelling the cause of Brazilian development. In the 1970s, it was a key enabler of the capital goods industry and an enabler of the import substitution model. The bank was a lender to companies at times of distress during the successive crises in the 1980s. In the 1990s, BNDES had a key role in the privatization process. Following the 2008/09 global financial crisis, the BNDES took center stage in the Brazilian economy. In the post-crisis period, BNDES increased its loans at a CAGR of 16.4% in 2007-2014, made possible by unprecedented Treasury loans to the bank (around R\$500 billion), at some points responsible for over 57% of the bank's funding. These loans were mostly destined to fund the so-called "national champions"—those companies that have a large and dominant position in the country and that could also expand abroad. What was initially post-crisis stimulus became a permanent feature of the bank: a large loan portfolio, responsible for over 21% of total credit in Brazil, or about 11% of GDP.

The increase of the BNDES participation in the Brazilian economy peaked in 2015 and has been falling since then. Starting with the Temer administration (2016), the BNDES participation in the economy as a whole started to decline, with the bank now responsible for 12.6% of total credit and 5.5% of GDP, an important contraction. The current role of the BNDES is once more focused on development: helping in the privatization/ divestment program, funding for concessions and infrastructure projects and also lending where the private sector is absent, such as sanitation, SMEs, etc.

Figure 177: BNDES Participation in Total Credit (%)



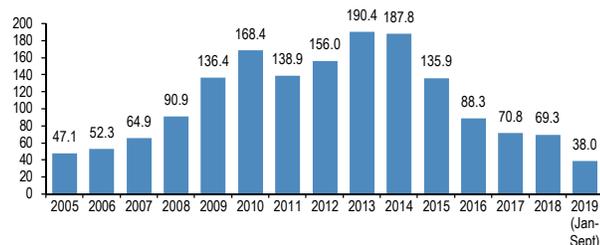
Source: Banco Central do Brasil.

The BNDES credit expansion and contraction are evident when looking at disbursement data. In 2008, BNDES disbursements increased by 40% relative to 2007, reaching R\$91 billion. In 2009, loans for the first time surpassed the R\$100 billion mark and increased by 50% relative to the previous year. The growth continued in

subsequent years. In 2010, BNDES loans reached a record of R\$168.4 billion (23.5% y/y) plus R\$25 billion that the bank invested in the Petrobras capitalization. In 2011, the level of loans declined to R\$140 billion, but excluding Petrobras, loans were almost flat relative to the previous year. 2012 saw an important contraction in investment and during 1H loan originations were very muted. These accelerated a great deal in 2H as a result of explicit government policy. Then, the terms of the PSI program were extended, issuing additional funding for the purchase of capital goods at negative real interest rates. In 2013, loans continued to expand (+22% y/y), surpassing the 2010 record and reaching R\$190.4 billion. This level was pretty much reproduced in 2014 as the BNDES continued to be used as a tool to smooth the economic contraction.

In the post 2014 election period, there was some effort to put the economy back on track and rationalize BNDES' roles, especially considering the cost that its funding was having on Treasury coffers. Loans in 2015 fell by 28% relative to the previous year, but were still at triple digit level in nominal terms. A real deceleration started in 2016, with the advent of the new Temer administration and restrictions on the funding side. In 2016, total disbursements declined to double digits in Reais for the first time since 2008. The deceleration trend has continued since then: if one were to annualize the 2019 data (available only until September), loans would be a bit over R\$50 billion, bringing the BNDES back to the levels observed in the early years of this century.

Figure 178: BNDES Disbursements (R\$ bil)



Source: BNDES; J.P. Morgan

Sector distribution: During the "giant BNDES" years, most of the loans were given to the industrial sector. Many recall that the BNDES made possible some of the large corporate transactions in Brazil, especially those that sought to become a leader in their sectors in international markets. In the meantime, infrastructure, which is very obsolete, usually received about 30% of total loans. This has recently started to change. In the first 3 quarters of 2019, infrastructure received 45.6% of total disbursements, while agriculture came in second

place, responsible for 26.8%. Still, considering the low level of disbursements, there has been a year-on-year contraction in loans for all sectors, with the exception of agriculture, which is up 9%.

Table 67: BNDES's Disbursements by Sector (Jan-Sept 2019)

Sectors / Subsectors	DISBURSEMENTS		
	Jan-Sept 2019	% of Total	% Change OYA
Industry	6.32	16.6	-22
Mining/ Oil extraction	0.60	0.2	-61
Food and beverage	1.66	4.4	27
Apparel and textile	0.10	0.3	-42
Pulp and paper	0.27	0.7	-64
Chemical and petrochemical	0.73	1.9	48
Metalurgy	0.41	1.1	45
Mechanic	0.55	1.5	-3
Transportation Material	1.75	4.6	-52
Others	0.77	2.0	4
Infrastructure	17.36	45.6	-1
Electric Energy	8.52	22.4	18
Construction	0.96	0.3	-80
Roads	3.54	9.3	-30
Rail	0.31	0.8	97
Other transportation	1.92	5.0	-23
Activities related to transportation	2.13	5.6	50
Public utilities	0.76	2.0	24
Telecom	0.08	0.2	0
Others	0.00	0.0	-34
Commerce & Service	4.16	10.9	-51
Agriculture	10.20	26.8	9
TOTAL	38.0	100	-13

Source: BNDES, J.P. Morgan. As of September 2019

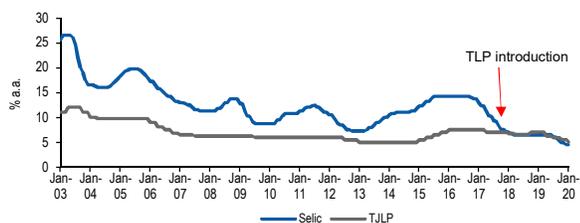
While in the Temer years there was a discussion on whether the BNDES was becoming too small and if it should have a more relevant role in funding, this has been mostly absent during the Bolsonaro administration. The BNDES is putting significant focus on the PPI investment program, privatizations and concessions, but especially on sanitation, which is a sector that has one of the worst indicators.

Treasury participation in BNDES funding: Funding from the Brazilian Treasury enabled the BNDES expansion after the 2008 crisis. However, what was supposed to be a counter-cyclical move became a very large liability for the government. From 2008 to 2015 Treasury credit to BNDES amounted to around R\$420 billion, with it being responsible for 50% of the bank's total liabilities at the end of 2016. These transactions have been heavily scrutinized because it created a fiscal hole in government coffers: it issued debt at a higher rate than it got back from the BNDES, which ended up creating a liability higher than the actual loan itself. Since 2015, the Treasury stopped issuing debt to the BNDES, which explains the slow reduction in the Treasury's share in the bank's liabilities. Also, since 2016, the BNDES

started to pay back the Treasury loans. In 2019, the repayment was accelerated, reaching R\$126 billion. At this point, the BNDES still owes about R\$200 billion to the Treasury in principal and interest combined. These resources helps the Treasury to reduce debt.

The TLP: Beginning on January 1, 2018, the BNDES interest rate, which was known as the TJLP, was substituted by the TLP. The bill that made it possible was approved in 2017 and, in effect, it made the BNDES rates more similar to market rates, rather than the subsidized rate that was in place earlier. The introduction of the TLP: 1) allows for greater efficacy of monetary policy as set by the central bank considering that it will also impact BNDES loans, which until now were benchmarked by a completely separate rate; 2) prevent the Treasury from subsidizing the BNDES at a loss considering that both will reflect market rates; 3) reverse the crowding out effect that TJLP had in terms of incentivizing private banks to lend long term. The TLP is defined by the IPCA inflation rate plus the real interest rate of the 5 year Brazilian inflation linked note (NTN-B). The new rate was applicable only to new contracts.

Figure 179: BNDES Interest Rate X Selic



Source: Bloomberg; J.P. Morgan

BNDES equity portfolio: The BNDES subsidiary, BNDESPar, is responsible for the bank’s capital market operations, and its main attribute is the management of a huge equity portfolio. As of 3Q19, the BNDES equity portfolio hovered around R\$114.5 billion, with equity participation in publicly traded companies. This makes the BNDES the largest equity market participant in Brazil. The sector distribution is very concentrated, with 28% in oil & gas and electricity. Mining is responsible for an additional 17%. There has always been a lot of questions on what strategy the BNDES was going to adopt to deal with this portfolio. The administration of Jair Bolsonaro defined that the entire BNDES portfolio is to be sold by the end of 2022, when his term ends. Already the BNDES is divesting important participation in Petrobras, JBS, Marfrig, Light.

Table 68: Sector Distribution of BNDES Equity Holdings (3Q19)

% of total for publicly traded companies (~ 90% of portfolio)

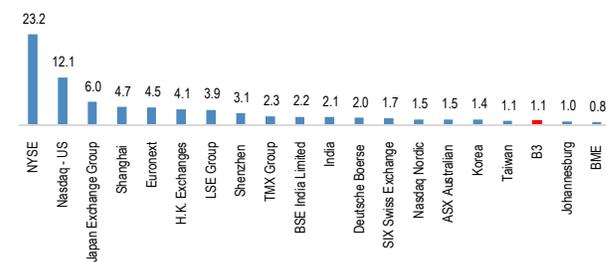
Sector	% of BNDES Portfolio	Company
Oil and Gas	40.69%	Petrobras
Food & Beverage	16.74%	JBS, Marfrig
Mining	12.10%	Vale
Electric Energy	13.28%	Copel, AES Tiete, Cemig, etc
Pulp and Paper	4.61%	Suzano, Klabin
Autos	0.62%	Tupy, lochpe
Capital Goods	0.56%	Embraer
Steel	0.36%	Gerdaul, CSN
Sanitation	0.23%	Copasa
Agribusiness	0.19%	Ouro Fino
Real Estate	0.19%	MRV, Cyrela
Telecom	0.07%	Tim, Oi
Logistics	0.01%	Triunfo
Consumer Goods	0.04%	Springs Global, Coteminas, Bombril

Source: BNDES. Note: Portfolio valued at R\$114.5 billion as of 3Q19

Capital Markets

According to the World Federation of Exchanges, the Brazilian stock exchange **B3** is the **18th-largest stock exchange in the world in terms of market capitalization and the largest in Latin America.**

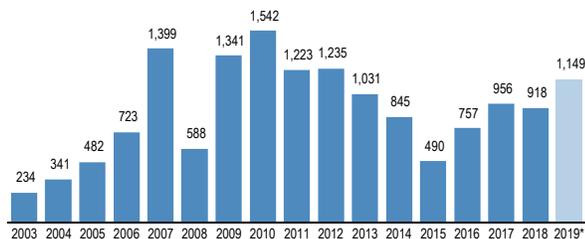
Figure 180: 15 Largest Stock Exchanges in Terms of Market Cap US\$ trillion



Source: World Federation of Exchanges. Note: as of October 2019.

Market cap: The B3 market cap reached US\$1.1 trillion in November 2019. From 2002 to 2007, Bovespa market cap in USD grew an average 48% per year, from US\$ 124 billion in 2002 to US\$1.4 trillion in 2007. In 2008, the total market cap of all companies listed on the stock exchange fell to US\$588bn, but rapidly rebounded in the following year reaching US\$1.3 trillion and achieved the all-time high in 2010 of US\$1.5 trillion. Still, in the following years B3 lost the ground gained as the economic activity decelerated, reaching US\$490 billion at year-end 2015. Since then, the B3 total market cap has been improving and reached US\$1.1 trillion as of November 2019, and R\$4.3 trillion, the highest amount ever registered in local currency.

Figure 181: B3 Market Cap
US\$ billion



Source: B3. Note: 2019 as of November.

In Brazil, 52% of B3's market cap is concentrated in only ten companies. The largest company is Petrobras, which by itself represents 10% of B3's market cap. The second-largest company is Itau Unibanco, responsible for 7.8%. Still, the largest sector for the B3 is financials (37.2% of B3's market cap). Note that among the ten largest companies on the B3, six are financial institutions (ITUB4, BBDC4, SANB11, BBAS3, ITSA4, B3SA).

Table 69: Brazil's Ten Largest Companies by Market Cap

Rank	Company	Ticker	Market Cap (R\$ billion)	% of Bovespa Market Cap
1	Petrobras	PETRA BS Equity	416.49	10.0%
2	Itau Unibanco	ITUB4 BS Equity	326.51	7.8%
3	Ambev	ABEV3 BS Equity	293.59	7.0%
4	Vale	VALE3 BS Equity	277.59	6.7%
5	Bradesco	BBDC4 BS Equity	268.49	6.4%
6	Banco Santander	SANB11 BS Equity	167.18	4.0%
7	Banco do Brasil	BBAS3 BS Equity	137.63	3.3%
8	Itausa	ITSA4 BS Equity	115.55	2.8%
9	B3	B3SA3 BS Equity	96.61	2.3%
10	Telefonica BR	VVT4 BS Equity	89.45	2.1%

Source: Bloomberg and J.P. Morgan. Prices as of December 12, 2019.

The largest sector in the B3 in terms of index weight is Financials (36.5%), followed by Energy (14.9%). In addition, this sequence is the same regarding market cap.

Table 70: Bovespa by Sector

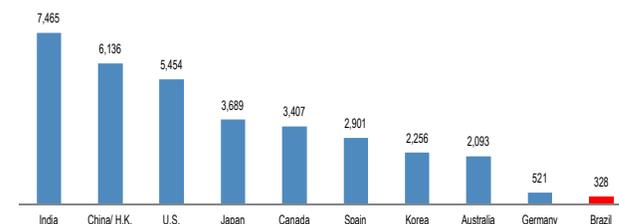
Sector	Number of Companies	Index Weight	Market Cap. (R\$ billion)	Market Cap. (%)
Financials	16	36.52	1,642.2	37.2%
Energy	5	14.98	917.2	20.8%
Materials	8	12.88	444.1	10.1%
Consumer Discretionary	13	11.16	327.5	7.4%
Consumer Staples	7	10.56	487.1	11.0%
Utilities	8	5.19	242.7	5.5%
Industrials	5	4.53	167.6	3.8%
Healthcare	3	2.24	61.3	1.4%
Communications	3	1.93	128.9	2.9%

Source: Bloomberg. Prices as of December 12, 2019.

The Brazilian stock exchange had 328 companies in November 2019. The number of companies traded on B3 has been falling: In 1998, there were almost 600

companies listed on the B3, but after that, the number started to decline. This reduction can be explained mainly by to the increased number of mergers and acquisitions. Also, less traditional companies decided to remain private. B3's management often mentions that the number of companies listed in Brazil is very low and this is likely to increase in the coming years.

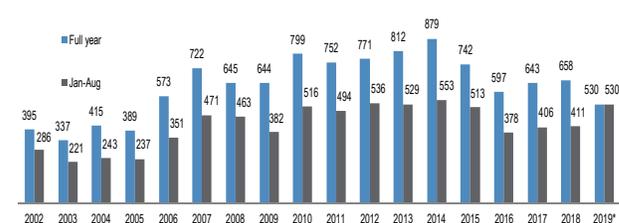
Figure 182: Number of Listed Companies on Selected Exchanges



Source: WFE, as of November 2019.

In the period between 2015 and 2018, an average of 660 M&A deals per year were announced, a decrease of 18% compared to the average observed between 2011 and 2014. In 2014, there were 879 M&A transactions in Brazil, the highest number ever registered. The acceleration happened at the same time that IPOs collapsed. Still, M&A transactions declined in 2015 (-16%/y) and 2016 (-20%/y), but rebounded in 2017 (+8%/y) and ended 2018 with 658 deals (+2%/y). According to PwC, in 2019 up to August, it was announced 530 M&A transactions, 30% higher than the same period in 2018.

Figure 183: Number of Mergers and Acquisitions in Brazil



Source: PwC. 2019 until August.

IPOs

The statistics related to IPOs indicate that the country is the most active in Latin America from 2000 to 2019, in terms of the amount of transactions and number of trades. From 2000 to 2019 (through the end of November) there were 182 IPOs in Brazil, or 67% of Latin America total amount. The sectors with the most IPOs in the country have been financials and consumer staples-related companies.

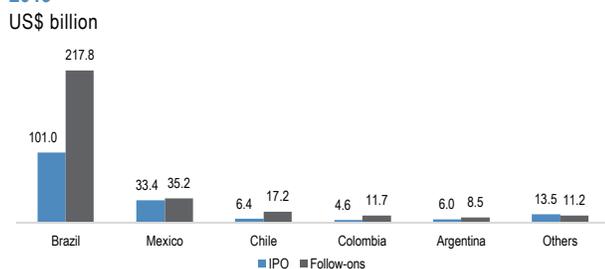
Table 71: Number of IPOs and Size by Year in Brazil

Year	Number of IPOs	Deal Value (US\$ Bn)
2000	3	4.79
2001	0	-
2002	1	0.13
2003	0	0.00
2004	9	1.75
2005	9	2.47
2006	23	5.71
2007	58	27.42
2008	4	9.58
2009	7	9.76
2010	13	6.53
2011	9	2.79
2012	5	2.59
2013	9	8.16
2014	3	0.55
2015	0	0.00
2016	3	0.64
2017	13	9.57
2018	5	3.47
2019	8	5.14

Source: Bloomberg, J.P. Morgan.

Taking into account all types of deals (IPOs and Follow-Ons) there was a total 655 deals in Brazil from 2000 to 2019, or 60% of total for LatAm through the same period. The total value of all deals in LatAm from 2000 to November 2019 was over US\$466.5 billion in the period, of which over US\$318.8 billion took place in Brazil.

Figure 184: Market Value of All LatAm Deals by Country, 2000-2019

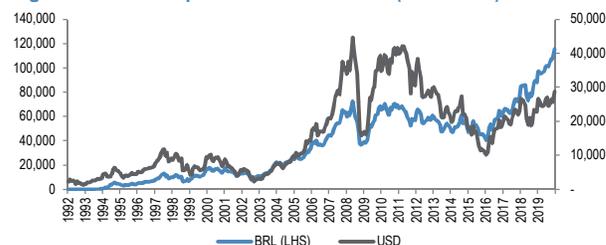


Source: Bloomberg, J.P. Morgan. Note: 2019 up to November.

B3 Equity Indexes

Ibovespa: This is the benchmark equity index for Brazil. The index is composed of a theoretical portfolio, now including 65 companies, that comprises the group of stocks whose total negotiability index represents 80% of total value negotiated on the Bovespa. Ibovespa is a cumulative index. Basically its number represents the current value of a portfolio that began on January 2, 1968, with a starting value of 100. The index is rebalanced every four months.

Figure 185: Ibovespa Index Performance (1992-2019)



Source: Bloomberg

Back to record levels after 9 long years: From 2002 until May 2008, the Bovespa index increased almost continuously, both in BRL and USD terms, reaching a level of more than 73,500, the all-time peak following Brazil's upgrade to investment grade. The Lehman collapse in 2H08 caused market jitters, but the Bovespa soon recovered, as growth picked up on the back of a credit boom and higher commodity prices. However, the market was impacted in 2011 from the European crisis. The recovery was mild in 2012, with an increase of only 7.4% in BRL terms, and almost flat in USD terms. 2013 was a tough year amid the taper tantrum in the US, with Brazil the worst performer among major indices in the world as commodity prices fell. In 2014, the index anticipated a significant recovery, which didn't materialize following the results of the 2014 elections. The increase in risk premium associated with the deterioration of the fiscal accounts and the loss of investment grade were responsible for the market deterioration in 2015. The contraction of the index reached a low in January 2016, as the economy deteriorated amid poor policymaking and a loss of support for then sitting President Dilma Rousseff. However, soon after that, the Ibov rallied after it became evident that monetary policy in the U.S. was going to remain accommodative and policy change consolidated locally. The rally entered 2017, helped by a positive external scenario with higher liquidity and commodity prices. 2018 continued to sustain the ascendant level of the Ibovespa providing returns of 15% in BRL terms, but declined 2% in USD given the strong depreciation of the BRL. The year was marked by the truckers' strike in May, which prompted several negative consequences for the economy, being an impediment for the rebound to accelerate. Still, this event led to strong outflows in the B3 market causing the currency to devalue. 2019 was a strong year for the Ibovespa as it rallied 32% in BRL terms and 27% in USD. The index closed above the symbolic level of 100,000 in March 2019 and in January 2020 it closed at its all-time record (119,000 points). This rally in 2019 was mainly led by local investors, while foreign allocation is still lagging. The approval of the social security reform coupled with a supportive macro

agenda to contain the extrapolation of fiscal accounts were the main triggers. It is worth noting that in dollar terms, the Bovespa is currently at about 40% below the level that it before the 2008 global financial crisis

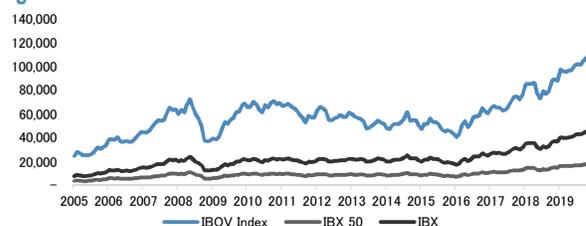
Table 72: Annual Bovespa Performance, 2000-2019

Year	Bovespa Index		Return	
	BRL	USD	BRL	USD
2000	15,259	7,825	-10.7%	-17.7%
2001	13,578	5,866	-11.0%	-25.0%
2002	11,268	3,184	-17.0%	-45.7%
2003	22,236	7,665	97.3%	140.7%
2004	26,196	9,869	17.8%	28.8%
2005	33,456	14,398	27.7%	45.9%
2006	44,474	20,818	32.9%	44.6%
2007	63,886	35,986	43.6%	72.9%
2008	37,550	16,076	-41.2%	-55.3%
2009	68,588	39,373	82.7%	144.9%
2010	69,305	41,715	1.0%	5.9%
2011	56,754	30,425	-18.1%	-27.1%
2012	60,952	29,820	7.4%	-2.0%
2013	51,507	21,820	-15.5%	-26.8%
2014	50,007	18,887	-2.9%	-13.4%
2015	43,350	10,961	-13.3%	-42.0%
2016	60,227	18,531	38.9%	69.1%
2017	76,402	23,109	27%	25%
2018	87,887	22,694	15%	-2%
2019	115,645	28,801	32%	27%
Accumulated			657.9%	268.1%
Average/Year			15%	17%

Source: Bloomberg.

IBX-50/IBX: The IBX-50 and the IBX are also benchmark indices. The companies that constitute these indexes are very similar to those in the Ibovespa. The main difference is the way the indices are calculated. The IBX-50 is composed of 50 companies with highest liquidity on the Bovespa and the IBX-100 of the 100 most liquid companies. The portfolios have durations of four months (Jan-Apr, May-Aug, Sep-Dec) and are recalculated at the end of each period. Because of the different methodology, the performance of the IBX can greatly vary from that for the Bovespa, even though they have the same company members in most cases.

Figure 186: Ibov vs. IBX vs. IBX-50



Source: Bloomberg

Other indices: Bovespa also provides sector-specific indices. This kind of index provides a segmented view of the market, measuring the performance of the stocks issued by the representative companies of each sector. Today, sector indices include ITEL (telecom), the IEE (electricity), INDX (industrial sector), ICON (consumer), IMOB (real estate), and financial (IFNC). Other relevant indices have to do more with corporate governance. The IGC can only be composed of companies listed on the Bovespa Level 1 or 2 or on the *Novo Mercado*. The ITAG is an index composed of companies that offer tagalong rights for minority shareholders than required by law in the event of a disposition of control. Finally, there are indices for medium cap (MLCX), the goal is to measure the average performance of a portfolio composed with companies with highest market cap. The SMLL has the objective to track the average performance of companies with lower market cap.

Corporate governance: Since the turn of the century, there have been important advances in terms of corporate governance. The main piece of legislation that greatly improved capital markets in Brazil was the Corporate Law approved by Congress in 2001. It established, among other things, that the number of preferential shares (PN) cannot be more than 50% of total shares and that PNs should have at least one of the following advantages: (1) a dividend that is equal to at least 25% of net income; (2) a dividend at least 10% higher than that for ordinary shares (ON); (3) in case of a sale or LBO of the company, tagalong rights of 80% and a dividend equal to that for ON shares. The Corporate Law also stipulates the rules for the composition of the company's board, the gathering of general and extraordinary assemblies, issues pertaining to offerings and the retirement of shares in circulation, among other things. While the Corporate Law is the backbone of equity market rules in Brazil, the CVM (equivalent to the US SEC) is responsible for the regulatory framework of Brazilian security markets. Today, in the Bovespa there are three levels of corporate governance, detailed on the next table.

Table 73: Summary of Corporate Governance Levels for Bovespa Companies

Level 1
Free float of 25%
Public offering that prioritizes capital dispersion
Quarterly financial releases
Public release of shareholder agreements
Public release of option programs
Tag along concession: 80% for ON
Level 2
Everything in Level 1 plus:
Minimum of 5 members on the Board (at least 20% independent with mandate of until 2 years)
Quarterly financial releases in US GAAP
100% tagalong rights for ON and PN
If the company takes itself private, or exits Level 2, it must publicly offer to acquire 100% of shares in circulation
Participation in the Arbitration Court
Right of vote for preferential shareholders (PN) on some issues, such as M&A
Novo Mercado
Everything in Level 2 plus:
Only one share class (ON – Ordinary)
100% tagalong rights
Board includes at least five members elected by shareholders

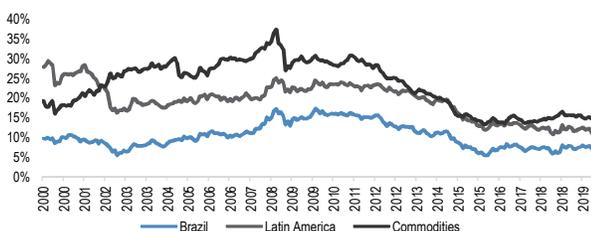
Source: B3.

MSCI Brazil

The Brazil MSCI index is composed of 55 companies, weighted by free float market capitalization. With a 7.25% weighting in the MSCI Emerging Markets index, Brazil is the fifth-largest country in terms of representation, behind China (31%), Taiwan (15.4%), South Korea (12.3%) and India (9%). Medium market performance over the past several years combined with the increased weight of China in the index has led Brazil's market weight in the MSCI EM to contract. The peak was in May 2008, after Brazil received an investment grade rating from S&P, at almost 17%.

Figure 187: Weights in MSCI Emerging Markets

% of total index



Source: J.P. Morgan, MSCI and Datastream.

As in the Ibovespa, the sector with the largest weight in the MSCI Brazil is financials (35%), but in contrast to the local index, all other sectors come in with far lower weights. Energy, for example, the second-largest sector, has a 13% weight in the MSCI Brazil, and materials, third, has 12.6% participation. The following table shows the share of each Brazilian equity sector in the MSCI Brazil, MSCI Emerging Markets, and MSCI LatAm.

Table 74: MSCI Brazil Weighting by Sector

	Weights (%)			Number of Co's
	Brazil	EM	LatAm	
Consumer Discretionary	8.63	0.63	5.60	4
Multiline Retail	5.82	0.42	3.78	3
Diversified Consumer Services	0.93	0.07	0.60	1
Specialty Retail	1.07	0.08	0.70	1
Internet & Direct Marketing Retail	0.80	0.06	0.52	1
Consumer Staples	11.70	0.85	7.59	0
Beverages	4.68	0.34	3.04	1
Food Products	2.59	0.19	1.68	2
Food & Staples Retailing	2.75	0.20	1.78	3
Personal Products	1.68	0.12	1.09	1
Energy	13.05	0.95	8.47	0
Oil, Gas & Consumable Fuels	13.05	0.95	8.47	4
Financials	34.72	2.52	22.53	0
Banks	24.27	1.76	15.75	6
Capital Markets	6.21	0.45	4.03	2
Insurance	4.24	0.31	2.75	4
Healthcare	3.18	0.23	2.07	0
Health Care Providers & Services	2.50	0.18	1.62	2
Pharmaceuticals	0.68	0.05	0.44	1
Industrials	6.89	0.50	4.47	0
Transportation Infrastructure	1.26	0.09	0.82	1
Road & Rail	3.08	0.22	2.00	2
Aerospace & Defense	0.69	0.05	0.45	1
Electrical Equipment	1.86	0.14	1.21	1
Information Technology	0.46	0.03	0.30	0
IT Services	0.46	0.03	0.30	1
Materials	12.66	0.92	8.21	0
Metals & Mining	10.31	0.75	6.69	3
Paper & Forest Products	1.21	0.09	0.79	1
Containers & Packaging	0.78	0.06	0.51	1
Chemicals	0.36	0.03	0.23	1
Telecommunications	2.21	0.16	1.43	1
Diversified Telecommunication Services	1.46	0.11	0.95	1
Wireless Telecommunication Services	0.75	0.05	0.49	1
Utilities	5.23	0.38	3.40	0
Electric Utilities	3.51	0.26	2.28	5
Water Utilities	1.14	0.08	0.74	1
Independent Power and Renewable Electricity Pr	0.58	0.04	0.38	1
Real Estate	1.28	0.09	0.83	2
Real Estate Management & Development	1.28	0.09	0.83	2
MSCI Brazil	100.00	7.26	64.90	3

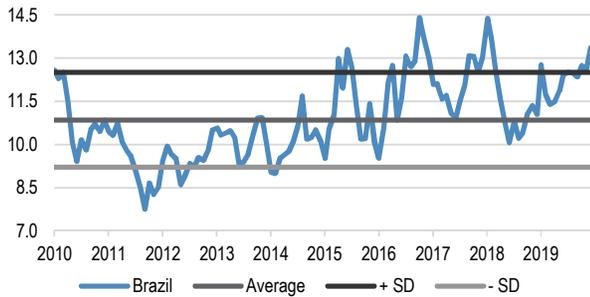
Source: MSCI, J.P. Morgan and Datastream.

Equity Market Valuation Metrics

Price to earnings: From a 10-year historical perspective, MSCI Brazil's 12-month fwd P/E has a median of 10.8x. In January 2020, the PE was at 13x, trading above 1.5 standard deviation of the average.

Figure 188: MSCI Brazil Consensus P/E

12-month fwd, (median and SD are for the last 10 years)

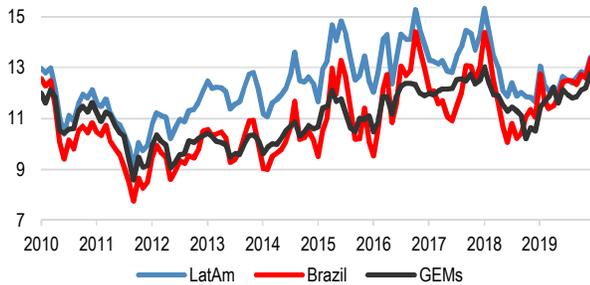


Source: Bloomberg, J.P. Morgan

The Brazilian market P/E typically trades at a discount to the Latin America multiple and almost in line with Emerging Markets, albeit there are notable exceptions. The 10-year average for LatAm and EM 12-month fwd P/E average now stands at 12.9x and 12.6x, respectively.

Figure 189: MSCI Brazil, LatAm and EM P/E

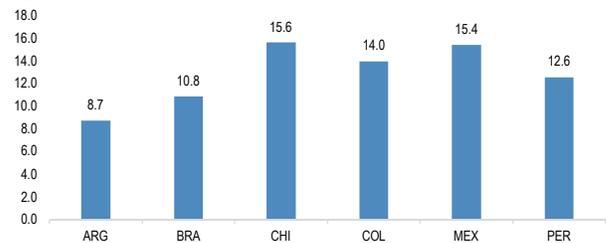
12-month fwd



Source: Bloomberg, J.P. Morgan

Within LatAm, Brazil trades expensive than all countries (on a 10-yr average), due to the continuation of macro reforms that justifies the premium. Argentina comes in second, trading 0.7 SD above its historical average. After the turmoil of the crisis, the market saw some correction. The average 12 mo. fwd PE for Brazil for the last 10 years is, Brazil is trading at 10.8x fwd P/E, versus Argentina at 8.7x. Chile is the most expensive LatAm market at 15.6x, with Mexico very much on its heel at 15.4x.

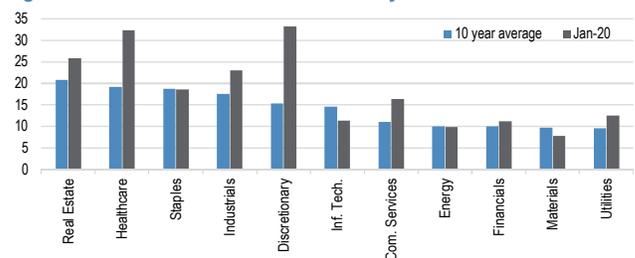
Figure 190: LatAm markets 10 year average PE (12 mo. fwd.)



Source: Bloomberg, J.P. Morgan

The most expensive sector within the Brazil MSCI is Consumer Discretionary. Other than that, among the sectors, health care, given the growth expectations and real estate, on the back of rally in performance in 2019, have the highest as of January 2020. It is also interesting to note that most sectors are trading at a premium to their 10 year average, with the exception of energy, materials and information technology.

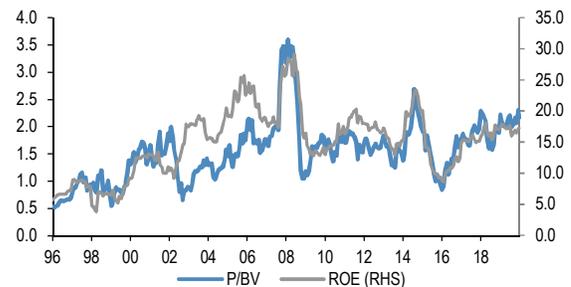
Figure 191: MSCI Brazil 12 mo. Fwd P/E by Sector



Source: Bloomberg, J.P. Morgan

Price to Book Value and ROE: At the end of January 2020, Brazil traded at 2.2x P/BV, which is higher than the 10-year average of 1.8x. Brazil's ROE is currently 17.2%, slightly above the 10-year average (16.4%).

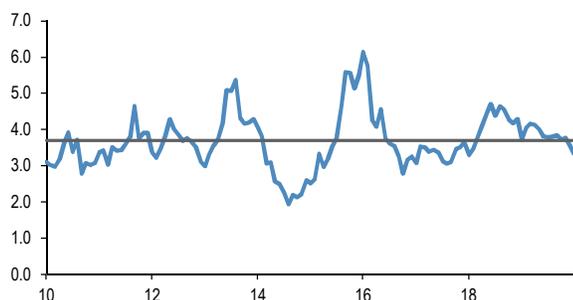
Figure 192: Brazil P/BV versus ROE



Source: MSCI, Bloomberg

Dividend Yield: Brazil's dividend yield was 3.3% at the end of January 2020, the second highest in LatAm, where the average is 3.2%. The 10-year historical average for LatAm dividend yield stands at 3.1%.

Figure 193: Brazil Dividend Yield



Source: MSCI, Bloomberg.

Flow of Funds

Our basic theory is that flows are inversely correlated to risk. This was pretty much the case in recent years, when outflows were the rule mostly due to the attraction of bonds over equities. In recent months, emerging markets suffered with strong redemptions on the back of the negative developments around the globe: US-China trade war, Brexit, US-Iran tensions, social protests in Latin America and Europe, China growth deceleration are the main to pinpoint. Still, the easing cycle (23 banks have eased in 2019) in EM lowered the chances of profits on carry trade.

From 2013 to 2017, strong foreign inflows to Brazilian stocks were registered. In 2013, Bovespa registered strong inflows of R\$11.9bn at the same time as its market value declined by 16.6% in USD terms. The same movement repeated in 2014 with inflows of R\$20.3bn while market cap was trimmed by 18.1%. In 2015, a similar movement took place with inflows of R\$16.4bn and a market cap reduction of 42% in USD terms. In 2016, the inflows continued, but this time with a positive strong market performance and the market cap registered 54% increase. In 2017, flows stood in positive territory at R\$13.4bn, with market cap increasing 26%/y/y. However, flows in 2018 were negative by R\$9.5bn, amid local events that brought uncertainty to the Brazilian market (Lula's trial, truckers' strike and the Brazilian presidential election).

2019: Foreign flows in the Brazilian secondary market registered record-high redemptions of R\$44.5bn, higher than the -R\$9.5bn registered in the full year of 2018.

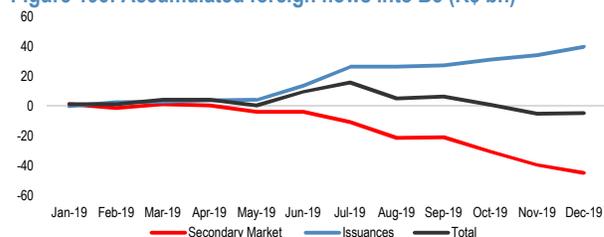
Figure 194: Foreign Equity Investments in the Bovespa
 BRL billion



Source: Bloomberg. Note: 2020 as of January, 29, 2019.

In 2019, there were R\$90bn in equity offerings up to October, which is the highest value since 2010 (R\$150bn). Foreigners were responsible for R\$40bn of these offerings (44% of total), thus justifying to some extent the dryness in the secondary market. All together, (primary and secondary) flows are in negative territory at R\$4.6bn.

Figure 195: Accumulated foreign flows into B3 (R\$ bn)

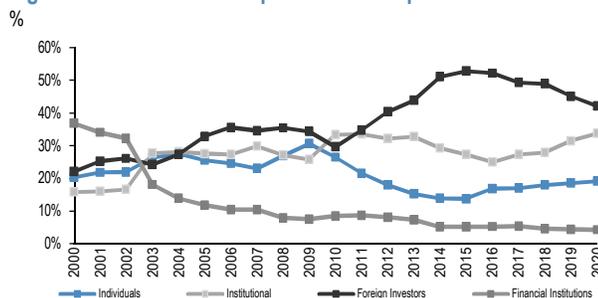


Source: Bloomberg, B3, J.P. Morgan

Investor participation in B3: Over the past ten years the profile of the B3 investors has consolidated. Foreigners remain important actors, even though their participation declined almost 10% in the past 5 years. They used to be 53% and are currently running at 42%. At the same time, individuals' participation saw a soaring trend in the past 2 years, standing at 19% nowadays. Institutional participation has been increasing since 2015, from 27.2% to 34% in 2020.

Foreigners have represented the largest group of investors since 2005. From 2010 to 2017 they increased their participation in ADTV consistently and reached a new level of participation above 50% of total investments in B3. On the other hand, in the same period of time, individual investors' share of total volume decreased significantly and reached 13.8% in 2014, down from above 30% in 2009. The participation of local institutional investors, who currently rank second after foreigners, has remained around 25%-30% for the last few years

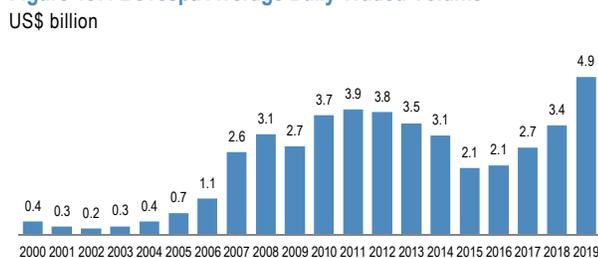
Figure 196: Investor Participation in Bovespa's Volume



Source: B3.

B3 average daily traded volume (ADTV): B3's ADTV had been reaching new record levels each year after 2005 (with the exception of 2009), but since 2012 the average daily traded volume has drastically declined and reached US\$2.1 billion in 2015 and 2016. This means a decrease of 45% compared to 2011 peak. However, since 2015, the trend reverted and volumes are rising and reached new record high in November 2019 of US\$5.1bn.

Figure 197: Bovespa Average Daily Traded Volume



Source: BM&F Bovespa. Note: 2019 is the average up to November.

Pension Funds

The Brazilian pension fund system: The pension fund system in Brazil is basically divided into three areas: (1) public sector – mandatory social security for public sector employees (RPPS); (2) general regime – mandatory social security for formal sector employees (RGPS); (3) complementary pension – optional, can be closed (when the worker is associated with a company that offers a private social security plan) or open (available to anyone who wishes to participate, independent of the company for which the person works).

As of June 2019, there were 255 closed-end pension funds in Brazil and almost 2.6 million active participants contributing to the system. The largest closed-end pension fund is Previ, which belongs to Banco do Brasil's employees. Its AUM accounts for 23% of the industry's total, or about R\$206 billion as of June 2019.

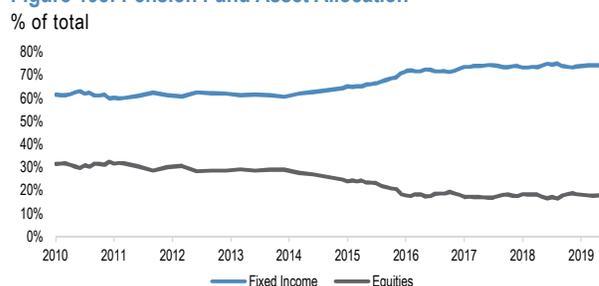
Table 75: Top Ten Brazilian Pension Funds (2019)

Fund Name	Entity Associated	AUM in R\$ bn
1 PREVI	Banco do Brasil	206.2
2 PETROS	Petrobras	82.2
3 FUNCEF	Caixa Economica Federal	69.8
4 FUNCESP	Cesp	31.2
5 FUND ITAÚ UNIBANCO	Banco Itau	27.9
6 VALIA	Vale	23.4
7 SISTEL	Telecom Companies	19.0
8 BANESPREV	Banco Santander	18.0
9 REAL GRANDEZA	Eletronbras	17.1
10 FORLUZ	Cemig	16.4

Source: Abrapp.

Pension fund investments in Brazil over the last several years have been pretty conservative, with a heavy concentration in fixed income. This makes sense, pension funds is about 5.5% per year. Until recently, it was easy to get this return in fixed income markets, as the inflation linked rate NTN-B had a yield that was higher than that. However, considering the easing cycle that started in mid-2016, we should see a rotation from fixed income into equities taking place in the next months, as investors search for higher returns. The data for pension funds is very lagging and current allocations across securities as of June 2019 were 18.2% in equity and 74% in fixed income.

Figure 198: Pension Fund Asset Allocation



Source: Abrapp

In Brazil, there are limitations in terms of security allocations for pension funds. In 2009, the legislation was changed to allow for a higher limit on equity investments, with the ceiling raised from 50% to 70%. Still, we note that the previous 50% limit was never reached, so the new legislation really hasn't made a material difference. Fixed income investments (public sector debt) in general have no ceiling, and funds can opt to invest 100% of AUM in these securities. For investment in private debt (notes, receivables, etc.), the limit is 20%. Real estate investment suffered some changes in mid-2018: direct investment in real estate as

the purchasing of buildings is now forbidden; only investments through real estate funds are allowed. As a bargaining chip, the CMN increased the application in this type of funds from 8% to 20%. Funds have until 2030 to divest from direct real estate or to transfer the investment to appropriate funds. Investments in real estate plans fall under another category (structured products, which include multi-strategy funds), with a limit of 10%. For investments outside of Brazil, the limit is 10%.

Large potential for equities: Going forward, pension funds will need to diversify their investments away from fixed income as interest rates fall to record low levels (in January 2020 they are at 4.25%). Until recently, fixed income investments, especially those linked to inflation, were enough for pension funds to meet their actuarial targets of 5-5.5% plus inflation. This is not likely to be the case anymore, and fund managers may need to take more risk.

Mutual Funds

As of November 2019, the mutual fund industry had R\$5.4 trillion of AUM. This amount represents around 75% of the country's GDP. In Brazil, there are almost 19,500 mutual funds registered, an all-time record level.

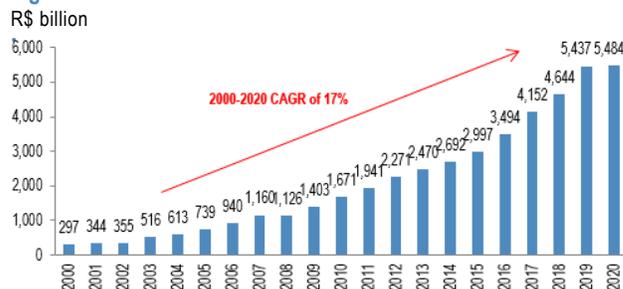
Table 76: Mutual Fund Industry

Relevant Information – Dec/19	
Domestic market	R\$5.430 trillion of AUM
Number of funds	19,391 funds
Offshore	R\$52.6 billion of AUM and 119 funds
Grand total	R\$5.483 trillion of AUM

Source: Anbima.

Total AUM has increased steadily since 1994. With the exception of 2002 and 2008 (both years marked by a confidence crisis in Brazil), between 1994 and 2012 each year presented double-digit growth from the prior year. The exception was 2013 and 2014, where growth stood at only a single digit. From 2015 onwards double-digits started to be observed. Total AUM average growth during in this century was 17% per year. Comparing 2019 to 2018 reading, the AUM increased by 17%/y.

Figure 199: Mutual Funds' Total AUM

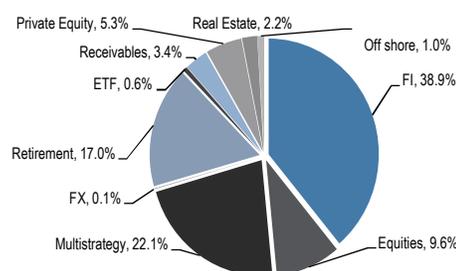


Source: Anbima. Note: 2020 as of January 2020.

As of January 2020, the share of total AUM invested in fixed income funds was 38.9%, including the amount invested in overnight rates tied to the Selic (DI). The second most preferred type of fund for investors is multi-strategy (mostly hedge funds), accounting for 22% of total AUM. Equity funds have increased its participation over the years, jumping from 4.2% observed two years ago to 9.6% of investments. This level has been increasing since 2018 when it was around 5.5%, even though it remains far from the peak of 15.5% observed in December 2007. Total equity investment of Brazilian mutual funds (which include hedge fund allocations within the realm of multi-strategy funds), account for 14% of total AUM. This was a significant jump in the past two years due to record lower rates increasing the appetite for more risky assets in the industry.

Figure 200: Mutual Funds AUM by Category

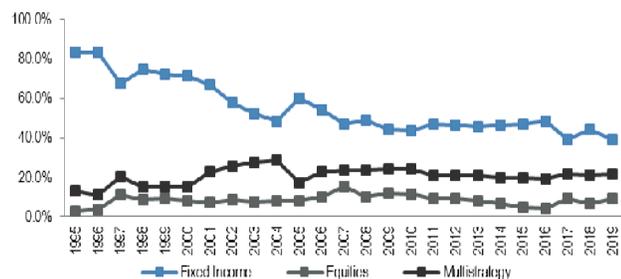
% of total, as of January 2020



Source: Anbima.

The figure below shows that the fixed income share of total AUM has decreased significantly over the last decade. In 1995, almost 85% of AUM was allocated to fixed income funds. At the end of the 1990s, a diversification process began and new fund categories (such as DI index, private equity and offshore funds) started to emerge as investment options. However, fixed income share in total AUM has been stable over the past 10 years.

Figure 201: Fixed Income vs. Equity vs. Multi-Strategy



Source: Anbima.

Comparing mutual fund and pension fund allocations, pension funds have a more aggressive strategy in terms of equity investments. While 18.2% of pension funds' total AUM is allocated to equities, 12.6% of mutual funds' AUM is invested in this category. In part, this is because pension funds were active participants in the privatizations of the 1990s and thus own important stakes in key Brazilian companies.

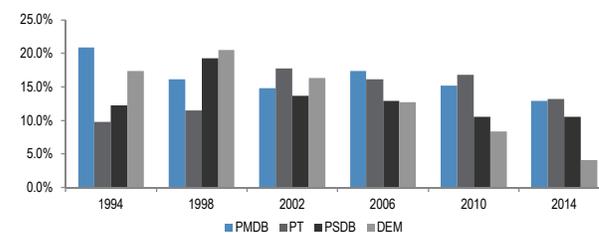
Political System

The Federal Republic of Brazil is a democratic state, meaning that its representatives are elected by universal suffrage, according to the Constitution of 1988. The executive power is exercised by the president. The president, governor and mayors are elected to a four-year term and may be re-elected once for a consecutive term. After a four-year hiatus, he/she could run again. The legislative power is exercised by the Brazilian National Congress, composed of two chambers. The Chamber of Deputies is the lower house and has 513 members elected for four-year terms, with unlimited re-elections possible. The number of representatives for each state is determined by its population, with a minimum of 8 seats and a maximum of 70 seats. The Federal Senate (upper house) has 81 members elected for eight-year terms, with elections every four years for, alternatively, either one-third or two-thirds of the seats. Each state elects three senators. To be elected president, governor or mayor in Brazil, the candidates need an absolute majority, which means they need 50% of the valid votes plus one vote to carry the election in a single round. Otherwise, the two candidates with the highest number of votes go to a second round. Run-offs for mayor only take place in localities of more than 200,000 people. Election for federal and state deputies as well as city council representatives are through a proportional system in which the total number of votes that the party and its representatives get determine the number of representatives it will have in Congress.

“Coalition presidentialism”: Because of the large number of political parties, the Brazilian political system became known as coalition presidentialism (*presidencialismo de coalis o*). This means that a president needs to form a wide enough coalition to guarantee governability. When the president is popular and the coalition is united, the system delivers good results. However, the system always forces the president to maintain a coherent balance within coalition members, well distributing posts and resources. This makes for a complex administration of governability and many times (more often recently), the president loses control of its wide base. One of the key problems is the proliferation of political parties in Brazil over the past decade. This diluted the representation of each party in the Lower House, making it necessary to add more parties to a coalition to guarantee support. All in all, the size of the coalitions balloon and, with this, the number of favors that the President needs to grant to each party. Cardoso governed with three main parties, and they made up over 50% of the Lower House. President Dilma Rousseff needed 11 parties to guarantee the support of about 60% of the Lower House in 2014, support which faded a couple of years later, as is well known at this point.

Figure 202: Participation of Largest Political Parties in the Lower House (1994 - 2014)

% of total representatives



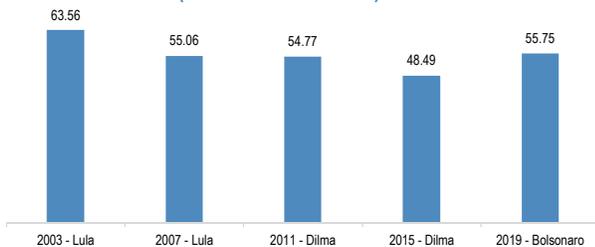
Source: Camara dos Deputados

Lack of Congressional support led to the impeachment of President Dilma in 2016. On April that year, there 367 out of the 513 Lower House representatives voted in favor of her impeachment (71.5%), 25 more than the minimum needed (66%) to open the impeachment procedure at the Senate. The consequence was that when President Temer took over, he had a very large Congressional support: those who voted to impeach President Dilma would consequently support Temer. But that was short lived to some extent, ending when the President "JBS tapes" were released on May 17, 2017.

“Old Politics”: During his presidential campaign, President Jair Bolsonaro vowed to change the way that

politics is done in Brazil and not to engage in the type of coalition described above. In fact, Bolsonaro's cabinet was one where he brought mostly the people he wanted to and that had some sort of allegiance to him or to his circle of supporters. Although the PSL, the party of the President until 4Q19, became the largest party in the Lower House and granted a firm support to the President, there was never a firm coalition in place. Still, the President was able to gather significant Congressional support in Congress during the first year of his administration. Part of the reason has to do with the fact that Bolsonaro released a record amount of budgetary resources for congress representatives (R\$5.7 billion). But, importantly, his programmatic agenda related to the economy enjoyed significant cross party support. According to a study from Arko Advice, the party that voted the most in line with the government was Novo (85%), PSL (78%), Patriota (75%), PTB (71%), and Cidadania (68%). The opposition voted in favor of the government in 30% of the vote.

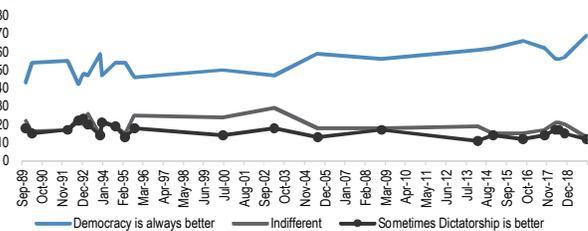
Figure 203: Lower House Support for the Executive, First Year of the Administration (% of total bills voted)



Source: Arko Advice

Democracy Support: Datafolha has been tracking the support of Brazilians to democracy for the past 30 years. It is interesting to note that by the time of the first direct elections following the military dictatorship (1989), the level of support for democracy was low. It oscillated between 45% and 55% approval until the second term of President Lula, when support for democracy increased to 60%. During the Temer administration, the support for democracy fell, but it increased once more during the Bolsonaro administration. The latest data, from December 2019, shows that although the support to democracy fell from 69% to 62%, the opinion that dictatorship sometimes are better than democracy remained at only 12%, the lowest in the series.

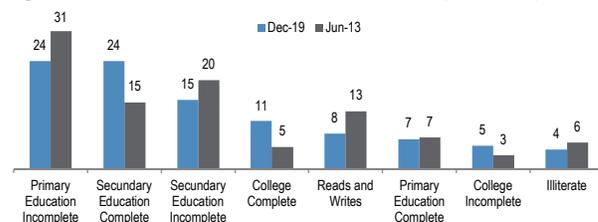
Figure 204: Level of support for democracy



Source: Datafolha

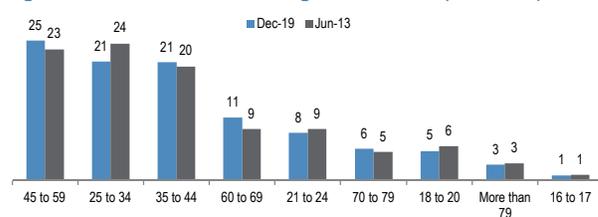
Who votes in Brazil? Voting is considered both a right and a duty in Brazil. Every citizen between 18 and 70 is subject to compulsory registration and voting. The new Constitution in 1988 allowed 16- and 17-year-olds to vote on a voluntary basis. In December 2019, the Brazilian electorate reached 147.870 million people, with 43.45% located in the Southeast region, 26.78% in the Northeast, 14.55% in the South, 7.68% in the North and 7.2% in the Midwest. Brazilians living abroad can vote, and they represent 0.3% of the electorate. **The majority of Brazilian voters (24.3%) didn't complete primary education (elementary school), while only 10.77% completed college.** The data shows an improvement in terms of education of Brazilian voters, with more people now having more education than in the past, but still at poor levels.

Figure 205: Brazilian Voters – Education Level (% of total)



Source: Tribunal Superior Eleitoral.

Figure 206: Brazilian Voters – Age Distribution (% of total)



Source: Tribunal Superior Eleitoral.

Voting system: Electronic voting was introduced in 1996, and the country became the first in the world to conduct fully electronic elections. The vote count

happens quickly, and results are out shortly after the polls are closed. In 2012, mayoral election biometric electoral booths were tested, in which voters prove their identity with electronic fingerprints. In the 2018 elections, there were 87.3 million voters with registered biometrics, representing at the time 59.3% of the electorate. Lately, there have been calls to produce a written receipt of the vote, as a cautious measure against hacking on the ballot box. The Electoral Court voted against that in the 2018 elections, an issue that is largely defended by President Bolsonaro. In January 2020, the Electoral Court started to test new electronic booths, which should start to be used at the 2020 mayoral elections.

How a Lower House Representative Gets Elected

This is a simplified explanation as a full one would require a report in itself. Most of the explanation and data comes from the book from political scientist Jairo Nicolau "Representates de quem? Os (des)caminhos do seu voto da urna a Camara dos Deputados"

Different than what is called "majority" elections (the person that get the most absolute number of votes get elected), Lower House representatives are elected in a proportional election of lists. First and foremost, each state has fixed number of seats in Congress, with a minimum of 8 and maximum of 70. Thus, the first distortion was already stated: the vote of one person in Sao Paulo is worth less than a vote of someone in Roraima: Sao Paulo has 43.6 million inhabitants and a federal deputy needs 622,753 votes to get elected. In Roraima, the population is 532K and a representative needs 66,382 votes to get elected.

On Election Day, voters can vote for a candidate or for a party. Once the election is over, all the votes for party or candidate are added (excluding the annulled votes, which represented 15% of the votes in the 2014 elections, double the ones for president). The next step is the determination of the electoral ratio is determined by dividing the number of valid votes to the number of seats. If a party doesn't meet this electoral coefficient, it is already out, meaning, no representative from this party is to get a seat in the Lower House, unless the party is part of a coalition and all the votes from the coalition put together do meet the electoral coefficient. All in all, this data determines how many seats a party will have. The next step is to distribute the seats within the party candidates. If a party has the right to 3 seats, the 3 most voted representatives get that seat. One of the most well-known problems with this is that sometimes a famous person gets a lot of votes that are enough to get elected

himself and others within his party, even if the others have virtually no votes. The example mentioned from Nicolau's book is well known to all Brazilians: Enéas Carneiro, who ran for President in past elections and became famous for only having a few seconds of TV time where he said only his name (Meu nome é Enéas!) got 1,573,112 votes in the 2002 elections, surpassing five times the electoral ratio in Rio (280,297).. He was able to carry with him 4 additional representatives to the Lower House, who had 275, 382, 484, and 673 votes, virtually unknowns. Another more recent example is that of a clown known as Tiririca, who got more than 1 million votes and was able to bring with him five additional candidates from his party (PR) to the Lower

A mini-political reform in 2015 made it mandatory for elected representatives to get at least 10% of the electoral ratio in votes under his/ her name. So, on the above example, the 4 representatives that were brought by Eneas would not make it as they would need at least to achieve 10% of the electoral coefficient to get elected or, at least 28K votes.

Another mini-political reform took place in 2017, when it was defined the end of coalitions in proportional elections starting in 2020. Therefore, from then on, a party cannot make alliances with others, thus pretty much eliminating the chance that smaller parties would be able to get much representation (recall they need to meet the electoral ratio and that their representatives need to get at least 10% of the vote under their name). Yet another important change to restrict access to smaller parties to the Lower House was the establishment of a "performance" clause starting in 2018 and raising the performance bar in subsequent years. If a party doesn't attain a certain threshold of representation, it will not have access to public funds that are distributed to political parties (*fundo partidario*), nor to "free" TV and radio time.

Brazil's Main Political Parties

Brazil has 33 official political parties, of which 24 have congressional representation. A political party can be formed if one is able to gather 430K voters' signatures in nine states, and these are accepted by the electoral court. Any party that is officially registered has the right to receive financial resources and have frequent spots on television during elections. The system itself is very fragmented and was not very polarized. Still, this has been changing as of late, with the advent of parties that are clearly identified with the right (such as the PSL and the new political party being formed by President Bolsonaro, the Aliança pelo Brasil). Until the time of the

impeachment of President Dilma and the 2018 elections, most of the parties were hovering around the center to center left.

The 2018 elections delivered a very important change in terms of Congressional composition as it registered a renewal rate of over 47%, the largest rate since 1986. This was a reflection of the discontent of the population with the political class, especially following the Lava Jato investigation. The PSL, which was Jair Bolsonaro's party until 4Q19, was the second most voted in the Lower House, only behind the PT and ahead of the MDB, and the PSDB, traditional parties that typically have a large representation.

The parties that have also been gaining a lot of political representation and influence are those so-called from the “*centrão*” or big center. The following are the parties that make up the *centrão*: DEM, PP, PL, PSD, Solidariedade and Republicanos. They add up to 150-200 representative in the Lower House and have an important decision-making role not only because they represent 30% of Congress, but also because the President of the Lower House, Rodrigo Maia, belongs to one of the *centrão* parties (DEM).

Congress Composition and Political Parties:

There are 24 parties today that are represented in the Lower House, with the formal opposition accounting for only 25%. In the Senate, there are 16 parties represented and one Senator without a party (Flavio Bolsonaro, the President’s son, who is waiting for the formation of the Aliança pelo Brasil to become affiliated).

Barrier Clause: Reducing the number of parties over time: Starting on January 1, 2019, parties need to attain a certain performance level in terms of elected representatives to qualify for free TV/ radio advertising and resources from the Party Fund, a chest of almost R\$1 billion that is divided among parties (95% according to their proportional representation at the Lower House at the time of the election and 5% equally among all). The barrier clause rule stipulates that, to pass the barrier clause, parties need to get at least 1.5% of total votes on the federal deputy election on at least 9 states. In addition, in each of those states it needs to get 1% of the valid vote. Alternatively, parties can have at least 9 federal deputies in 9 states. These criteria start to get more difficult in each election, until 2030, when parties will need to get 3% of the valid votes with at least 2% of the votes in 9 states or 15 federal deputies in 9 states. In

the 2018 elections, that were 12 parties that fell below the barrier clause threshold, including REDE (from Marina Silva), and the PCdoB, a historical ally of the PT. If a party falls below the barrier clause, its representatives have the right to switch parties without any penalty (there are specific windows for elected representatives to change parties. If they do so outside of the window or if not to join a newly formed party, they, in theory, lose their mandate). While the barrier clause doesn’t impede new and small parties to get Congressional representation, it makes it more difficult for them to get the vote and increase in size. Over time, it should help a lot to reduce the number of parties represented in Congress.

Table 77: Lower House Composition by Party

Party	# of representatives
PSL	54
PT	53
PP	40
PL	40
PSD	37
MDB	33
PSDB	33
REPUBLICANOS	32
PSB	30
PDI	28
DEM	26
SOLIDARIEDADE	14
PODE	11
PIB	11
PSOL	10
PROS	10
PSC	9
Cidadania	9
NOVO	8
PCdoB	8
Avante	7
PATRIOTA	5
PV	4
REDE	1
Total	513

Source: Camara dos Deputados

Table 78: Senate Composition by Party

Party	# of representatives
MDB	14
PODEMOS	10
PSD	9
PSDB	8
DEM	6
PP	6
PT	6
PDT	4
Cidadania	3
PROS	3
REDE	3
PL	2
PSB	2
PSL	2
PSC	1
REPUBLICANOS	1
No party	1
Total	81

Source: Senado

On the next pages is a summary of all the parties with Congressional representation.

PSL: Liberal Social Party became official in 1998, and was the creation of a northeast businessman, Luciano Bivar. During the first twenty years of existence, the party didn't have a lot of political expression, until presidential candidate Jair Bolsonaro decided to enter it. Along with Bolsonaro, several congressional candidates also entered the party, which grew exponentially the number of affiliates. The PSL, who had only 2 representative in Congress in the previous legislature (2015-2018), now boasts the largest number of representatives, tied with the PT (53). The PSL was originally a left leaning party but it is today seen as a right wing conservative party. By mid-2019, however, Bolsonaro had disagreements with the "owner" of the party and decided to split to form his own party. Thirty Lower House representatives from the PSL decided to join Bolsonaro in the Aliança pelo Brasil. At the time of this writing, the Aliança was in the process of collecting signatures for the party creation. Going forward, the level of influence of the PSL should decline, considering that it is to become smaller.

PT: Founded in 1980, the Worker's Party was founded by a group of intellectuals and union workers in the industrial São Paulo region (known as ABC) whose leader was Luis Inácio Lula da Silva. The PT is a leftist party on the ideological spectrum and was an opposition party until Lula was elected President in October 2002. It is a well-established view that President Lula's election was made possible because he embraced more centrist

views. One of the main strategies of the PT has been to form very large coalitions to widen the party's support in Congress and get its members elected in regional elections. At the time of President Dilma's reelection, there were 11 parties in her coalition, most of them with Cabinet representation. The most important party in the PT coalition during its 13-year tenure in Brazil's presidency was the MDB. Despite winning the reelection in 2014, President Dilma quickly lost popularity. A very serious stagflation, combined with fiscal creativity (the now famous *pedaladas*), led to Dilma's impeachment. Just a few months after that, the PT was the party with the worst relative showing in the 2016 municipal elections. Only 236 mayors from the party were elected in Brazil's 5,500 municipalities, a 59% decline from the 2012 municipal elections. In the 2018 elections, the party's candidate Fernando Haddad (former Sao Paulo mayor) went to the second round against Jair Bolsonaro and got 29.28% of the votes, against 46.03% for Bolsonaro, or 17.9 million less votes. The PT also decreased in terms of Congressional representation, albeit it still has the largest number of Lower House representatives (along with the PSL).

PP: The PP is a political party that was founded in 1995 under the name Partido Progressista Brasileiro. It housed politicians such as Paulo Maluf, Francisco Dornelles, Antonio Delfim Netto, among others. The current president of the party is Senator Ciro Nogueira, who has important influence in Congress. Although the party has a right wing identity, it doesn't have a strong ideology and was part of President Lula's and Dilma's coalition in Congress. Still, in 2016, the PP representatives were largely in favor of President Dilma's impeachment. The PP is the largest party in the "*centrão*", or big center, a group of parties that have about 150 representatives in Congress and who tend to vote together, independently of ideology.

PL: The Liberal Party is also part of the *centrão* and it was formerly known as PR – Party of the Republic. It was founded in 2006. The party lacks high profile national leaders, but boasts 40 representatives in the Lower House. The boss of the party is Valdemar Costa Neto, a former congress representatives who was involved in the mensalão scheme.

PSD: The Social Democrat party was created by former Sao Paulo mayor Gilberto Kassab and was a split from other center and center right parties, but with members especially from the DEM. It was part of Dilma's coalition in 2014 but it also supported her impeachment. In the 2018 elections, it was part of the Alckmin coalition.

MDB: Formerly known as PMDB. The Brazilian Democratic Movement party is the largest political party in Brazil, although it has never elected a president in a direct election – that is, with the entire population able to cast a vote. Still, two PMDB representatives have become sitting presidents. One was Itamar Franco, which was the VP of impeached President Fernando Collor de Mello, and the other is Michel Temer, the VP of impeached President Dilma Rousseff. The MDB was the largest party in the last legislature and has often been among the top three in terms of number of representatives in Congress. That has however changed in the 2018 elections, with the MDB now being #5 in terms of size in the Lower House, but it is still the largest in the Senate. The MDB is still the largest number of party affiliates, and the largest number of mayors by far, giving the party a large grassroots organization. Re-launched in 1980, as PMDB, the party is the successor of the Brazilian Democratic Movement (MDB), which was the official opposition party to the military regime. Since the end of the military regime, the MDB has been part of the governing coalition, filling key posts in the various administrations. Historically, the MDB has been characterized as a very divided party, with important leaders in different areas and regions of the country. The PMDB hasn't had a presidential candidate since the 1994 elections, but it always announces its clear intention to have one. The MDB is represented in the Cabinet by Minister Osmar Terra (Cities Minister). The Leader of the Government in the Senate is also a member of the MDB, Fernando Bezerra. The main representatives of the PMDB include Former President Michel Temer, Senator Renan Calheiros, Ulysses Guimarães (leader of the constitutional assembly of 1988), former President Sarney, former head of the Lower House Eduardo Cunha.

PSDB: The Brazilian Social Democracy Party was founded in 1988 by dissidents from the PMDB and is considered a centrist political party. The PSDB grew faster than any other party in Brazilian history, electing President Fernando Henrique Cardoso just six years after the party's creation. PSDB members are called "tucanos" because of their mascot, which is a toucan. During the years of the PT presidency, the PSDB was the main opposition party and saw an important contraction in the number of congressional representatives. However, the PSDB popularity greatly increased during the impeachment process of 2016, and it had a great showing in the 2016 municipal elections, being the party that increased the most the numbers of mayors elected, a 15% rise from the previous race. Most emblematic was the election of Joao Doria for Sao Paulo mayor in a first round of voting, something that never happened before. The PSDB today is a member of the coalition that

supports President Temer in office and occupies four Ministries, Cities, Human Rights, Foreign Affairs and the General Secretariat. It is the third largest party in the Lower House with 46 representatives and has 11 Senators. The party is currently very divided between those who would like to leave the Temer coalition (the "black heads" or *cabeças pretas*, represented largely by the party's younger generation) and those that want to stay in the government (the "white heads" or *cabeças brancas*, which is primarily the older generation). Main representatives: former president Fernando Henrique Cardoso, Senator Aécio Neves (presidential candidate in 2014), São Paulo Governor Geraldo Alckmin (presidential candidate in 2006 and possible 2018 contender) José Serra, who has been mayor and governor of São Paulo and ran twice for president (in 2002 and in 2010), current party President and former Governor of Ceara Tasso Jereissati and more recently João Doria, the mayor of São Paulo and potential presidential contender in 2018. All in, one could generalize that the PSDB has had more active protagonists in the political debate recently compared to past years.

Republicanos: Former PRB. Founded in 2005, was the party of former vice-president of President Lula, Jose Alencar. It is considered a center right party. It was part of the Temer coalition and currently supports the Bolsonaro administration.

PSB: The PSB is Brazil's socialist party, in theory. It was founded in 1947, but its first role in the national stage was with João Goulart, who in 1961 assumed the Presidency following the resignation of Janio Quadros. After that, with the military coup of 1964, the party was banned but later re-created 1985. Its main stronghold was (and continues to be) in Pernambuco state. The party became a national protagonist again in 2002, with the presidential candidacy of Anthony Garotinho. During the PT presidency years, the PSB was mostly a governing party, but it left the coalition in 2013, as then governor of Pernambuco Eduardo Campos decided to run for President the following year. He invited Marina Silva to become his running mate and form a wide coalition on the center-left as an alternative to the PT vote. Mr. Campos died in a tragic plane accident, and Marina Silva became the party's presidential candidate. The PSB supported the impeachment of President Dilma. It was the third most voted party in the 2016 elections and continues to grow. The main party leaders today are the governor of Pernambuco Paulo Camara, with the family of Eduardo Campos still very influential in the party, as well as relevant congressional representation.

PDT: The Democratic Workers Party was founded in 1979 and is a left wing party, today part of the opposition. It carries the legacy of former President Getulio Vargas. Its legendary representative is Leonel Brizola, who was the former Governor of Rio Grande de Sul, the son in law to President João Goulart (last president before the military regime) and the Governor of Rio de Janeiro. More recently, the party has been mostly represented by Ciro Gomes, who ran for President in 2018.

DEM: DEM stands for Democratas and is the former PFL. The origins of the party are in the ARENA, which was the party that supported the military rule in Brazil. Today, the party is of right of the center ideology. The party, in theory, stands for lower taxes and economic liberalism. The DEM lost a lot of support after the name change of 2007 and the creation of the PSD party, which took many of the DEM representatives to form its base. Importantly, the current President of the Lower House, Rodrigo Maia, is from the DEM. The party houses also Salvador mayor ACM Neto, the grandson of the anthropological Antonio Carlos Magalhães (ACM), and Goiás Governor Ronaldo Caiado. The DEM holds three spots in the Cabinet of President Bolsonaro: Chief of Staff, Agriculture and Health.

SOLIDARIEDADE: Founded in 2013, it is a center left party whose main representative is the union leader Paulo Pereira da Silva, a.k.a. Paulinho da Força. It supported Geraldo Alckmin during the 2018 elections.

PTB: The Brazilian Workers Party was founded by former President Getulio Vargas in 1945, and has its historical base on the unions. Still, in recent decades, it has usually been a part of the governing coalition, whoever is in power. Roberto Jefferson, one of the protagonists of the *mensalão* scandal was the party President at the time (2005). After serving his sentence, he is back as the President of the party. In the Lower House, the PTB forms a voting block with the MDB and the PP.

Podemos: Formerly known as Partido Trabalhista Nacional, it changed to Podemos in 2016. It is the party of Senator Alvaro Dias, who ran for President in the 2018 elections. It considers itself a centrist party and it favors direct representation (referendum, plebiscites, etc). The President of the party is Renata Abreu, who is also from the family that created it.

PSOL: The Socialism and Freedom Party was created in 2003 as a dissidence of the PT, when its representatives decided to vote in favor of the social security reform

being proposed by President Lula. Today it is to the left of the PT and one of the most left wing parties in Brazil. Since its creation, it had presidential candidates: in 2018, it was Guilherme Boulos.

PROS: Founded in 2013, it is a center left party, who supported Fernando Haddad in the 2018 elections. It has 10 representatives in Congress.

PSC: The Social Christian party was founded in 1990 and while it oscillated in the ideological spectrum, it is today a party from the right that supports President Bolsonaro. Its big feat in the 2018 race was the election of newcomer Wilson Witzel for Governor of Rio de Janeiro.

Cidadania: Formerly known as PPS, which, in its turn was originated from the Communist Party (PCB). Today, it is a party much more identified with the center/ center-left of the political spectrum. The President of the Party is Roberto Freire. This party is being considered as an option to house a possible presidential candidacy of TV presenter Luciano Huck.

PCdoB: The Communist Party of Brazil is a left Marxist party that has been traditionally a close ally of the PT. In the 2018 elections, it nominated Manuela D'Ávila as the vice presidential running mate of PT candidate Fernando Haddad. One of its main representatives is Aldo Rabelo.

NOVO: The Novo party was registered in 2015. It has a clear ideological stream which is to defend democracy, liberalism, a small state, and entrepreneurship. The party doesn't use any of the public funding received by political parties in Brazil. In its first general election, it elected 8 Lower House representatives and its presidential candidate, Joao Amoedo got 3% of the vote, ahead of Marina Silva and Henrique Meirelles. Novo also elected Romeu Zema as Governor of Minas Gerais in the 2018 elections.

AVANTE: Formerly known as PTdoB. It is a small center left party.

PATRIOTA: Formerly known as PEN, it is a right wing party and was going to be the one that housed the candidacy of Bolsonaro in the 2018 election. The party chief is a former state representative from São Paulo called Adilson Barroso. Its presidential candidate in the 2018 elections was Cabo Daciolo.

PV: Brazil's Green Party has little national representation these days. It gained national notoriety

when Senator Marina Silva ran for President under the party in 2010, getting over 19% of the votes. In the 2018 elections, the party endorsed Silva.

REDE: Rede Sustentabilidade was created by former Senator Marina Silva and registered in 2015. According to its founded, the party doesn't have a right or left ideology, but it supports the parties and coalition that are in line with its party programatic views.

Structural Reforms

The need for structural reform has been perpetual for the past few decades. However, it has been twenty years since Brazilians saw an ambitious reform agenda in Congress, with the possibility of getting things done, even if in a diluted matter. The approval of a robust social security reform with vast Congressional support in 2019 was a landmark event. While the current agenda is more diffuse and, for that, more difficult to follow, it is also important to foster fiscal sustainability and provide the basis for higher long term growth.

The year of 2020 is likely to be a relatively short one in terms of voting in Congress due to the mayoral elections, which compromise the agenda in 2H. Still, some of the most important bills in Congress are likely to be: The sanitation bill, the tax reform, the administrative reform, the independence of the central bank, and the three constitutional amendments that tighten fiscal rules, known as Plano mais Brasil.

- Constitutional amendments need a 3/5 majority in both houses of Congress to get approved
- Law projects, presidential vetos and the elimination the mandate of a congressman need 50% +1 majority, with a 50% minimum quorum voting (257 in the Lower House, 41 in the Senate).
- Provisional measures, ordinary law projects, and legislative decrees need simple 50% + 1 majority

On the next page are a list of the main reforms that are currently in Congress. Beyond those, the government is expected to send three more bills:

- **Tax Reform:** While there are a couple of proposals in Congress, the government also wants to give its version so that it can be incorporated in the final proposal that is to be discussed by a commission. For details on the tax reform, see tax
- **Administrative reform:** The bill seeks to reformulate public jobs by introducing new wage

brackets, make promotions more difficult and meritocratic, elimination of job stability.

- **Fast track for privatizations:** Make the process less bureaucratic.

Table 79: Main Measures Approved in 2019

Bill	Comments
Social Security PEC 6/2019	Adopts a minimum age of retirement, transition period, increases the time of contribution and equals the system for public and private sector workers. The impact should be R\$1 trillion in 10 years, according to the gov't.
Transfer of rights PL 5478/19	The law established the division of resources from the transfer of rights auction among different entities.
Positive Credit Bureau	Positive Credit Bureau: Makes it mandatory for all Brazilians to be part of the positive credit bureau
Cabinet Reform	Administrative Reform: Allows the gov't. to cut the number of Ministries from 29 to 22, among other things
Social security fraud	Combats social security fraud (expected savings: R\$10 billion/year)
Foreign capital on airlines	Removes limits on the participation of foreign capital on airlines
Extraordinary credit for the Union/ Golden Rule	Authorizes the government to issue an additional R\$250 billion in debt to finance current spending, thus remaining compliant with the "Golden Rule".
Regulatory Agencies	Gives autonomy to regulatory agencies, gives more transparency on their activities, and establishes measures to avoid the interference of the private sector.
Economic Freedom	Looses regulations for small businesses to open business, frees up some labor legislations and allows for less rigid control and monitoring of these businesses.
Social security rules for the military PL 1645/2019	Establishes new social security rules for members of the military and restructures military careers, with a possible net impact of R\$11 billion for the next 10 years.
Telecom Law	Changes from concession to authorization the telecom licenses of operation. In practical terms, this reduces the investment companies need to do on fixed line voice, increasing it in broadband. Financial impact to be determined. Oi is the company that benefits the most, Vivo is the second
Tech Industry Law (Law 13.696)	A law that concedes tax breaks for companies that produce notebooks, tablets, mobile phones and other tech items. Still, aiming to avoid commercial retaliation, the congress approved the substitution of tax benefit indexed to IPI (tax over industrialized products) for a new regime, which uses tax credit that takes into consideration all the steps of the production.

Source: J.P. Morgan, Arko Advice, Camara, Senado

Figure 207: Pending Measures in Congress – Reform Agenda

Measures in congress	What it does	Status
National Program Green-Yellow Job MP 905/19	New labor laws with reduced taxes for low-income workers between 18 and 29 years. The plan intends to generate 1.8 million new jobs and the fiscal cost will be compensated by a 7.5% tax on unemployment insurance. The provisional measure for these new labor laws also include the possibility of the National Monetary Council to create incentives to increase the amount of funds destined to micro-credit.	At the Lower House Committee Level. Still needs approval at Lower House and Senate floor. Deadline is April 20. Simple majority.
Sanitation Law PL 4162/19	Allows for private investment on water and sewage companies, perhaps paving the way for privatizations in the sector	Approved in the Lower House, where a regimental procedure made it as if the legislation originated in that chamber. Now needs to be approved in the Senate and, if changes, back to the House. Simple majority vote.
Central Bank PLP 19/2019 and others	Gives autonomy to the central bank and establishes fixed mandates for its board. Four year mandate with possibility of another consecutive four year terms are not coincident with the presidential term.	The text was approved at the Commission of Economic Affairs, pending the issue of the final report from the rapporteur. The proposal goes to the Congress Floor.
Foreign Exchange Market PL 5387/19	Implements a new, more concise and legally safer framework for the foreign exchange and foreign capital markets in Brazil. Among other things, it will allow Brazilians to hold USD bank accounts and paves the way for the full convertibility of the currency.	Has not started. Needs to undergo a special commission, plus simple majority vote in Lower House and Senate.
Tax Reform PEC 45 and others.	Envisages the merger of 5 taxes into a VAT which will ultimately be charged where the good is consumed. A decade long transition period is expected. Expected to be revenue neutral but simplify the system. A similar bill is in the Senate, aiming to consolidate 9 taxes into a VAT. The government is still to send its own version of the reform, but appears inclined to support a	Pending final statement of the rapporteur at the Special Committee.
Eletrobras PL 5877/19	The government plans to get rid of its stake in the company by selling its shares to the market, in a process known as capitalization. Still, the government intends to maintain a stake between 30% and 40% in the company. It also states a limit of 10% stake for each private stockholder. The Federal government will not participate in the auction.	Pending the Lower House final dispatch.
Concession and Public-Private Partnerships PL 7063/17	Redefines and consolidates the legislation for partnerships between the public and private sectors.	Approved by the Special Commission in the Lower House. The main text moves to the Lower House floor and then the Senate. Simple majority.
New Gas Market PL 6407/2013	Opens up the gas market for more competition	Approved by the Mining & Energy Commission at the House. Pending final statement by the rapporteur at the Commission of Economic Development, Industry, Trade and Services (CDEICS).
Social Security Reform - The Parallel bill PEC 133/2019	The bill allows States, Federal District and Municipalities to adopt in their own pension regime the federal social security reform terms.	Approved in the Senate. The bill moves to the Lower House, where it will be analyzed by the Constitution and Justice Committee (CCJ), then by a Special Commission and finally voted in the Lower House floor. Two thirds majority needed
Public Funds PEC 187/2019	Free resources from 281 public funds to pay interest on debt. According to the Finance Ministry, the impact should be around BRL200bn freed up from funds.	The voting process will begin at the Senate. Pending approval by the Senate's Constitution and Justice Special Committee (CCJ)
Emergency Measure PEC 186/2019	The emergency measures aim at fiscal adjustment with the creation of permanent and temporary rules to reduce expenditure, such as reducing worked hours and wages of civil servants, freeze promotions, block the creation of new mandatory expenditure, reevaluate benefits, and define sustainable levels of debt.	The voting process will begin at the Senate. Pending approval by the Senate's Constitution and Justice Special Committee (CCJ) and then a special commission. It then needs to go to the Lower House. 3/5 majority needed.
Federative Pact PEC 188/2019	The federative pact brings medium and longer term measures to redistribute resources to regional governments and increase fiscal responsibility at all government levels, including measures to reduce budget rigidity, distribute royalty from oil exploration among regional governments, and create new rules for fiscal management, also valid for regional	The voting process will begin at the Senate. Pending approval by the Senate's Constitution and Justice Special Committee (CCJ)
ISS effective collection PL 461/17	Modification on the collection of the tax over services (ISS), the project transfers the taxation of the service to the destiny where its provided, currently it is taxed on the origin. The law sees a window of three years for the transition to take place (starts counting on 2020).	Approved at the Lower House, however there are 11 specific issues to be voted. After the approval it goes to the Senate to be analyzed.
Land policy PL 2963/19	Regulates the acquisition, possession and registration of rural property.	The bill is at the Senate's Constitution and Justice Special Committee and pending the rapporteur final statement.

Source: J.P. Morgan, Arko Advice.

Brazil's Presidents

Since the advent of the republic (1889), Brazil has had 38 presidents, including Jair Bolsonaro. The Brazilian republic history is very troubled, and only a few presidents can be considered fully elected by a democratic vote. Below we describe briefly what many view to be the most famous, popular and polarizing presidents in Brazil's history.

Getúlio Vargas: One of the most popular political figures in Brazil's history, Mr. Vargas was the country's president twice, from 1930 to 1945 and from 1951 until his suicide in 1954. He held the post of president longer than anyone else – 18 years in all. Vargas assumed the post initially as a provisional president after the 1930 Revolution against the oligarchic and decentralized confederation of the Old Republic. In 1937 he utilized fears of Communism to justify a dictatorial regime. Under the "New State," Mr. Vargas abolished political parties, imposed censorship and stimulated nationalism. In 1945 he was deposed by the military. In his second government, when he was finally elected by free and secret vote, Vargas pursued a nationalistic policy, turning to the country's natural resources and away from foreign dependency. Petrobras was created in this context. Pressured by political adversaries and the military, who wished his resignation, Vargas shot himself in August 1954. He is famous as the "the father of the poor," mainly because of the improvements he made in the labor laws.

Juscelino Kubitschek (JK): JK played a key role in Brazil's industrialization, and his presidency was marked by political optimism. During his government (1956-1961), the country went through a period of relative economic prosperity and political stability. He launched the famous "Plano de Metas" (Goal Plan) in order to stimulate the diversification and expansion of the Brazilian economy. The plan was based on industrial expansion and integration of the national territory. His main motto was "fifty years of progress in five," and the time of his government is known as "the Golden Age." Mr. Kubitschek's special achievement was the construction of a new capital for Brazil away from the coast, Brasília. (The plan to move the capital was 100 years old.) But JK was not free from controversies; his government was also marked by accusations of corruption, mainly involving the construction of Brasília.

Fernando Collor de Mello: Collor was Brazil's president from 1990 to 1992 and the first president elected by popular vote after the end of the Brazilian military regime. His government was marked by the

freezing of the population's banking assets and corruption accusations that shortened his term. Still, Collor was responsible for trade liberalization and the start of privatization. Despite that, he was unable to curb inflation. During his government, more than 920,000 jobs were lost and annual inflation climbed to more than 1,200%. In October 1992 he resigned under accusations of corruption and influence peddling. After his resignation, the impeachment trial continued, and Mr. Collor was found guilty and disqualified from holding elective office for eight years (1992-2002). He was elected senator in the 2006 elections.

Fernando Henrique Cardoso (FHC): An accomplished sociologist, professor and politician, Mr. Cardoso took command of the country in a difficult period, from 1995 to 2002. He was propelled to the presidential seat mostly due to the successful implementation of the Real Plan, which took place under his watch as Finance Minister. His election was a vote of confidence on the stability of the Brazilian economy and, especially, on the end of inflation. He was the first president since Vargas to be re-elected (he approved the constitutional amendment allowing re-election). On the economic front, he deepened the privatization process and led Brazil through major crises, including Asia, Russia, the BRL devaluation, the energy rationing (2001) and the Lula election crisis (2002). During his government important policies were put in place such as the inflation-targeting system and the fiscal responsibility law.

Luis Inácio Lula da Silva: Arguably, the most popular president in Brazil's history, Mr. Lula ran for the post three times unsuccessfully before becoming the country's president for eight years (2003-2010). He is a founding member of the Worker's Party and currently its most important member. Upon his election, President Lula stuck to the economic pillars of the previous administration, fostering market confidence and popular support. The emphasis of his administration was on social programs, such as "Bolsa Família" and "Minha Casa, Minha Vida," which brought him a lot of popularity. On the international relations front, his government was marked by polemical but prominent participation, including controversial statements on Iran's nuclear program. Under his government, the Brazilian economy performed well and recovered quickly from the 2008/2009 financial crisis. Social indicators also presented significant improvements: income inequality decreased, and more than 30 million Brazilians migrated to middle-income segments. After eight years of government and 85% popularity, he was a key figure in helping to elect his successor, Dilma Rousseff. Despite his popular acclaim, there was little progress in terms of

structural reforms. In 2018, as a consequence of the Car Wash probe, Lula was put in jail for 580 days. According to current law, he cannot run for elected office as the appeal against his sentence has been rejected. Trials on different matters are pending.

Table 80: Brazilian Presidents

	President	Period
1	Deodoro da Fonseca	Nov 1889 - Nov 1891
2	Floriano Peixoto	Nov 1891 - Nov 1894
3	Prudente de Morais	Nov 1894 - Nov 1898
4	Campos Sales	Nov 1898 - Nov 1902
5	Rodrigues Alves	Nov 1902 - Nov 1906
6	Afonso Pena	Nov 1906 - Jun 1909
7	Nilo Peçanha	Jun 1909 - Nov 1910
8	Hermes da Fonseca	Nov 1910 - Nov 1914
9	Venceslau Brás	Nov 1914 - Nov 1918
10	Delfim Moreira	Nov 1918 - Jul 1919
11	Epitácio Pessoa	Jul - 1919 - Nov 1922
12	Artur Bernardes	Nov 1922 - Nov 1926
13	Washington Luis	Nov 1926 - Oct 1930
14	Getúlio Vargas	Nov 1930 - Oct 1945
15	José Linhares	Oct 1945 - Jan 1946
16	Eurico Gaspar Dutra	Jan 1946 - Jan 1951
17	Getúlio Vargas	Jan 1951 - Aug 1954
18	Café Filho	Aug 1954 - Nov 1955
19	Carlos Luz	Nov 1955 - Nov 1955
20	Nereu Ramos	Nov 1955 - Jan 1956
21	Juscelino Kubitschek	Jan 1956 - Jan 1961
22	Jânio Quadros	Jan 1961 - Aug 1961
23	Ranieri Mazzilli	Aug 1961 - Sep 1961
24	João Goulart	Sep 1961 - Apr 1964
25	Ranieri Mazzilli	Apr 1964 - Apr 1964
26	Castelo Branco	Apr 1964 - Mar 1967
27	Costa e Silva	Mar 1967 - Aug 1969
28	Emílio Médici	Oct 1969 - Mar 1974
29	Ernesto Geisel	Mar 1974 - Mar 1979
30	João Figueiredo	Mar 1979 - Mar 1985
-	Tancredo Neves	-
31	José Sarney	Mar 1985 - Mar 1990
32	Fernando Collor	Mar 1990 - Dec 1992
33	Itamar Franco	Dec 1992 - Jan 1995
34	Fernando Henrique Cardoso	Jan 1995 - Jan 2003
35	Luiz Inácio Lula da Silva	Jan 2003 - Jan 2011
36	Dilma Rousseff	Jan 2011 - Aug 2016
37	Michel Temer	Aug 2016 - Dec 2018
38	Jair Messias Bolsonaro	Jan 2019 -

Source: J.P. Morgan.

Dilma Vana Rousseff was first elected in 2010, continuing the PT's administration after Lula, then in 2014 she was reelected by a tight margin (3%) against Aécio Neves (PSDB). Before becoming President, Ms. Rousseff was part of President Lula's Cabinet, first as Minister of Mines and Energy and later as Chief of Staff. She was born in Minas Gerais in 1947 and in the mid-1960s joined the armed resistance against the military regime. President Dilma was a member of far-left guerrilla movements until she was caught and imprisoned. She stayed in jail for three years (1970-1973). Sometime after her release, she earned a degree in economics. In the 1980s she was part of the group that revived the PDT (Democratic Worker's Party), the party of political icons such as former President João Goulart and Leonel Brizola. In the early 1990s she was the Secretary of Energy of the state of Rio Grande do Sul, and in 1998 she joined the PT (Worker's Party). Since the beginning of her first term, President Dilma's presidency has been characterized by a very wide but not very faithful coalition. Measures in general have a hard time getting through congress. She was a very popular president until June 2013, when millions of people went to the streets across Brazil, initially to protest against an increase in bus tariffs. Later, this protest became a symbol of the middle class' dissatisfaction with the government for not providing good access to quality healthcare, education, transportation, and for the many corruption allegations against politicians. President Dilma's popularity recovered during the 2014 election, at the expense of lots of TV appearances and a multi-million electoral campaign.

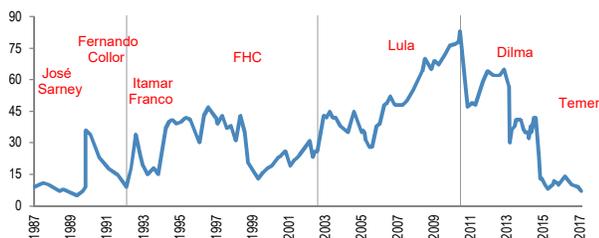
IMPEACHMENT: During 2014 the macro imbalances in the country were already evident, but the electoral process put them in the background. In 2015, however, the macro situation went from bad to worse, with growth falling and inflation rising sharply, at the same time that fiscal indicators moved sharply down. The president lacked the charisma of her predecessor and, amid the stagflation, started to lose Congressional support. Add to this critical situation the fact that the Lower House President Eduardo Cunha was a formidably strong opponent of the President. All this, combined with developments related to the Lava Jato investigation, culminated in the impeachment process against the president. First, Eduardo Cunha accepted the impeachment petition against the president in December 2015. In March 2016, after President Dilma nominated former President Lula as Chief of Staff (which would grant him the privilege to answer Lava Jato investigations only to the Supreme Court), millions of Brazilians went to the street to support her impeachment. By April, the Lower House gave 367 votes to permit

impeachment to move forward, 59 votes more than needed. Immediately after, Michel Temer, Dilma's vice president, took over as interim president until the impeachment was confirmed in the Senate in August. The PT and its allied parties denounced the impeachment as a coup.

Michel Temer: Michel Miguel Elias Temer Lulia is the first Paulista president in 110 years. He was a well-known constitutional lawyer before entering politics in 1987. He was a federal representative for six consecutive terms and twice the President of the Lower House. He was also the President of the PMDB party and Dilma Rousseff's running mate since her first election in 2010. Following the impeachment, he became the President and came to power with very low popularity but a strong weapon: 85%+ support in Congress. This was an ideal combination to pass unpopular reforms. The President surrounded himself with a top-notch economic team and by 2H16 had approved the constitutional amendment that established a spending ceiling. In 1H17 the Labor Reform was approved, and there were efforts to approve the social security reform. However, the government was weakened by corruption accusations from executives of JBS against President Temer. That event, which took place May 17, brought the government into chaos, and there was speculation about the president's resignation. That didn't happen, and the president ended up surviving two votes against him in the Congress that, if approved, would have led to his substitution, first temporarily and then eventually permanently. However, in retrospect, the president's survival can be attributed to a lack of viable substitutes, the trauma of two presidential replacements in a short period of time, a very strong economic team with a pro-market agenda, and significant political maneuvering to get support for the President in Congress.

Bolsonaro organized a huge following on social media, becoming known by 70% of the population and maintaining a mid-teen voter preference a year before the race. Bolsonaro's attractiveness is that he appealed to the discontent of the population, who was fed up with corruption. He also talked a lot about a values agenda. For example, he is against same sex marriage, against university quotas, favors the death penalty, among others. About a year before the race, Bolsonaro recruited Paulo Guedes, a liberal macro economist from the Chicago school, to become his Finance Minister and have complete dominance over the macro framework. Bolsonaro was elected with 55.1% of the valid votes, or 57.8 million votes, beating Fernando Haddad from the PT in a second round election. Bolsonaro's base of support is diffuse, relying on the military (with some members being part of the Cabinet), his family (he has three sons in politics: Flavio in the Senate, Eduardo in the Lower House, and Carlos as Rio's city representative), and some important sectors of the civil society such as the evangelic (who make up about 30% of the population), the market liberals (who have embraced Paulo Guedes agenda), among others. Bolsonaro's cabinet was not made of political appointees and he doesn't have a steady coalition in Congress. Beyond the macro liberalism, the administration has embraced a close alignment with the United States in foreign relations.

Figure 208: Popularity of Brazilian Presidents
%, 1989-current



Source: Datafolha.

Jair Messias Bolsonaro: The election on Jair Messias Bolsonaro is one that is going to enter history book because it was the first time that digital means of communication were more important than television. Since even before the electoral campaign started,

Sectors

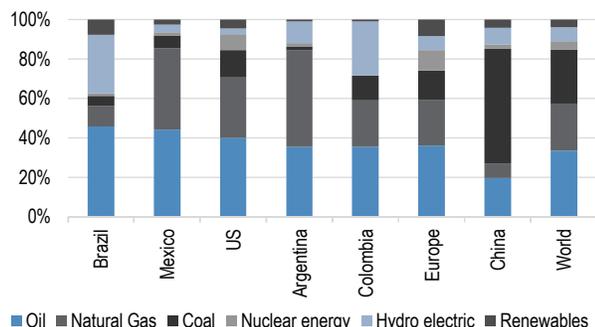
Oil, Gas & Petrochemicals

Rodolfo Angele ^{AC} and team
 (55-11) 4950-3888
 Rodolfo.r.angele@jpmorgan.com
 Banco J.P. Morgan S.A.

The Brazilian O&G segment is complex and comprises several companies divided into different segments: upstream, midstream, downstream, petrochemicals and fuel distributors, which, at the end, supply the country's energy needs. The Oil & Gas sector contributes approximately to ~11.3% of Brazilian GDP, and the sector has a weight of ~13.7% in Ibovespa.

The Brazilian energy matrix is centered on hydropower generation and oil consumption. Oil represents 46% of Brazil's energy matrix, followed by hydropower generation with 29%. Compared to other countries, Brazilian natural gas and coal consumption are among the lowest in the world. Natural gas represents only 10% of the total energy matrix compared to other countries at 24%. Coal represents 5% vs 27% compared to the world's average. We expect this matrix to change in the coming years as gas consumption is likely to increase with higher gas production from the pre-salt area, whereas oil should continue to lead this list. Our view is corroborated by the government's plan to foster the utilization and competitiveness of the natural gas market in the country.

Figure 209: Brazil's Energy Matrix, 2018



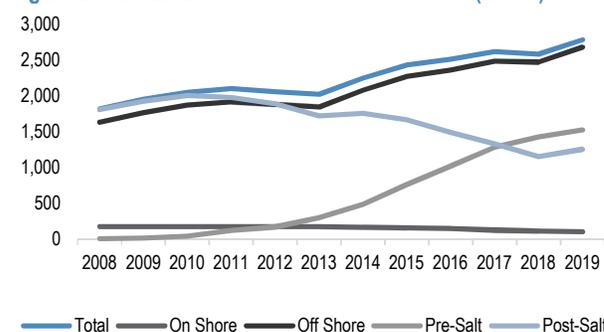
Source: BP Statistical Review of World Energy 2018.

Brazil oil and gas reserves reached 13.23bn boe as of YE18. Of this total, Petrobras has 76% of Brazil's total O&G reserves (10.03 bn boe). Industry expectations are that reserves are likely to increase at least ~10bn barrels over the next several years with the development of pre-salt reservoirs. This reserve boost would be led by PBR,

which is likely to book more than 6.0bn boe in proven reserves

Prolific oil basins are concentrated in the Southwest of Brazil. The biggest oil and gas accumulations found in the country are concentrated in the Brazilian Continental Platforms of Santos and Campos Basins, respectively. The Santos Basin, which contains the most recent giant discoveries in pre-salt, accounts for 57% of the reserves, while Campos Basin, which contains both pre- and post-salt assets, represents ~37% of the reserves. As of 2019, Petrobras' pre-salt production represented 50% of the company's total volume.

Figure 210: Brazil E&P Overview – Oil Production (kboed)



Source: ANP.

Figure 211: Simplified Map of Brazilian Basins



Source: Energy Ministry, J.P. Morgan.

Brazil O&G production increased at a CAGR of 4.0% between 2015 and 2019. This increase reflects (i) declining ratios in already mature fields such as Campos Basin and (ii) increased pre-salt production and the additional oil output from post-salt fields throughout the country.

Figure 212: Brazilian Production Profile (kbd)

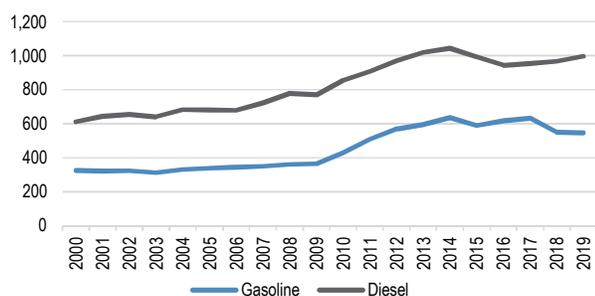
Brazil	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Oil	1,277	1,334	1,503	1,540	1,534	1,691	1,783	1,809	1,881	2,019	2,127	2,179	2,140	2,095	2,334	2,523	2,606	2,714	2,678	2,886
Natural Gas	231	243	269	274	295	307	307	315	375	367	398	418	448	489	554	610	658	696	709	776
Total	1,507	1,577	1,773	1,823	1,828	1,998	2,091	2,125	2,256	2,386	2,525	2,597	2,588	2,584	2,887	3,133	3,263	3,410	3,387	3,662

Source: ANP; J.P. Morgan

Brazil's refining capacity reaches ~2.3mbpd. As of 2019, the production of oil derivatives reached 1.8mbpd, which implies a utilization rate of 78%. Current sales of refined products of 2.0mbpd are almost balanced with the refining capacity, with diesel representing 47% and gasoline 27%. Demand for refined products floats according to GDP expansion/ retraction. Diesel fuel leads the consumption of oil derivatives in Brazil, reaching ~966kboepd, followed by gasoline, with demand of ~549kboepd. PBR owns virtually nearly all of the refining capacity in Brazil, with a stake of 95%. As part of its divestment program, and also due to an agreement with the anti-trust regulator to foster competition in the sector, Petrobras has put 8 of its refineries for sale ([Brazil Refining 101](#)).

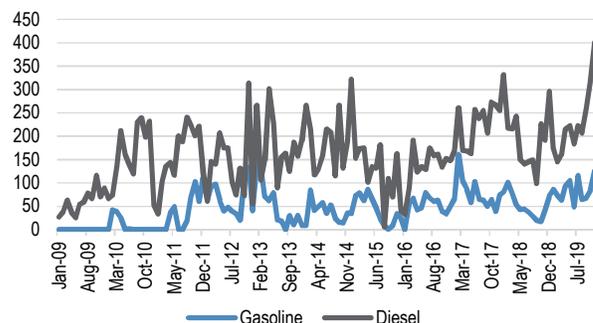
Brazil imports diesel and gasoline. Over the last years, fuel consumption has continued to increase (CAGR of 1.2% and 1.0% for gasoline and diesel, respectively, from 2011-2019), leading PBR and trading companies to import fuels. Brazil imported 83kboed of gasoline (+62%/y) and 224kboed of diesel in 2019. Ethanol still represents a fast-growing market on the back of consumer preference for flex-fuel cars, which can run on 100% ethanol, boosted by record highs agribusiness crop in 2019.

Figure 213: Brazil Gasoline and Diesel Sales (kboed)



Source: ANP.

Figure 214: Brazil Gasoline and Diesel Imports (kboed)



Source: ANP.

Fuel prices readjustments in Brazil now have a flexible schedule and import parity rules. Petrobras introduced a flexible readjustment schedule for diesel prices on its refineries. Until June 2019, prices were readjusted every two weeks. The new schedule may provide the company with more operating room to adjust prices, especially on environments where prices might be more volatile. The pricing mechanism has not changed: still has international prices as a benchmark, with Gulf Coast and Rotterdam dictating the prices for diesel and gasoline, respectively.

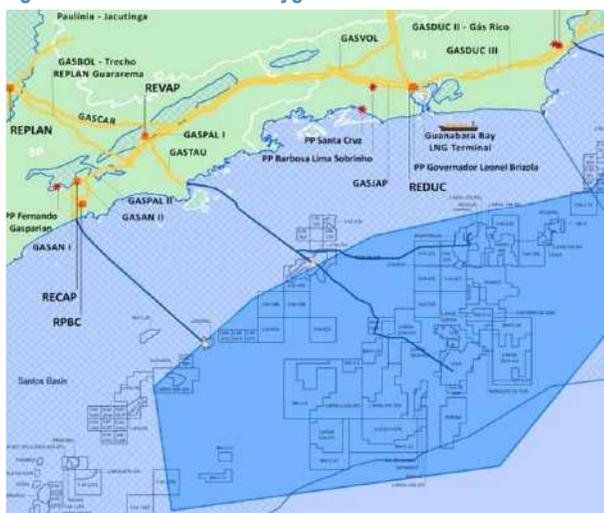
Brazil Oil & Gas Regulators snapshot. The sector's main policymakers are the National Petroleum Agency (ANP), the National Council for Energy Policy (CNPE), and the Ministry of Mines and Energy (MME). ANP is an autonomous federal entity responsible for regulating the segment. CNPE, which is presided over by the Ministry of Mines and Energy, is tasked with proposing national energy policies to the President of the Republic. MME, in its turn, is an administrative body that represents the federal government in the formulation, supervision, and implementation of public energy and mines policies

Brazil has three regulatory frameworks for oil and gas exploration and production. The Brazilian federal government regulates the oil and gas sector and is the owner of all crude oil and natural gas reserves in Brazil. Currently, Brazil has three regulatory frameworks:

- *Concession model:* Oil and gas companies have the right to explore and produce hydrocarbons through contracts granted during licensing rounds. The concession model is valid for onshore acreage and other non-strategic offshore areas outside the "Pre-Salt Polygon." By current regulation, ANP is allowed to conduct new rounds of bidding under a concession model, observing the rule that acreage

cannot be part of the pre-salt polygon nor considered strategic by the federal government. Under the concession regime, O&G companies pay royalties that vary from 0-10% as well as special participation taxes (SPT), which are charged on current production and vary from 0-40%.

Figure 215: Brazil Pre-Salt Polygon: Santos Basin



Source: Petrobras.

- Production-Sharing Agreement (PSA):** Introduced in 2010, the PSA regime became valid for licensing pre-salt assets inside the pre-salt polygon. The PSA regime has some specific characteristics: (i) The government receives its oil portion from production after both cost oil and oil profit are deducted; (ii) the minimum percentage of excess oil to the government moves according to a matrix that considers different oil prices and well productivity ratios; (iii) PBR has the optionality to have a minimum 30% stake in the areas; (iv) signing bonuses are established by the bidding process offer; (v) companies are exempt from paying special participation taxes (SPTs) but must pay 15% royalties to the government; (vi) the winning consortium will be the one to present the highest stake of oil profit to the government
- Transfer of Rights Model.** The transfer of rights model is applicable only to specific assets acquired directly by Petrobras from the federal government during the company's \$69.9bn capitalization process held in 2010. For the assets acquired in this process, the federal government will not charge special participation taxes (based on productivity of fields).

of 5bn barrels to Petrobras during the company's capitalization process. All barrels contained in the area belonged to the government but the rights to explore were transferred to Petrobras. As part of the agreement, Petrobras paid BRL74.8bn (equivalent to USD42.5bn at the time) for the rights to explore and produce up to 5bn barrels of oil equivalent – implying a value of USD8.51 per barrel. It was also agreed that any excess oil discovered in the area would continue to be owned by the government. The original agreement already contemplated scenarios where it could be renegotiated between the parties. Much changed since then. The Brazilian real (BRL) weakened compared to the US dollar. Oil prices have also dropped from USD79.23 (the value on which the ToR agreement is based) to ~USD60.0 per barrel. By being the sole operator of the pre-salt fields, Petrobras incurred a significant amount of CapEx that weighed on its capital position. And, as fields were explored and developed in the pre-salt area, it became evident that the area contained more than the 5bn originally related to the ToR contract, and the contract became even more valuable. **Outcome:** On April 9th, after years of negotiations, the Federal Government and Petrobras have finally settled on a value for the adjustment of the Transfer of Rights (ToR), with the company being reimbursed \$9.06bn. The Federal Government was then able to auction the blocks within the Transfer of Rights area - Atapu, Buzios, Itapu and Sepia. The auction took place on November 6th and Petrobras was the biggest winner, with a 90% stake in Búzios and 100% in Itapu. There were not any bids for the two other areas - Atapu and Sepia, with the Government likely putting those two areas for auction again in the future.

Table 81: Brazil's Major Listed Oil, Gas and Petrochemical Companies

Company	Ticker	Rating	Mkt Cap (US\$ Mn)
Petrobras	PETR4	OW	92,316
BR Distribuidora	BRDT3	OW	7,927
Braskem	BRKM5	UW	6,285
Ultrapar	UGPA3	N	6,513
Enauta	ENAT3	NC	999
Petro Rio	PRI03	NC	1,634
Unipar	UNIP3	NC	268
Elekeiroz	ELEK4	NC	131

Source: J.P. Morgan estimates and Bloomberg as of October 22, 2019.

Transfer of Rights Recap and Auction. Recap: The pre-salt had been recently discovered when in 2010 the federal government transferred the rights of exploration

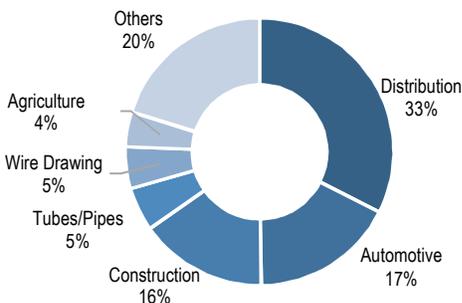
Metals & Mining

Rodolfo de Angele^{AC} and team
 (55-11) 4950-3888
 rodolfo.r.angele@jpmorgan.com
 Banco J.P. Morgan S.A.

The Brazilian Metals & Mining industry evolved during the industrial development programs (Brazil’s “economic miracle”) of Presidents Vargas and Kubitschek during the 1940s and 1950s. During the mid-20th century, strategic state steel production plants were established by the government, and steel production became synonymous with the drive toward a more autonomous development model. The sector remained predominantly state owned until the 1990s, and in the process it became highly inefficient. It was then that the federal government embarked on a privatization drive that began with a change of control first at Usiminas (1991) and later at Vale (1997). After privatization, Vale’s core focus was moved to mining activities, and it sold its holdings in the steel (Açominas, CSN, CST, and Usiminas) and pulp businesses.

As it stands now, **the steel industry in Brazil is 100% held in private hands**, and until recently it boasted some of the lowest cost production of steel in the world, which is no longer the case. Within the sub segments, compared to long steel, the flat steel category faces relatively more competition from the presence of a greater number of players and the increasing influence of imports (direct and indirect). Finished steel output was 22Mt in 2019 (59% flat steel, 47% long steel), while consumption was 20.7Mt, and the main consuming sectors include civil construction, automotive, capital goods, machines, and equipment as well as household and commercial appliances.

Figure 216: Brazil: Main Steel-Consuming Sectors, 2018



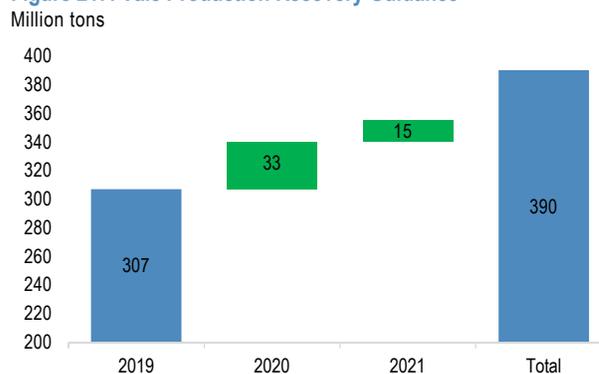
Source: IABr.

On the mining side, **Vale is the world’s largest iron ore producer and exporter, continuing to gain scale since**

privatization as it ramps up its S11D project, and it is the third largest mining company in terms of market capitalization. While it made efforts to diversify into other commodities, such as nickel and copper, it remains predominantly an iron ore producer and exporter.

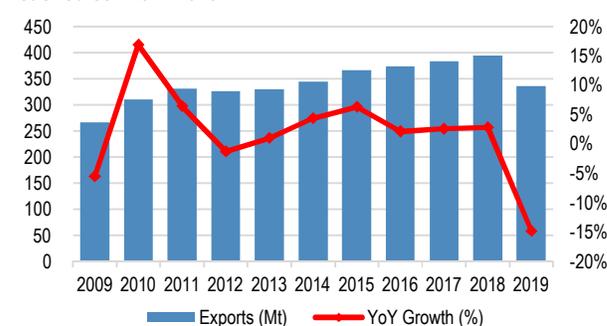
However, following the Brumadinho dam burst in January 2019, Vale lost at peak ~100Mtpa of iron ore capacity (out of 400Mtpa total) due to government shutdowns. Since then, Vale has gradually restarted halted capacity (operating at 350Mtpa in mid-2019) and the company expects to normalize production volumes by 2021E.

Figure 217: Vale Production Recovery Guidance



Source: Vale, J.P. Morgan.

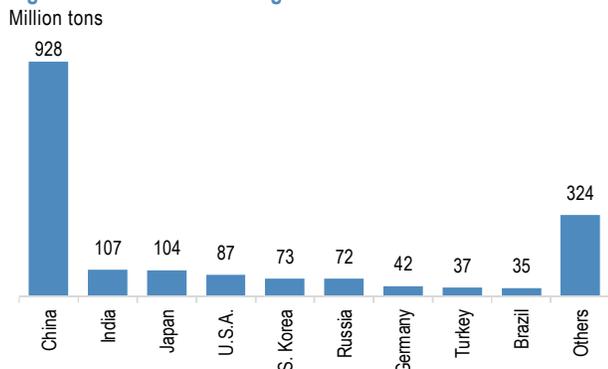
Figure 218: Brazil Iron Ore Exports decreased 15%/y/y and reached 394Mt in 2019



Source: MDIC, J.P. Morgan

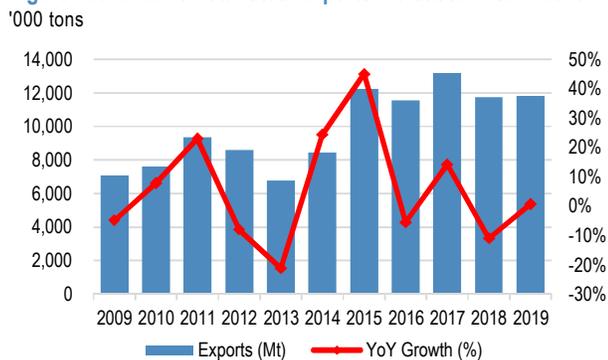
Brazilian steel consumption growth for the five-year period (2018-2014) since the credit crisis decelerated to 0.7% p.a. vs. the previous five-year period (2009-2013) average of 6.7% p.a. The industry went through one of the toughest demand phases during the recent recession. Since then, demand has shown small signs of improvement, and the worst seems to be past, but recovery is likely to be gradual and unstable.

Figure 219: Brazil: Ninth Largest Crude Steel Producer in 2018



Source: WSA (World Steel Association).

Figure 220: Brazil's Total Steel Exports Increased 11% in 2019



Source: MDIC

We have witnessed a change in the competitive landscape in the Brazilian steel industry, especially on the flat steel side. Imports already were the fourth key player in the market behind CSN, Usiminas, and ArcelorMittal. Thus, the government tried to support the steelmakers by implementing higher import tariffs on selected steel products in Oct 2012 for a year, which was a successful measure, in our view. However, with tariffs cut back to previous levels, imports have become a regular feature and domestic prices now more closely match international levels. In addition, with the entry of new players like Gerdau and potentially CSA in the finished steel market, the competition is likely to get more intense. Thus, the days of historically high domestic price premiums are unlikely to return. Finally, with continued overcapacity (78% capacity utilization in Jun 2017) in the global steel industry, Brazil is unlikely to remain alone in experiencing an impact. The domestic market is likely to remain oversupplied as competition is expected to remain intense and utilization levels should remain low.

According to the IABr (*Instituto Aço Brasil*), the loss of competitiveness of Brazilian products and excess supply of steel in the international market—which exceeded 635Mt—explain the significant drop in Brazil’s finished steel exports to 2.7Mt in 2013 from 5.4Mt in 2003. The situation has begun to change since 2014 with exports increasing to 4.5Mt in 2018 as the Brazilian steelmakers started to export more to offset the lackluster domestic market and take advantage of weaker FX, but the level remains far below historical highs. In addition, the ongoing macro instability in Argentina should further pressure direct and indirect steel exports from Brazil. Lastly, the impact of direct and indirect imports of steel to the country has led the industry to operate at ~70% capacity when, historically, average capacity utilization has been above 85%. Brazil’s 2019 steel consumption was flat y/y.

Figure 221: Brazilian Flat-Steel Imports as a % of Apparent Consumption – YTD Average Currently at 11%



Source: IABr J.P. Morgan estimates.

Table 82: Major Listed Metals and Mining Companies

Company	Ticker	Rating	Mkt Cap (US\$ Mn)
Vale	VALE	OW	66,081
Bradespar	BRAP4.	OW	3,106
Gerdau	GGBR4	OW	8,244
Metalurgica Gerdau	GOAU4	OW	3,383
Usiminas	USIM5	N	3,027
CSN	SID	N	4,305

Source: J.P. Morgan and Bloomberg as of October 16, 2019.

Pulp and Paper

Marcio Farid ^{AC} and team
 (55-11) 4950-3524
 marcio.farid@jpmorgan.com
 Banco J.P. Morgan S.A.

Brazil is a unique place for pulp production owing to the combination of favorable climate, land, and water. As a result, Brazil has become a major player in the global pulp market and is now the second biggest pulp producer in the world.

A handful of family-run companies have dominated the sector in Brazil since the turn of the last century. Brazil's advantageous climate allowed for rapid tree growth, with eucalyptus plantations reaching maturity in just seven years compared to 20-30+ years in traditional pulp markets (N. America, Europe, etc.). Advances in forestry yields in the 1970s further improved Brazil's cost competitiveness in pulp production, making it one of the lowest-price producers globally and leading to Brazil becoming a significant exporter of eucalyptus pulp. Meanwhile, advances in paper production technology have allowed for broader use of eucalyptus grade pulp, which began to replace the traditional softwood-type pulp in tissue, printing and writing, and even boxboard paper manufacturing.

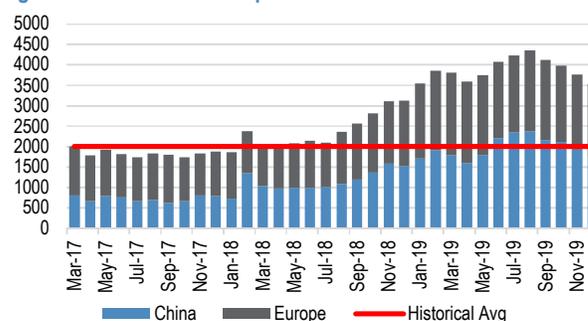
The growth in the domestic paper market has not been steady and has resulted in oversupply. More recently, Brazil's recession led paper consumption to drop, accelerating the replacement for digital media.

The past two decades saw significant consolidation in the sector, in both the pulp and printing and writing paper segments (the corrugated packaging segment remains quite fragmented). Suzano and Bahia Sul merged. Ripasa was bought out by Suzano and VCP. Fibria, the then world's largest pulp producer, was created through the merger of Aracruz and VCP. Over time, Suzano and International Paper emerged as the key domestic players in P&W paper grades, while Klabin and Suzano emerged as the leaders of the domestic boxboard segment. American players Meadwestvaco (today WestRock) and IP also entered the containerboard market through acquisitions of Rigesa and Orsa. More recently, Fibria was acquired by Suzano, resulting in the world's largest pulp producer. Strong position on the cash cost curve in Brazil have attracted international players, with Asian RGE Group acquiring Lwarcel (a small mill with plans to expand capacity) and Paper Excellence acquiring 49% stake in Eldorado.

The main drivers in the sector recently have been the emergence of Chinese domestic consumption and the onset of structural decline in demand in the developed world.

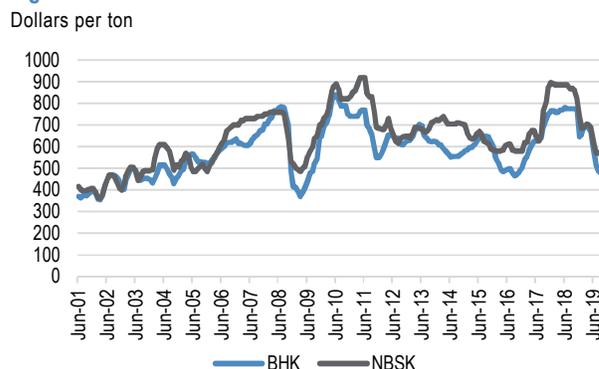
In 2018-1H19, a combination of elevated pulp and paper inventories at the buyers in China and negative macro sentiment (trade war) have resulted in weakening buying appetite from the Chinese and, as a consequence, strong pulp price drop. Weaker than expected demand in Europe (economic slowdown, higher competition on the export market) also weighed on overall pulp demand. Looking forward, China demand is now normalized, but sellers' inventories is still a major overhang risk and demand in Europe is still weak. JPM base case is for pulp prices to remain at current low levels in 1H20, and a more relevant recovery to materialize in 2H20. However, the market is already pricing in a more significant pulp price increase, which we think is unlikely to materialize. In the longer term, pulp supply growth should be limited by wood availability, while demand should continue to grow (led by China tissue consumption growth). So we expect Brazilian producers to be well positioned to deliver healthy profitability.

Figure 222: China and Europe Port Inventories



Source: EuroPulp and J.P. Morgan

Figure 223: China Hardwood and Softwood Prices



Source: RISI and J.P. Morgan estimates.

Going forward, we expect Brazil to increasingly focus on pulp production, which takes advantage of favorable access to raw materials. However, we believe paper production will increasingly be based in China, where access to raw materials is limited but access to capital is more readily available. China may continue to depend on virgin fiber imports due to its limited availability to increase production. Also, China has been replacing non-wood fibers such as wheat and bamboo straw, opening room for market-share gains for Brazilian fiber.

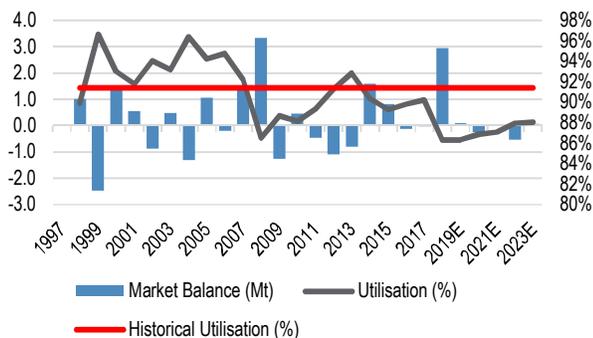
In order to secure long-term supply of fiber, Asian paper companies have been interested in Brazilian assets. In 2017, the private producer Eldorado was sold at a 40-70% valuation premium to Paper Excellence, a company controlled by an Asian producer.

For many years, Brazil and South America were, without a doubt, considered among the places providing the best returns for greenfield projects. As mentioned previously, the region contains most of the resources needed for pulp production. However, the increasing prices of land, labor, and energy have made Brazil less competitive

The growth of Brazilian pulp production had been heavily supported by the National Development Bank (BNDES), which has a mandate to support sectors in which Brazil has competitive advantages. Through both debt and equity, the bank has over R\$6.5bn employed in almost all the important pulp and paper producers. As Brazil’s fiscal situation deteriorated, BNDES announced it won’t finance more than 35% of a new pulp project versus 70% previously. The lower availability of subsidized rates for these projects may help to raise barriers for newcomers.

As Brazil’s fiscal situation deteriorated, the BNDES has raised the bar for new loans to the sector, and we believe it should divest its equity positions in the mid-term, potentially being one of the catalysts for future sector M&A

Figure 224: Pulp Market Balance



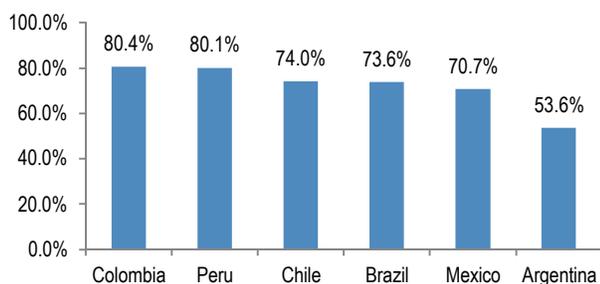
Source: RISI and J.P. Morgan estimates

Banks

Domingos Falavina^{AC} and team
 (1-212) 622-3602
 domingos.falavina@jpmorgan.com
 J.P. Morgan Securities LLC

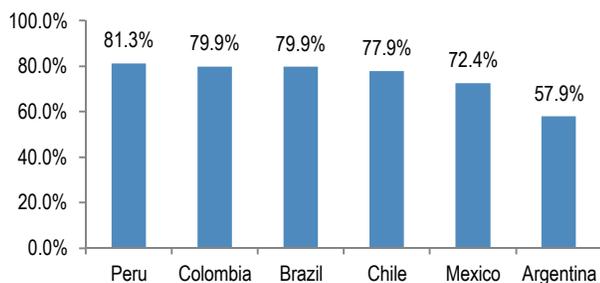
A highly concentrated industry. As of 2018, the five largest banks controlled ~74% of loans and ~80% of deposits. While Brazil is not the most concentrated industry in the region, it certainly is a highly concentrated one.

Figure 225: Top Five Loan Concentration (2018)



Source: J.P. Morgan and Central Bank as of December 2018. Note: For Colombia, Grupo Aval banks are considered as one institution for the purposes of our top five calculations. Chile does not include Corpbanca Colombian operations and BCI's US operations.

Figure 226: Top Five Deposit Concentration (2018)



Source: J.P. Morgan and Central Bank as of December 2018. Note: For Colombia, Grupo Aval banks are considered as one institution for the purposes of our top five calculations. Chile does not include Corpbanca Colombian operations and BCI's US operations.

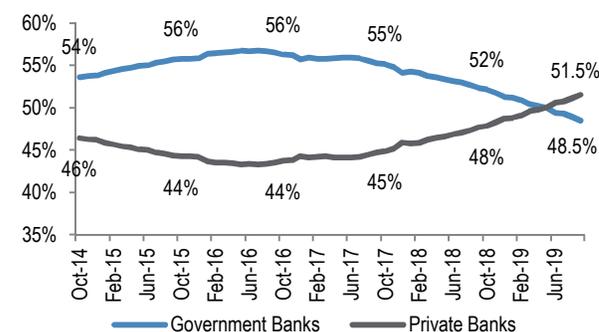
Privately owned banks gaining back share from public banks. One of the primary structural changes in the Brazilian banking system from 2007 to 2016 was the rapid growth of government controlled banks at the expense of private banks. In particular, government controlled banks increased their collective market share to a peak of ~56% in 2015-16 from just ~34% in 2007. Throughout the past two years, however, public banks' share reduced 460bps to 51% in 2018 (down 300bps in 2018 only). Moreover, going into 2019 private banks kept growing faster and as of August 2019 reached 51% market share.

Table 83: Market Share: Government, Private Domestic and Foreign Banks

	Gov.	Private Domestic	Private Foreign
2008	36.1%	43.1%	20.9%
2009	41.4%	40.3%	18.3%
2010	41.7%	41.0%	17.3%
2011	43.6%	39.0%	17.4%
2012	47.9%	35.8%	16.3%
2013	51.3%	33.1%	15.6%
2014	53.8%	31.6%	14.6%
2015	55.8%	29.4%	14.7%
2016	55.7%	31.5%	12.8%
2017	54.1%	32.2%	13.7%
2018	51.1%	34.1%	14.9%
CAGR 08-18	14.1%	7.7%	6.5%

Source: Central Bank of Brazil

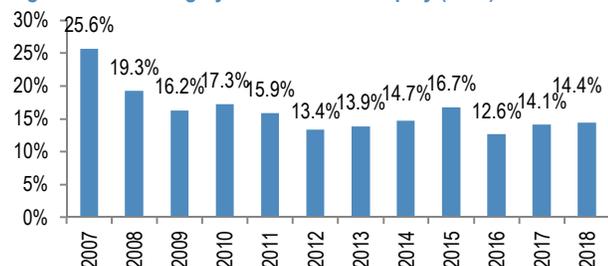
Figure 227: Market Share: Public vs. Private (Sept. 2019)



Source: Central Bank of Brazil. Data as of September, 2019.

Rate-adjusted ROE at its highest level since 2007. System earnings grew 14% Y-o-Y in 2018, decelerating from strong 26% growth in 2017, but still allowing ROE to expand 30bps Y-o-Y to 14.4%. Netting out the average Selic rate, the system ROE amounted to +7.8%, well above the +4% in 2017 and 1.6% value destruction recorded in 2016. This rate-adjusted ROE is the highest since 2007. Overall, banks' earnings growth was sustained by lower provisions, a trend also observed in 2017, while spreads remained somewhat high and eventual declines were compensated by volumes acceleration. The four Brazilian banks in our coverage universe (Itau, Bradesco, Banco do Brasil and Santander Brasil) were able to retain close to ~60% market share in the system's consolidated net income. Also interestingly, Itau and Bradesco, which control 25% of the system's loans and 32% of system assets, contribute 37% of system earnings (down from +40% in the past).

Figure 228: Banking System Return on Equity (ROE)



Source: Central Bank of Brazil

Figure 229: ROE minus Average Reference Rate



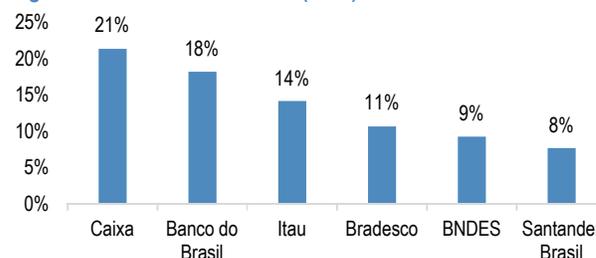
Source: Central Bank of Brazil.

Consolidation has been a trend in the past decade.

Since 2008, sizable mergers have taken place in the country: (i) Santander Brasil and ABN Banco Real (August 2008); (ii) Itau and Unibanco (November 2008); (iii) Banco do Brasil and Banco Nossa Caixa (November 2008); (iv) Banco do Brasil and Banco Votorantim (January 2009); and more recently (v) Bradesco and HSBC (August 2015); and (vi) Itau and Citibank retail operations (October 2016). Additionally, in 2013, Itau also acquired Credicard (Citibank’s card operations).

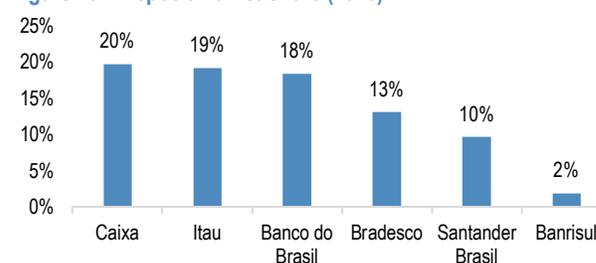
Local banks remain the most relevant players. In particular, top 5 banks in terms of loan market share are local and control a joint market share of 74%. Among foreign banks, Santander Brasil stands out as the most relevant one with 8% loan market share. Dynamics are similar when looking at deposits, with top 4 banks being Brazilian and holding 70% of total deposits, while Santander Brasil stands at 5th place with 10% share. Notably, policymakers in other major Latin American countries, particularly Mexico, cited the limited market share of foreign banks among the reasons why the Brazilian banking system withstood the financial crisis in 2008 and 2009 better-than-peers (e.g., when foreign banks pulled back their lending activity, the impact was not large enough to exacerbate the negative economic impact of the crisis).

Figure 230: Loan Market Share (2018)



Source: J.P Morgan and Central Bank of Brazil. Note: Gross Loan figures.

Figure 231: Deposit Market Share (2018)



Source: J.P Morgan and Central Bank of Brazil

Credit data presented by Brazil’s Central Bank is often classified as directed or non-directed lending.

In essence, most directed lending constitutes lending that comes from BNDES sources, or agricultural and mortgage loans funded by savings and/or demand deposits. By contrast, non-directed lending is freely lent out by banks at market interest rates and not beholden to directed lending requirements on some sources of funding. Moreover, we note two data revisions in recent years. First, the Central Bank instituted in February 2015 methodological changes in its data series ([link](#)). These changes moderately impacted non-directed loan balances, spreads, and NPLs when compared to prior versions. Moreover, these changes are layered onto more sizable changes in the credit data instituted in February 2013 (see [Latin American Banks: Credit and Market Share Bible, Published April 10, 2013](#) for details).

Non-directed lending accelerating again, while directed lending keeps declining.

After decelerating for several years and actually declining in 2016, non-directed lending started accelerating again. In particular, non-directed loans were up 2% Y-o-Y in 2017, 11% in 2018, and reached 13% as of September, 2019. Directed lending, on the other hand, has been declining for the past 3 years. From 2008 to 2018, the compound annual

growth (CAGR) of directed lending added up 14% vs. 8% for non-directed lending.

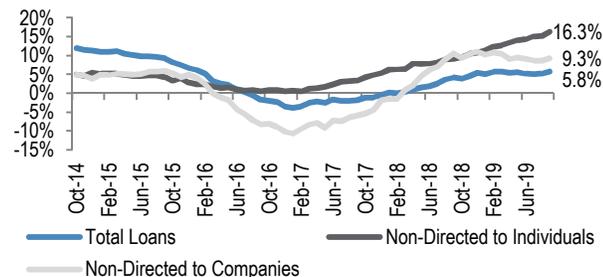
Table 84: Directed and Non Directed Lending (Y/Y)

	Total	Directed	Non-Directed
2008	30.7%	26.7%	32.7%
2009	15.1%	29.2%	8.4%
2010	20.6%	27.0%	16.9%
2011	18.8%	23.5%	15.8%
2012	16.4%	20.1%	14.0%
2013	14.5%	24.0%	7.9%
2014	11.3%	19.6%	4.6%
2015	6.7%	9.8%	3.8%
2016	-3.5%	-2.1%	-5.0%
2017	-0.5%	-2.8%	1.9%
2018	5.4%	-0.5%	10.9%
CAGR 08-18	10.3%	14.2%	7.7%

Source: Central Bank of Brazil

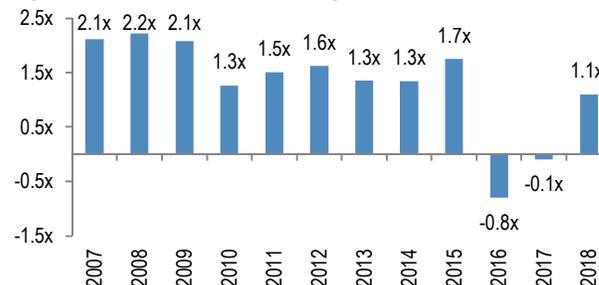
Loan origination accelerated in 2018, helped by consumer loans. After the profound economic recession that took place in 2015-2016, we finally observed an important recovery in loan growth as inflation stabilized and policy rates decreased to historical low levels (6.5%). True, the truckers' strike and presidential elections added some uncertainties and GDP grew only 1.1% last year, but total loans volumes still increased 5.5% in 2018, ahead of inflation for the first time since 2014 and driving loans-to-GDP to recover to 47.4%, but still below penetration peak of 54%. Additionally, higher-risk consumer loans have been growing ahead of both total loans and commercial loans recently. In particular, non-directed individual loans were up 16% Y-o-Y in September 2019 vs. non-directed commercial up 9% and total loans up 6%.

Figure 232: Y-o-Y Loan Growth (Sept. 2019)



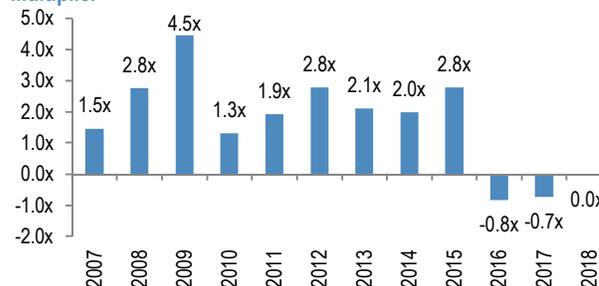
Source: Central Bank of Brazil.

Figure 233: Loan-to-Nominal GDP growth Multiplier



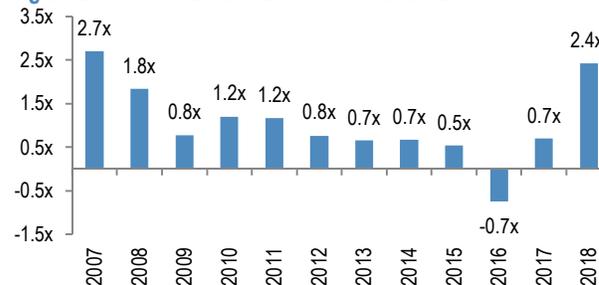
Source: Central Bank of Brazil.

Figure 234: Government Banks: Loan-to-Nominal GDP Growth Multiplier



Source: Central Bank of Brazil

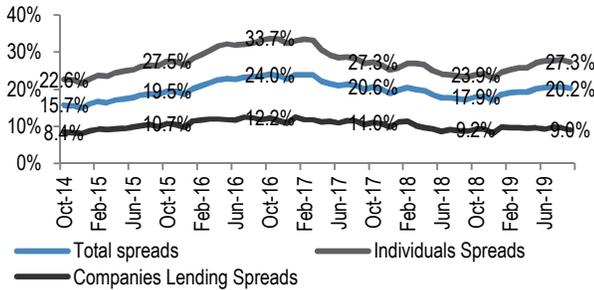
Figure 235: Private Banks: Loan-to-Nominal GDP Growth



Source: Central Bank of Brazil. Note: Private Banks includes Domestic Private Banks and Foreign Private Banks.

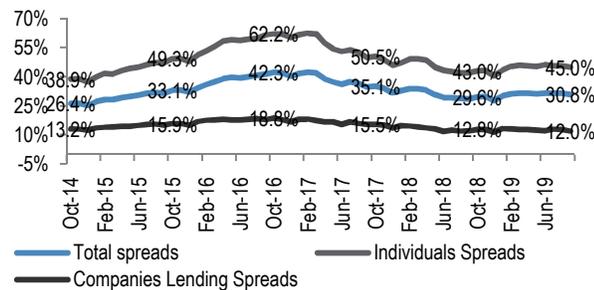
Lending spreads decreased for most of 2018, but less than in 2017 and moving higher again 2019. Total spreads decreased 190bps in 2018 to 17%. This is less than the 380bps decline we observed in 2017. Similar to last years, the decrease is explained by: (i) lower reference rates – though Selic decreased most in 2017 (down 675bps), we observed additional 50bps cuts in March 2018 to 6.5%; (ii) Central Bank's agenda to lower system spreads (e.g. overdraft); and (iii) competition dynamics with private banks getting more aggressive towards retail loans. From its peak in February 2017 to December 2018, total spreads decreased about 700bps, vs. an about 900bps increase from 2014 to 2016. Into 2019, we note that spreads have been trending higher. In particular, total spreads reached 20.2% as of September.

Figure 236: Total System Lending Spreads (Sept. 2019)



Source: Central Bank of Brazil. Data as of September 2019.

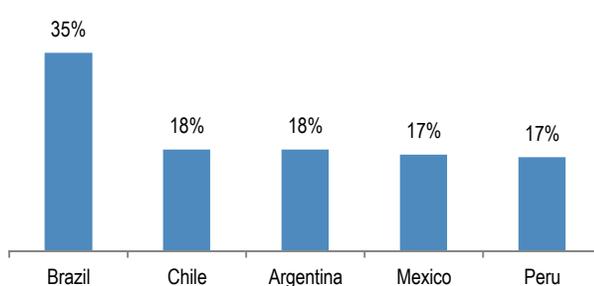
Figure 237: Non-Directed Lending Spreads (Sept. 2019)



Source: Central Bank of Brazil. Data as of September 2019.

Fees under pressure from fintechs' competition. Fee-to-revenues reached historically high levels of +35% (highest in the region) in 2018. Though Brazilian banks have large financial conglomerates with diversified fee business (e.g. insurance, consortium, pension, credit card brands, etc.), we believe the rise of fintechs could pressure this line in a multi-year period. In early 2019, we started seeing this pressure more materially with fiercer competition in selected markets (e.g. acquiring) and fee growth running below inflation for some peers. Though it is early for conclusions, our take is that this movement could pressure optimization of costs (headcount and branch reduction) and higher payout to sustain acceptable ROEs.

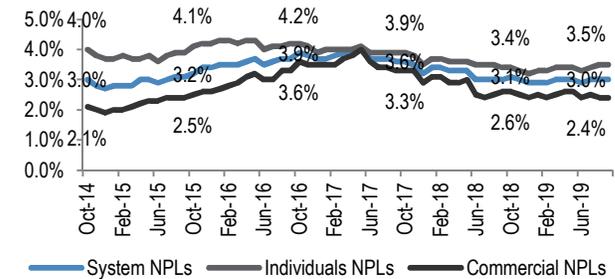
Figure 238: Fees-to-Revenues (2018)



Source: Central Bank of Brazil.

Asset quality keeps improving – but more gradually than in 2017 – in the absence of corporate cases. Asset quality continued the behaved trends from 2017, with NPL ratio improving 30bps to 2.9% despite recent mix shift towards higher risk retail loans. Into 2019, system NPLs have remained virtually stable, with consumer NPLs increasing ~10bps, but offset by commercial NPLs declining.

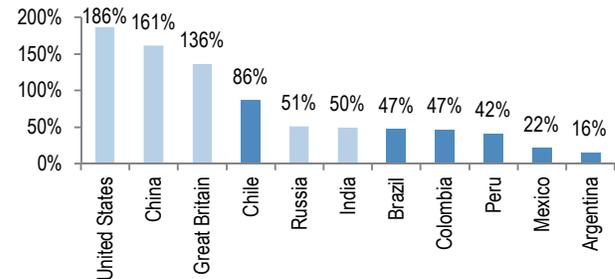
Figure 239: Total System NPL Ratio (Sept. 2019)



Source: Central Bank of Brazil.

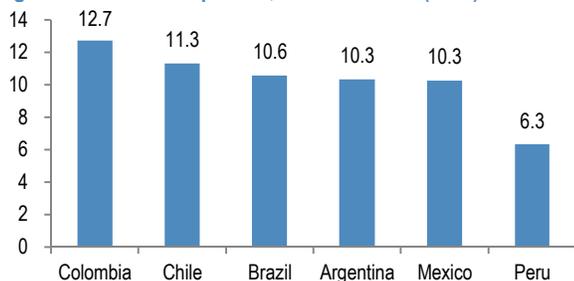
Financial penetration is relatively low on a global basis, but not compared to other Latin American economies. Brazil has a relatively high loan-to-GDP ratio vs. Mexico, Peru, and Argentina, but stands well behind Chile and developed markets. As of 2018, loans-to-GDP were 47%, still below 54% historic peak in 2015, but with some marginal Y-o-Y increase after declining in both 2016 and 2017. On more particular per capita metrics, Brazil leads the region regarding ATM, and stands top 3 regarding branches and employees.

Figure 240: Loans to GDP



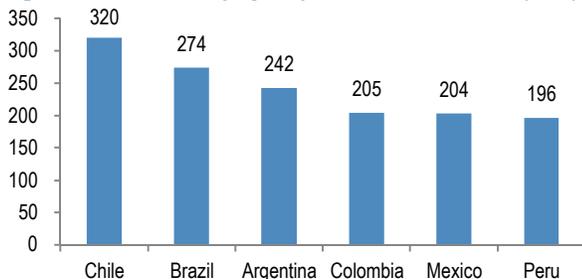
Source: J.P. Morgan estimates, Bloomberg, Central Bank of Brazil, Superintendencia de Bancos e Instituciones Financieras (Chile), Superintendencia Financiera de Colombia, Comision Nacional Bancaria y de Valores (Mexico), Banco Central de la Republica Argentina, and Superintendencia de Banca, Seguros, Y AFP (Peru). China, United States, Great Britain Russia, and India data based in 2018 figures from the World Bank.

Figure 241: Branches per 100,000 Inhabitants (2018)



Source: IMF population estimates, Central Bank of Brazil, Superintendencia de Bancos e Instituciones Financieras (Chile), Superintendencia Financiera de Colombia, Comision Nacional Bancaria y de Valores (Mexico), Banco Central de la Republica Argentina, and Superintendencia de Banca, Seguros, Y AFP (Peru)

Figure 242: Bank of Employees per 100,000 Inhabitants (2018)



Source: IMF population estimates, Central Bank of Brazil, Superintendencia de Bancos e Instituciones Financieras (Chile), Superintendencia Financiera de Colombia, Comision Nacional Bancaria y de Valores (Mexico), Banco Central de la Republica Argentina, and Superintendencia de Banca, Seguros, Y AFP (Peru). Note: Brazil is as of December 2013 adjusted by the difference of headcount decline in the top10 banks from 2013-2018 which represent ~90% of total headcount. Colombia as of 2015.

Central bank is the primary regulator for banks. The National Monetary Council (Conselho Monetário Nacional, or CMN) is the primary regulatory entity in the Brazilian financial system. The CMN is composed of the central bank president, the finance minister, and the planning minister. Among its functions, the CMN gives the central bank authority to establish reserve requirements and establishes general directives regulating the banking and financial markets. However, the central bank is the primary supervisory entity overseeing the banking system. Among its primary functions, the central bank establishes minimum capital and reserve requirements, approves mergers and acquisitions of financial institutions, and must approve any capital increases or establishment of branches in Brazil and abroad.

Table 85: Brazil's Major Listed Financials Companies

Company	Ticker	Rating	Mkt Cap (US\$ Million)
Itau Unibanco	ITUB4	OW	83,077
Bradesco	BBDC4	OW	67,369
Santander Brasil	SANB11	N	47,403
Banco do Brasil	BBAS3	N	34,088
Banrisul	BRSR6	OW	2,323
ABCB	ABCB4	N	999

Source: J.P. Morgan estimates and Bloomberg as of October 25, 2019.

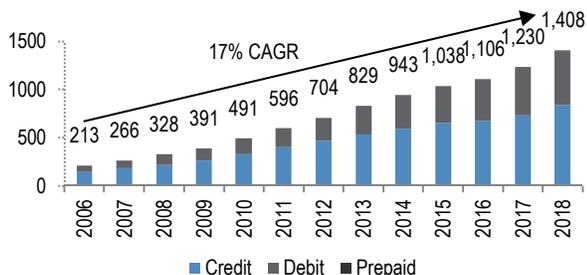
Non-Bank Financials

Domingos Falavina^{AC} and team
 (1-212) 622-3602
 domingos.falavina@jpmorgan.com
 J.P. Morgan Securities LLC

Acquirer Industry Overview

Secular growth story. The volume of payment card transactions has consistently increased in the past years. In 2018, total processed volumes added up to R\$ 1,408bn, up from R\$ 213bn in 2006 and implying a 17% CAGR in the period. Notably, in 2018 credit card volumes were up 14.8% in 2018, its highest pace since 2012.

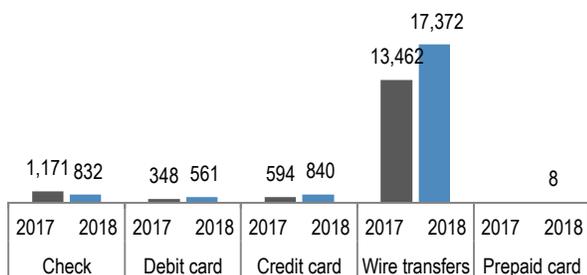
Figure 243: Credit and Debit Processed Volumes (R\$ billions)



Cash and check substitution has been the main driver of credit and debit card usage. The percentage of transactions accounted for by checks fell to 2% in 2018 from ~46% in 2002. Similarly, credit and debit cards accounted for 81% of transactions in 2016 compared to just 28.4% of transactions in 2002.

Wire transfers still respond for the larger share of financial volume. Despite the rapid growth of card volume, it still represents a small percentage of the overall payment means. Notably, larger payments are transferred through electronic means, and we see its migration to cards as unlikely.

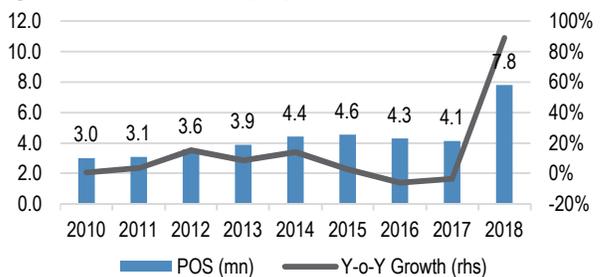
Figure 244: Payment Mean - Financials Volume (R\$ Billions)



Source: Central Bank of Brazil

Number of POS machines almost doubled in 2018, now at 7.8mn (vs ~210mn population). The number of POS machines totaled 7.8mn in 2018, almost 2x 2017's 4.1mn figure. Brazilian total population stands at 210mn and economically active population at ~105mn, implying 4% and 7% penetration, respectively. We believe most of the growth is explained by the acquiring boom in the long tail, and we expect the trend to continue going forward as we see more players intensifying efforts in the segment.

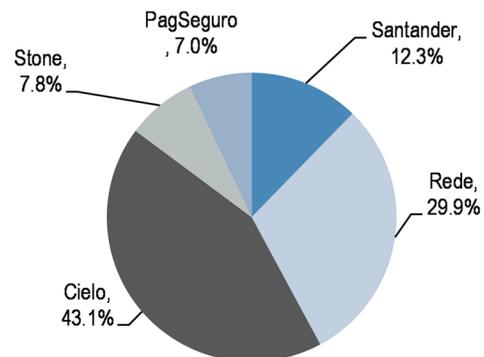
Figure 245: POS Machines (mn) and Growth Rates



Source: Central Bank of Brazil

Competition structure. Since 2012 the Central Bank is officially the regulator of Brazil's electronic payment structure. One of its first measures was determining the end of remaining exclusivities between brands and acquirers. That started to end in 2016, and in 2017 the full acquiring model begins. With the end of barriers, competition got fiercer and started pressuring MDRs

Figure 246: Total Processed Volume Market Share (2Q19)

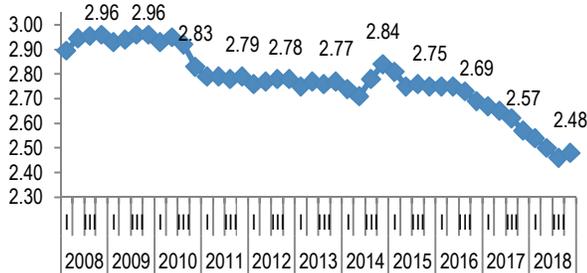


Source: Company reports and J.P. Morgan Research. Excludes small acquirers.

Merchant discount rates trending downwards. According to Central Bank data, gross credit card MDR declined to ~2.50% in FY18 vs ~2.63% in FY17. Notably, it is not clear at this point if Central Bank considers all-in packages (with D+2 prepayment fee or POS rental embedded in MDRs) within numbers, which would imply further pressure. Meanwhile, net MDR

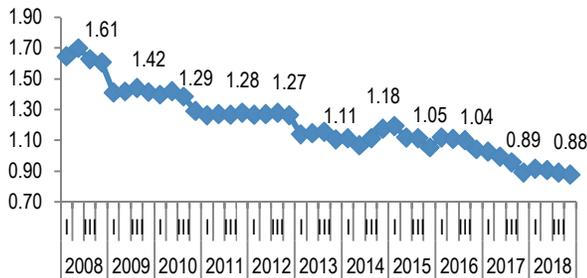
declined more modestly to ~0.88% (vs ~0.89% in 4Q17). Debit card MDR in FY18 was 1.41%, down 7bps vs 1.48% in FY17. Debit net MDRs, on the other hand, spiked almost ~20bps in 4Q18 to 0.78% as result of the new regulatory interchange cap on debit in place.

Figure 247: Credit Card - Gross MDR (%)



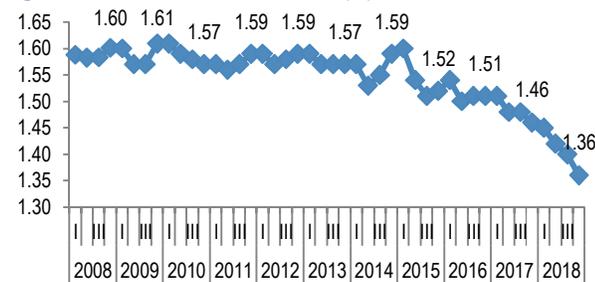
Source: Central Bank of Brazil

Figure 248: Credit Card - Net MDR (%)



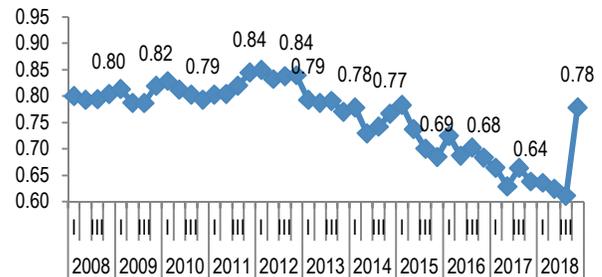
Source: Central Bank of Brazil

Figure 249: Debit Card - Gross MDR (%)



Source: Central Bank of Brazil.

Figure 250: Debit Card - Net MDR (%)



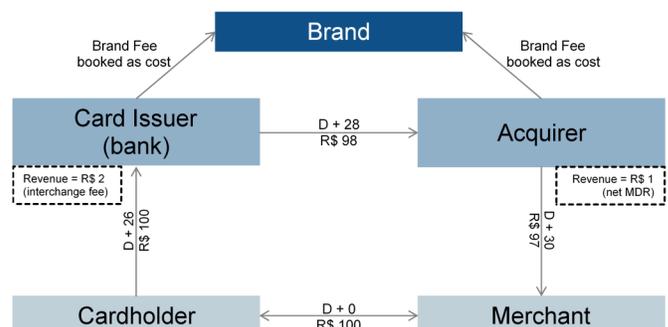
Source: Central Bank of Brazil

Industry organization: participants and fees. The Brazilian payment card industry has the following participants and fees:

- **Issuer:** Financial institution that is responsible for setting credit limits, interest rates, and identifying and authorizing each card transaction. It also is responsible for maintaining a direct relationship with the brand (e.g., Visa, MasterCard) and establishing loyalty programs.
- **Acquirer:** The financial institution responsible for capturing and processing credit and debit card transactions. It connects merchants to banks.
- **Brand:** The owner of the trademark. It defines the general rules and terms of the payment means structure, including the interchange fee (bank remuneration) and net merchant discount rate (acquirers' remuneration). Examples include Visa and MasterCard.
- **Cardholder:** Financial client, user of the card.
- **Merchant:** Seller of good or service.

The following figure illustrates this structure.

Figure 251: Brazilian Card Payment Structure (Estimated Values for R\$100 Transaction)



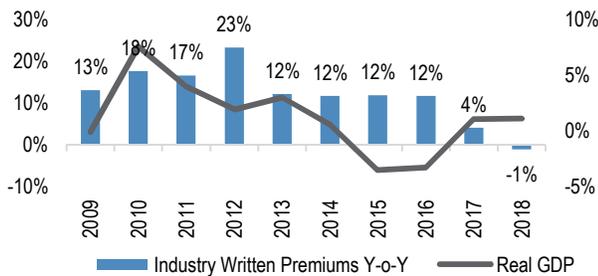
Source: BACEN payment cards report and J.P. Morgan estimates.

Insurance Industry Overview

According to SUSEP data, as of 2018 the Brazilian insurance market was formed by: 119 insurance companies, 17 capitalization companies, 15 focused in supplementary pension, and 133 reinsurance companies.

Premiums remained resilient during economic recession, but have decelerated since. Interestingly, during 2013-2016, written premiums growth remained at ~12% despite around -1% avg. GDP growth in the period. Notably, premiums decelerated in 2017 and were actually down 1% Y-o-Y in 2018.

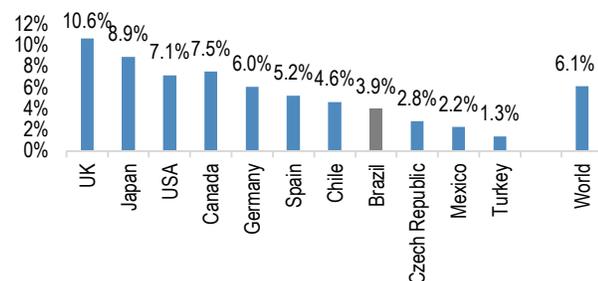
Figure 252: Insurance Growth vs. GDP (2018)



Source: SUSEP.

Still-low penetration when compared to other markets. Penetration of insurance and long-term savings products remains low in Brazil when compared to other markets, mostly developed ones. Specifically, premiums as %-age of GDP have been roughly stable at ~4.0% level since 2014. Meanwhile, Brazil continues to rank below the global average (6.1% in 2018).

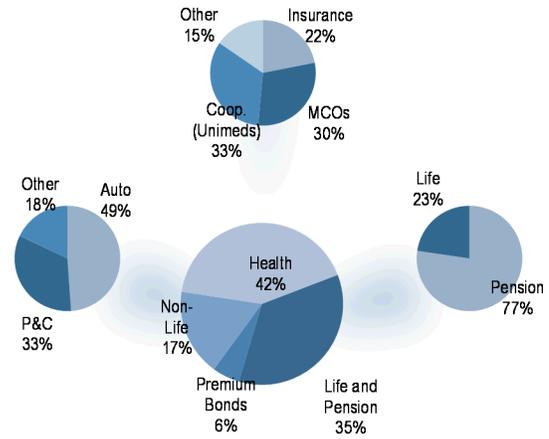
Figure 253: Insurance Penetration: Premiums as % of GDP (2018)



Source: Sigma Swiss Re 2018 report.

Overall, health, life, and pension insurance represent the bulk of total premiums. Auto insurance is the main category within P&C insurance. The following figures are based on SUSEP data and illustrate premium breakdown for each category.

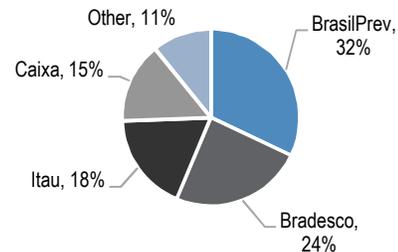
Figure 254: Brazil's Insurance Premium Breakdown (2016)



Source: SUSEP, ANS and J.P. Morgan.

BBSE leads in pension plans. In traditional insurance and pension plan products, there is very high market share concentration among the large retail banks. In particular, the four largest players represented ~90% of total market contributions in 2018. Those same players represented ~80% of market reserves. Notably, BBSE remains the largest participant with 32% market share through BrasilPrev.

Figure 255: Pension - Contribution Market Share (2018)



Source: SUSEP.

Porto Seguro remains the leader in the Auto Insurance market. In particular, they controlled ~28% the market's written premiums as of 2018. Notably, SulAmerica reached an agreement to sell its auto and P&C operations to Allianz in August, 2019.

Table 86: Auto Market Share (written premiums)

	2014	2015	2016	2017	2018
Porto	26.7%	27.3%	28.8%	27.7%	27.9%
Porto	13.8%	13.9%	15.2%	18.4%	18.2%
Azul	6.7%	7.3%	7.9%	8.0%	8.5%
Itau Auto	6.3%	6.1%	5.7%	1.3%	1.1%
BBSE	14.6%	14.7%	12.3%	11.5%	11.8%
Bradesco Auto	12.7%	11.9%	12.1%	11.8%	11.1%
SulAmérica	9.3%	10.4%	10.1%	9.1%	9.6%
HDI Seguros	7.5%	8.7%	8.7%	8.4%	8.7%
Tokio Marine	5.7%	6.6%	7.3%	9.1%	9.5%
Liberty Seguros	5.7%	6.3%	6.5%	7.1%	7.7%
Allianz Seguros	5.0%	4.2%	4.4%	5.0%	5.3%
Others	12.7%	9.8%	9.9%	10.4%	8.4%

Source: SUSEP.

Table 87: Brazil's Major Listed Non-Bank Financial Companies

Company	Ticker	Rating	Mkt Cap (US\$ Million)
Itausa	ITSA4	OW	29,178
B3	B3SA3	N	24,695
BB Seguridade	BBSE3	N	17,287
Pagseguro	PAGS	OW	12,296
Stone	STNE	N	9,744
IRB	IRBR3	N	8,922
Cielo	CIEL3	N	5,504
SulAmerica	SULA11	N	4,857

Source: J.P. Morgan estimates and Bloomberg as of October 28, 2019.

Homebuilders

Marcelo Motta ^{AC} and team
(55-11) 4950-6712
marcelo.g.motta@jpmorgan.com
Banco J.P. Morgan S.A.

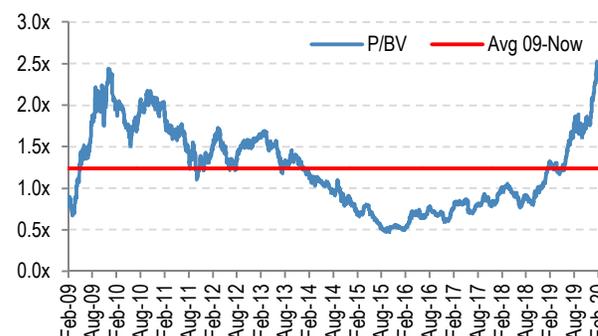
Sector overview: Currently the homebuilding sector comprises 16 companies with a total market cap of more than US\$14bn, with trading volume of over around US\$170mn per day on average and a weight of around 1.5% in the Ibovespa with the presence of Cyrela, MRV, Iguatemi, BR Malls and Multiplan. The sector has its own index called IMOBVV, which also includes Malls stocks. The sector is divided in two main segments: low income, operating within the MCMV program, and the mid/high income names. Worth to flag that in 2020 we saw the first IPO in the sector in over 10 years, with Mitre starting to trade in February.

We have a bullish view on Brazilian homebuilders. This positive view is mainly fueled by: **(i)** sustainable funding conditions on low interest rates and new mortgage lines linked to inflation (IPCA), increasing homebuyers' affordability; **(ii)** lack of short term bottlenecks due to low inflation, still high unemployment rate, and no pressure on raw materials, which should cap potential costs escalation as seen in past bull cycles in the sector; and **(iii)** growing demand supported by stabilization of interest rates at low levels and GDP growth expectations for the next years.

The mid/high income segment is the one that we find the most interesting. We expect the mid and high income segment to continue to deliver superior performance during 2020 helped by the improvement in macroeconomic scenario (consumer confidence and GDP growth) as well as increase in affordability due to mortgage linked to inflation which represent a reduction of around 35% on homebuyers monthly payment. We also expect profitability to continue to improve substantiated on higher contribution from new launches and lower pressure from inventories. Moreover, changes on cancellation legislation should also have a positive impact on the sector increasing the penalty on homebuyers cancelling their acquisition, although the level of cancellation is already trending down due to the recovery in confidence. On the other hand, despite the existing potential for the low income segment in Brazil we remain relatively cautious on the segment, despite the well-known housing deficit in Brazil, due to expected noise on MCMV execution, consequence of Brazilian government delicate fiscal situation as well as CEF execution due to higher credit scoring which could

negatively impact sales speed and margins. Keep in mind that noises throughout 2019 included; reduction of one of the brackets of the MCMV program (Faixa 1.5), new FGTS withdrawals of R\$40bn, transfers halt of 45 days during 3Q19. Although we don't expect significant changes in the upcoming "new MCMV" that is expected to be announced in the near term (likely March), it represents an overhang, especially considering government's liberal agenda.

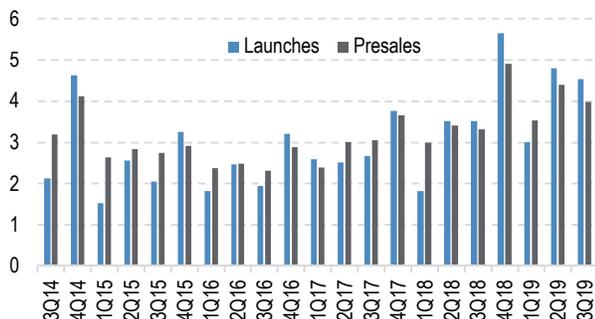
Figure 256: Sector P/BV



Source: Company data, J.P Morgan estimates. Priced as of October 30th, 2019.

Launches at all-time highs. Launches by companies under our coverage (CYRE, EVEN, EZTC, MRVE, DIRR, TEND) peaked in 4Q19 at around R\$7.8bn in the quarter and totaling R\$22bn in 2019, an all-time high, reflecting the recovery in the mid and high income segment as well as the strength in the low income segment. We expect companies to continue a robust launches schedule in 2020 as macro fundamentals continue trending upwards and interest rates remain at low levels. We note that home prices have remained below inflation over the past 3 years, impacted by a high level of inventories. However, we expect this trend to reverse as inventories continue to trend down and demand pick-up, evidenced by the greater presales numbers. Considering 2019 data, companies under our coverage have increased net presales by 22% yoy reaching R\$18.5bn indicating the market has been absorbing inventories and launches. Sales Speed was also healthy closer to 20% per quarter on average during 2019 almost 10pp higher than in 2016.

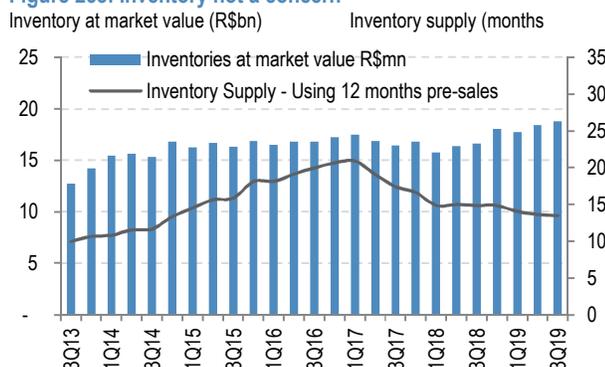
Figure 257: Covered Homebuilders Launches' and Presales



Source: Companies' report; J.P. Morgan estimates; Launches at co's share.

Inventories not a concern. Even though aggregated inventories for companies under our coverage increased 15% yoy being at R\$22bn in 2019, inventory supply, which measures how many months it would take to sell current inventories, has continuously decreased being at 14 months in 4Q19 vs. 15 months in 4Q18 and 18 months in 4Q17. This decrease in inventories level has also helped companies to report higher profitability as inventory (which usually also has a lower margin) reduced its participation in companies' revenues mix. Moreover, keep in mind that finished units have a negative carrying cost for companies, putting additional pressure on profitability due to taxes and condominium expenses. As of 4Q19, finished inventories represented around 20% of total inventories for covered companies, moving downwards from around 30% in 4Q18.

Figure 258: Inventory not a concern

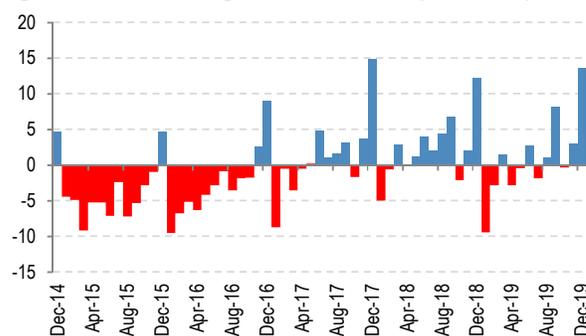


Source: Companies' reports; J.P. Morgan estimates. Launches at co's share.

Funding dynamics. The main sources of funding for mortgages are i) SBPE, mortgages for mid- and high-income segment, which represents roughly 65% of saving account balances and; ii) FGTS, low-income funding, especially the MCMV (Minha Casa Minha Vida) program, represented by an 8% mandatory annual contribution from regular employees' compensation.

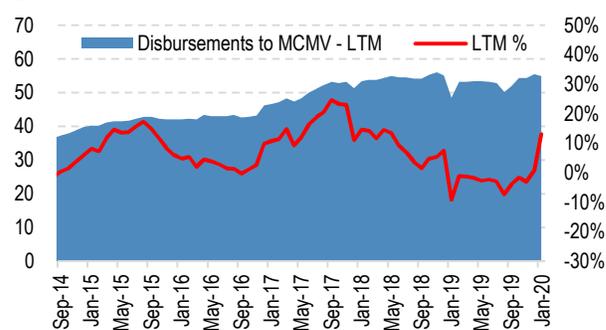
During 2019, savings accounts (SBPE) posted R\$12bn in net inflows vs R\$28bn in 2018, mainly reflecting a more positive macro landscape and lower interest rates as well as a migration of funds from fixed income to equity and other asset classes. In 2019 monthly mortgage disbursements have been growing at around 30% yoy. The FGTS has allocated over R\$55bn towards the MCMV program during 2019, in line with 2018 levels of disbursements. It is important to flag that the Central Bank authorized the issuance of mortgages linked to inflation which should over the coming years become the main source of funding for the mid and high income segment, given its lower monthly payment (30% lower vs SBPE mortgages) and its positive impact on affordability.

Figure 259: SBPE Savings Accounts Inflows (R\$ Billions)



Source: Central Bank

Figure 260: FGTS Financing - Disbursements to MCMV Program LTM



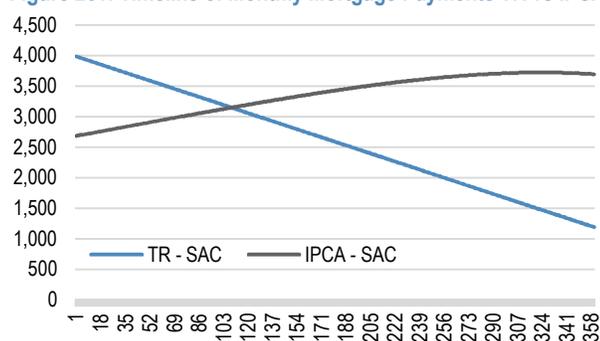
Source: J.P. Morgan estimates, and CEF.

The reduction in interest rates (Selic) should continue to positively impact cost of funding, for both the mid and high income and the low income segment with banks already charging mortgage rates for SBPE mortgages as low as 6.75% per year. However, FGTS funding for the low income segment has suffered as of late, with disruptions in transfers to the MCMV Program which were halted during 45 days in 3Q19, due to lack of treasury resources and were halted again in the beginning

of 2020. Even though the low income segment is more resilient than the mid and high income due to Brazil's well documented housing deficit, ~7.5mn units, the sector's growth is still depending on funding availability represented mostly by the FGTS budget, which has been flat in the past years. Moreover, the government decided during July 2019 to allow the withdrawal of up to R\$40bn in funds, reducing the amount of potential disbursements in the coming years, impacting sector long term growth. Despite the withdrawals, FGTS budget for housing (mortgages + subsidies) which was already defined is at R\$61.4bn for 2019, 2020 and 2021 and should not change. Additionally, also bear in mind that listed companies have been gaining share within the MCMV program, given their superior execution quality and scale, a trend we expect to continue despite a lower funding availability.

New financing line: IPCA linked mortgages. At this point CEF is the only bank offering mortgage linked to inflation. CEF announced it was to start to offer in August 2019 mortgages linked to inflation + 2.95% to +4.95% per year, with inflation being measured by IPCA. So far CEF issued almost R\$5bn toward this line. Bear in mind that CEF is responsible for the administration of the MCMV program and is fully owned by the government. According to CEF's President Mr. Pedro Guimarães, the new line will help develop a securitization market, given the demand for long-term bonds linked to inflation, while also increasing affordability, as initial monthly payments could be 30-50% lower considering units with a price of R\$300k. We see this new line as positive, not only due to Mr. Guimarães' points, but also due to the fact that it should increase funding for mortgages, which in Brazil is below 10% of GDP vs. Chile at 21% and South Africa at 42%. CEF also expects to announce soon a mortgage line at fixed rates (excluding its link to TR).

Figure 261: Timeline of Monthly Mortgage Payments TR vs IPCA



Source: J.P. Morgan estimates. *Considering units of R\$300k, a 360 month tenor and LTV of 80%.

Details on MCMV program. The Minha Casa Minha Vida (MCMV) program was announced by the government in March 2009, with a target to build 1 million houses in a period of two years to reduce a housing deficit. Through the MCMV program, more than 5.5mn units have already been contracted since 2009 (based on 2018 data), with roughly 15mn people living in housing financed thru the program representing investments of R\$445bn. The program is currently in its third phase and was recently upgraded by the previous administration. The changes made by the Temer administration to the program included: i) Extension of the upper monthly income limit of *Faixa 3* to R\$9.0k per family from R\$6.5k (+30%), the largest since the program was created; ii) *Faixa 1* income cap was R\$1,800, while *Faixa 1.5* increased to R\$2,600 and *Faixa 2* to R\$4,000. In terms of segment breakdown, *Faixa 1* should correspond to 170k units, *Faixa 1.5* to 40k units, and *Faixa 2* and 3 together should amount 400k units.

Potential New MCMV Program. A potential new format of the program was presented in June 2019 to the Lower House of Congress, in which the Ministry of Regional Development highlighted the following potential new changes: i) Partnership with private companies for new *Faixa 1* (up to 1 minimum wage income), creating a format based on social rent, converted latter into saving account for future down payment as well as the creation of a voucher system for refurbishment; ii) New segmentation of participants by bracket and level, with families earning above 7 minimum wages not taking part in the program (end of *Faixa 3*). The final version of the new program should be announced by year end.

Accounting methodologies specificities. Homebuilders in Brazil have some accounting particularities, which helps to explain the mismatch between operational data, income statement, and FCF. Companies book revenues and costs according to the percentage of completion method (PoC), in which revenues and costs are booked in accordance with the physical evolution of construction. For example if a project is 50% built and 50% sold, the company recognizes 25% of the results. Considering the current environment, in which companies accumulated high levels of inventory, the sale of concluded units tends to boost revenues and FCF, since it is 100% recognized on the income statement.

Malls

Marcelo Motta ^{AC} and team
(55-11) 4950-6712
marcelo.g.motta@jpmorgan.com
Banco J.P. Morgan S.A.

Our view. We continue to like the Shopping Mall segment, as companies should continue to benefit from lower interest rates in Brazil, now at a record low of 4.25%. Under this lower interest rate scenario we believe the Malls segment's multiple should remain at its high ~25x P/FFO 12M forward. Additionally, the acceleration of GDP to 2.0% this year – after 3 years with GDP below 1% – should translate into higher retail sales, leading to better-than-expected Same Store Sales, top lines and bottom line growth, representing an additional earnings growth and upside to stocks. Our favorite names are BRML3 (OW) and ALSO3 (OW), as we believe they should benefit from the recovery in retail sales more than IGTA3 (OW) and MULT3 (N).

Table 88: Brazilian Shopping Malls Under Coverage

Company	Ticker	Rating	Mkt Cap (US\$ Million)
BR Malls	BRML3	OW	3,930
Aliance Sonae	ALSO3	OW	3,347
Iguatemi	IGTA3	OW	2,257
Multiplan	MULT3	N	4,925

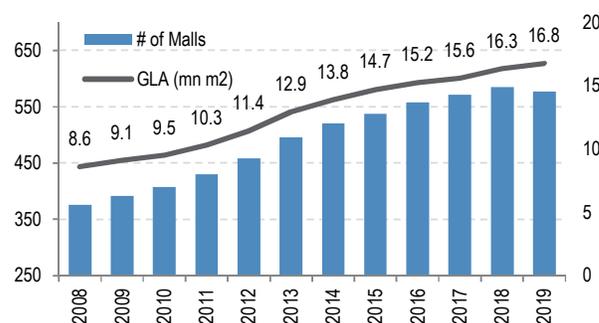
Source: J.P. Morgan estimates and Bloomberg, as of February 5th, 2020.

A defensive sector with stable results and FCF. The shopping mall industry offers exposure to growing retail consumption in Brazil and to potential appreciation in property values on the back of a secular trend of compression in cap rates and lower interest rates, result of Brazil macroeconomic stabilization. The sector also offers protection against inflation through its rent structure as retailers are subject to monthly payments, represented by a maximum of a percentage of sales (around 5-7% of total sales) or a minimal rent annually adjusted by inflation (IGP-M or IPCA). As a consequence, the companies benefit from stable and predictable cash flows, offering investors a hedge against inflation as contracts have tenors of 5-10 years. On the other hand, during positive economic cycles the sector allows investors to capture an increase in consumption right away. Moreover currently we are already seeing the first signs of improvement on the consumption front, which could lead to positive surprises SSS growth over the past quarters. Cielo retail sales data (nominal terms) showed an increase of 6.4% during 2019 highest level since 2014.

Main metrics. According to ABRASCE (Brazilian Shopping Mall Association), as of 2019 Brazil had 577

malls representing total gross leasable area (GLA) of 16.8mn m² divided into 106k stores and 2.9k cinema rooms. Total sales amounted R\$193bn in 2019 (+7.9% vs. 2018). Over the last five years (2015-19), shopping mall sales increased at a CAGR of 6.3%, compared with a GLA CAGR in the period of 4%. For 2020, ABRASCE expects the opening of 19 assets representing 423k m² of GLA.

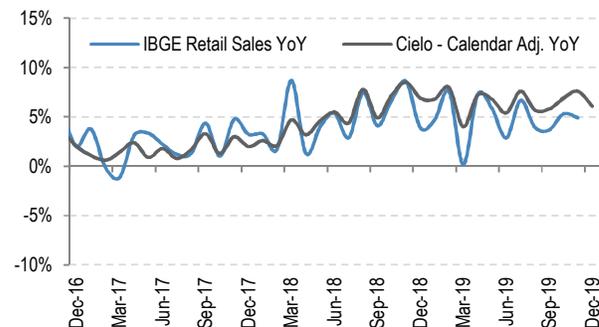
Figure 262: Shopping Mall Evolution per ABRASCE Data
Number of malls GLA (mn m²)



Source: ABRASCE (Brazilian Shopping Mall Association).

Recent recovery in consumption could lead to upward revisions. Data from Cielo showed a 6.4% yoy expansion in retail sales in nominal terms during 2019, the highest level since 2014. Additionally, IBGE figures for August also show a positive trend with volumes ~1.5% yoy, with Supermarkets and personal items leading this recovery, while the apparel segment was down 3% yoy and paper related products was down 17% yoy. Keep in mind that we expect those figures to accelerate during 2020 positively impacted by GDP recovery. Given this positive scenario on GDP expectation and consumption, we believe investors could start to raise their estimates upwards in the coming quarters in case sales start to reflect this improvement in fundamentals.

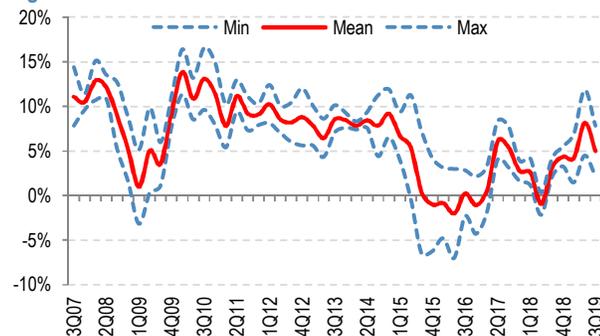
Figure 263: Cielo (ICVA) and IBGE Retail Sales Index



Source: IBGE; Cielo, J.P. Morgan estimates.

Good recovery in operational metrics. In 3Q19 SSS improved for covered companies, to around 3.5%, on average vs 2.9% in 3Q18, reflecting the recovering in consumption in Brazil, which should also led to stronger figures in 2020. This positive environment should also lead to higher occupancy rates, which are currently at 95.8% on average vs roughly the same level a year ago (+0.1pp).

Figure 264: Sector Same-Store Sales YoY

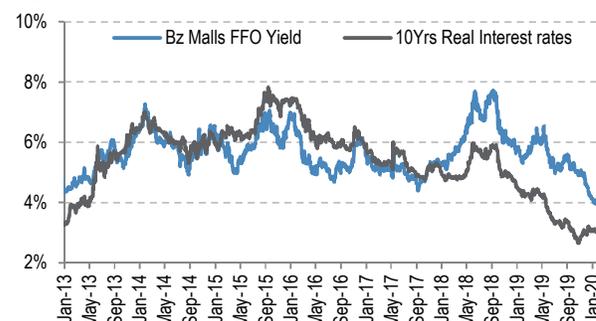


Source: Company reports; J.P. Morgan estimates.

Low leverage leave rooms for new projects and M&A. Shopping mall companies typically have high leverage; however given the recent deceleration in the economy and the consequent reduction in the pace of new investments consolidated leverage is at 2.3x net debt to EBITDA as of 3Q19 vs a peak of 3.5x in 2013-14. In our view this comfortable leverage level leaves room for companies to accelerate investment (Greenfield, Expansion and M&A) once the economy starts to grow again. Moreover, the reduction in the absolute level of leverage and lower interest rates have allowed companies to refinance their debt representing a significant reduction in cost of debt in the past 3 years.

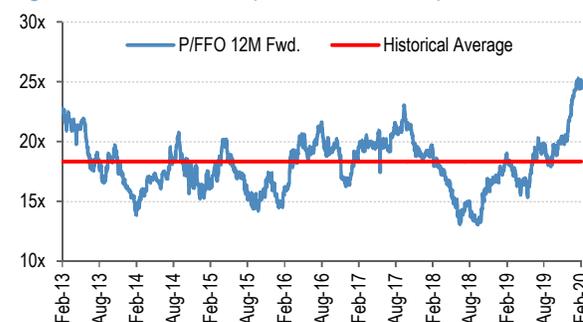
Earnings growth to be the driver. The sector is trading at ~25x 12M forward P/FFO, which is in line with sector peak, limiting the room for additional re-rating in the short term, even though we recognize that interest rates are at a record low. Although GLA growth should not be as strong as in the past cycle, we believe the lower interest rate (Selic at record low) and earnings growth should support current valuation. Additionally when comparing sector FFO yield with long term interest rate the sector is currently trading with a yield 150bps above long term rates vs an average of 50-100bps.

Figure 265: P/FFO (12 Months Fwd) vs Real Interest Rates



Source: J.P. Morgan estimates; Bloomberg.

Figure 266: Sector P/FFO (12 Months Forward)



Source: Bloomberg consensus, J.P. Morgan estimates.

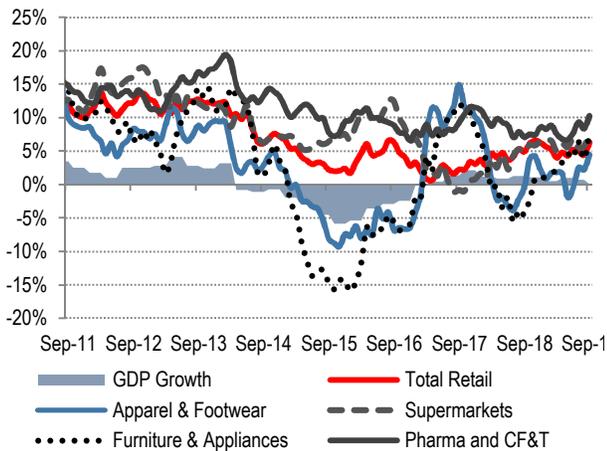
E-commerce competition. Even though e-commerce penetration should continue to increase in Brazil, given its small base of around 5%, we don't believe it will have a significant impact on listed shopping mall companies given the premium location of those assets. Keep in mind that in Brazil parking revenues represents around 15-20% of companies' revenues, illustrating the assets' premium locations. Moreover, shopping malls in Brazil are already a destination center for consumers given the elevated participation of services (casual dining, restaurants) and entertainment (movie theaters and gyms) in their mix.

Retail

Joseph Giordano ^{AC} and team
 (55-11) 4950-3020
 joseph.giordano@jpmorgan.com
 Banco J.P. Morgan S.A.

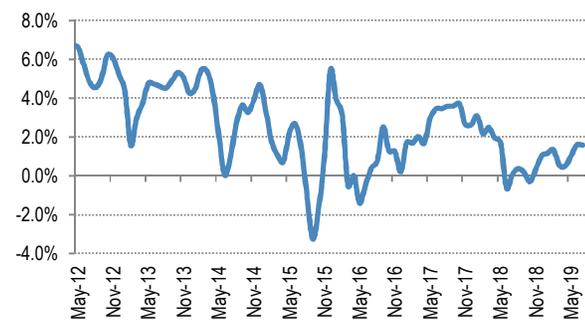
Gradual improvements to consumer environment. The consumer environment has been a challenging one for retailers for the past years. However, we have been seeing gradual improvements to consumption trends and consumer financial health in the LTM, and expect a more favorable environment from '20 onwards. Gradual improvements to unemployment and better GDP growth along with low interest rates and inflation should be supportive for higher disposable income. Thus, likely translating into better consumer confidence, and, consequently, into a better consumption scenario.

Figure 267: Retail Sales Growth – Three-Month Average



Source: IBGE.

Figure 268: Improvements to Disposable Income



Source: SCPC Boa Vista.

Figure 269: Consumer Confidence is increasing

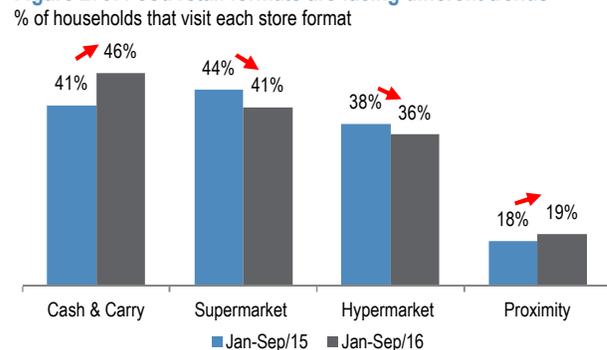


Source: FGV.

Staple proxies like pharma, CF&T, and food retail tend to offer resiliency. HPC (Health and Personal Care) products have not experienced any major slowdown over the past several years in spite of the tough macro environment. In our view, this stems from the non-discretionary nature of such products, along with the low average ticket. Such trend is also valid for drug retailers, like RD (N-rated). Meanwhile, we also see some volume resiliency in food retail albeit a more volatile growth given food inflation volatility.

Food retail: purchasing behavior has been shifting towards value and convenience. Industry growth is shifting away from the more traditional supermarket and hypermarket formats. And, the larger purchases are migrating to retail formats that offer a superior value proposition and prices, particularly Cash&Carry. The replenishment purchases are gradually moving to convenience formats, particularly proximity stores and in-neighborhood supermarkets. Thus, we see food retail undergoing a format polarization process. In response to this trend, Grupo Carrefour Brasil (OW-rated) and CBD (OW-rated) have been focusing their expansion plan on banners under cash&carry and smaller supermarkets

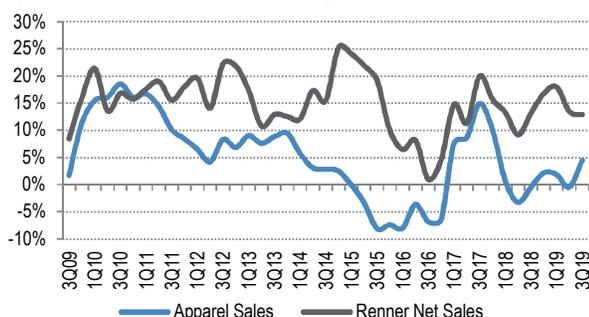
Figure 270: Food retail formats are facing different trends



Source: CBD reports.

Lojas Renner continues to gain market share in the Brazilian apparel market. Apparel retail was one of the most impacted categories by the decelerating macro and consumer environment. Lojas Renner (OW-rated), on the other hand, took advantage of the challenging scenario and was able to further accelerate its market share gains by sustaining its expansion pace and further strengthening execution with digital tools with a more agile supply chain structure. This has led to continued market share gains and solid SSS prints while peers like Hering (N-rated), Guararapes (NC), C&A (NC), and Marisa (NC) printed volatile SSS along with store closures in most cases.

Figure 271: LREN Has Been Gaining Market Share in Apparel

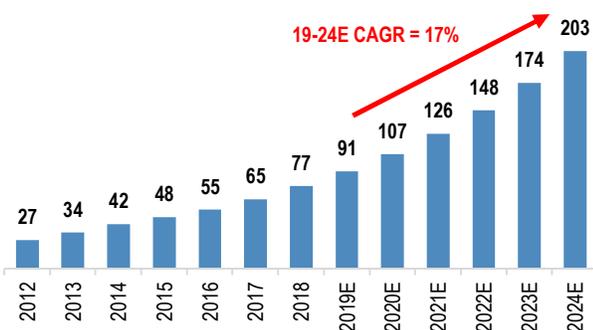


Source: Company reports, IBGE, J.P. Morgan.

Online sales and omnichannel capabilities are a key theme. The downturn had limited impacts on the segment given the secular trend towards higher convenience and the increasing penetration of the channel in broader retail in Brazil. In this context, we see major retailers (in all segments) investing in online platforms fully integrated with the bricks&mortar stores to improve shopping experience and increase the number of contact points with the client plus loyalty.

Figure 272: E-commerce sales

R\$bn

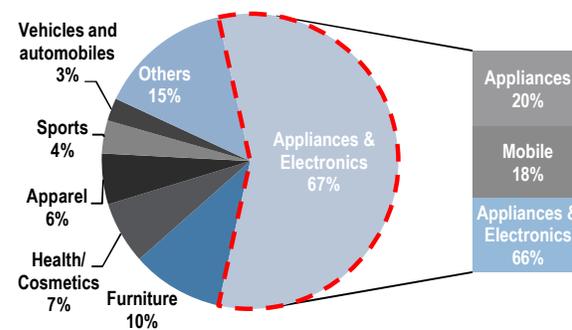


Source: E-bit

E-commerce – assortment, logistics and frequency are key. Appliances and electronics are the most relevant category in terms of volumes (~37% of total orders) and even more in terms of value, accounting for ~67% of the revenues. With the goal to increase purchase frequency, Magazine Luiza (OW) and B2W (N) are working on widening their assortment by investing in other categories such as HPC, sportswear and apparel (1P and 3P) to bring higher traffic to their platform as well as frequency.

Figure 273: Household penetration per format

% of e-commerce sales (2018)



Source: E-bit.

Table 89: Brazil's Retail/HPC Companies under Coverage

Company	Ticker	Rating	Market Cap. (US\$ Million)
Magazine Luiza	MGLU3	OW	20,656
Natura&Co	NTCO3	UW	12,800
Carrefour Brasil	CRFB3	OW	10,427
Lojas Renner	LREN3	OW	10,403
Lojas Americanas	LAME4	N	9,470
B2W	BTOW3	N	8,541
CBD	PCAR4	OW	5,467
Alpargatas	ALPA4	N	4,473
Via Varejo	VVAR3	OW	4,391
Vivara	VIVA3	OW	1,631
Arezzo&Co	ARZZ3	OW	1,273
CVC	CVCB3	UW	1,235
Hering	HGTX3	N	937
Restoque	LLIS3	N	267

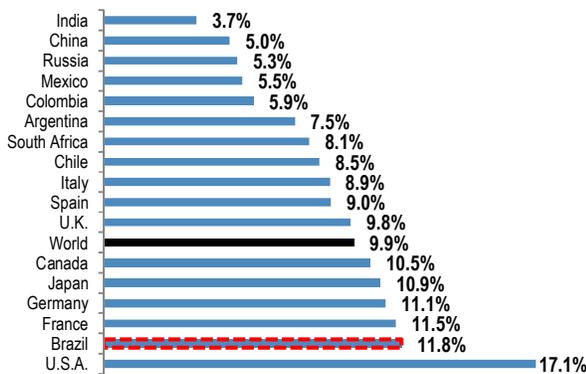
Source: Bloomberg, Company reports and J.P. Morgan estimates. Priced as of February 7, 2020

Healthcare

Joseph Giordano ^{AC} and team
 (55-11) 4950-3020
 joseph.giordano@jpmorgan.com
 Banco J.P. Morgan S.A.

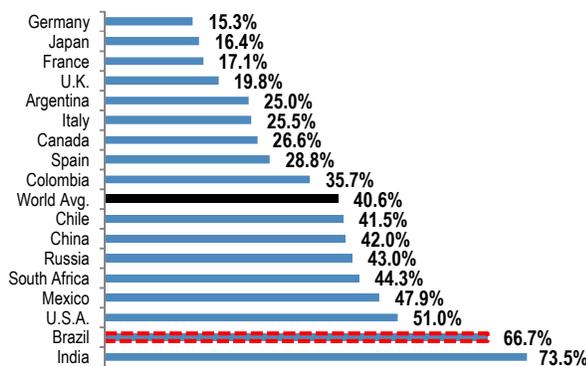
Overburdened public universal healthcare system. Brazil has a universal healthcare system, and public healthcare services are a right granted by the constitution. However, the public healthcare system is overburdened, as budget constraints limit investments. As a result, people often have to wait months for exam results and to get simple and critical surgeries and procedures. Moreover, ~67% of health expenditure in Brazil is private, while just about 22% of the population is part of the private healthcare system.

Figure 274: Healthcare Expenditure as % of GDP (2016)



Source: World Bank and J.P. Morgan.

Figure 275: Private Healthcare Expenditure as % of Total (2016)

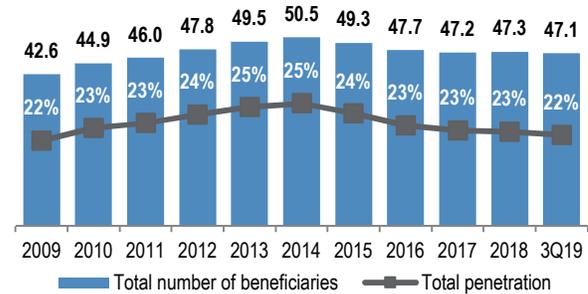


Source: World Bank and J.P. Morgan.

Penetration of private healthcare is still low. Currently, 22% of the population is covered by private healthcare plans, a number that is down from its peak of 25% in 2014. Also, just ~12% enjoy dental coverage through plans, but the lower figure is expected given the high affordability of dental services out-of-pocket. Still, those penetration figures compares with 87% in the U.S. for health coverage and 60% for dental.

Figure 276: Private Healthcare Market in Brazil

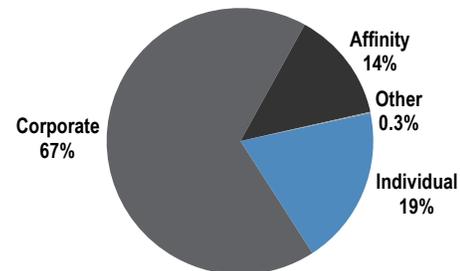
Millions of beneficiaries/% of the population



Source: ANS and J.P. Morgan.

The private healthcare market has been closely tied to formal job creation. Corporate plans represent about 67% of the sector. Thus, job creation is a major market driver. On the positive side, net job creation is back to the positive territory and unemployment rates are lowering. Such movements are structurally positive for the private healthcare sector growth. Still, we expect the reflection of such movement into healthcare member base growth to be gradual.

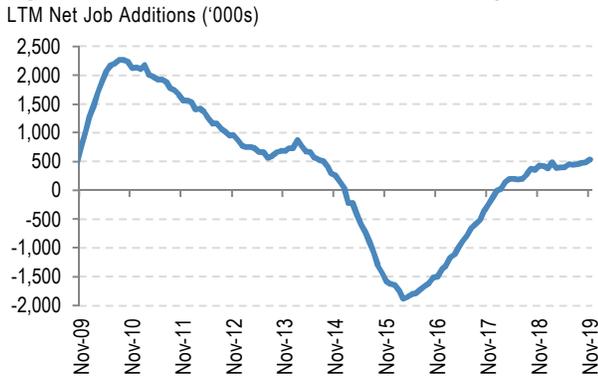
Figure 277: Private Healthcare Plans by Type



Number of Private Healthcare Beneficiaries (3Q19) = 47.1mn

Source: ANS and J.P. Morgan.

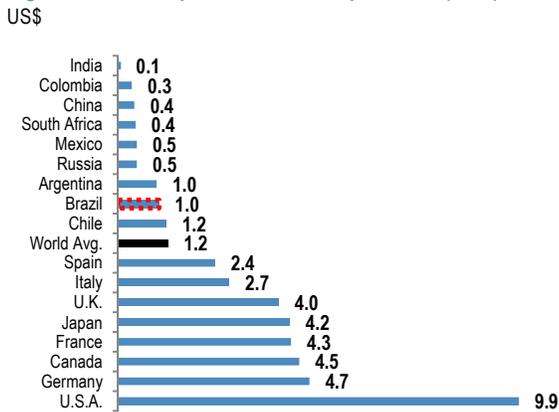
Figure 278: Job Creation back to the positive territory



Source: MTE/CAGED.

Still-low healthcare expenditure per capita in Brazil. Healthcare expenditure per capita stands at about US\$1k per year (2016), slightly below the global average of US\$1.2k and substantially lower than in developed countries, including those with universal healthcare system. Thus, we believe there is potential for higher healthcare expenditure, particularly as the private system grows.

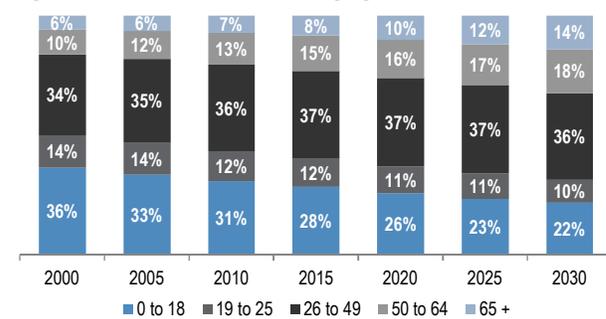
Figure 279: Per Capita Healthcare Expenditure (2016)



Source: World Bank and J.P. Morgan.

Aging population is a key expenditure structural driver. Based on population forecasts, the percentage of inhabitants aged 65+ is expected to double and reach 14% of the total from 2010 to 2030. Older populations lead to higher demand for healthcare services and drug prescriptions. In our view, this is a major opportunity for the sector as a whole. However, this may become a risk for managed care organizations (MCOs). Current regulation sets forth 59+ years old as the oldest age band, and this population tends to have higher average medical loss ratio (MLR).

Figure 280: Brazilian Population Aging Profile

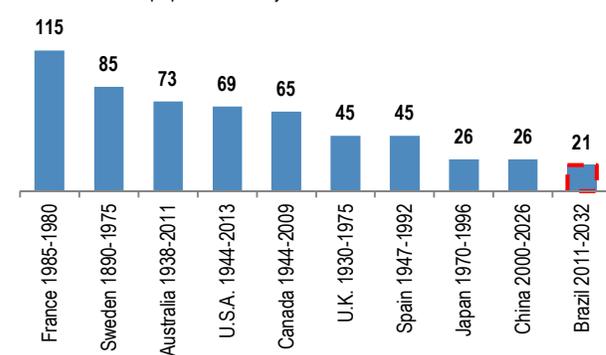


Source: IBGE 2013 Projections.

Brazilian population is getting older at a faster pace than what was seen in other countries. The percentage of inhabitants aged 65+ is expected to increase faster in Brazil than in many other countries, according to the World Bank and IBGE. This process is happening at a significantly faster pace than in developed markets and also in China, where this aging process is expected to take 26 years and end by 2026. As a result, the demand for healthcare services should increase significantly within the next 10 years as the older population tends to need more health services.

Figure 281: Ongoing Accelerated Aging Process

Years to double population +65y from 7% of total to 14%



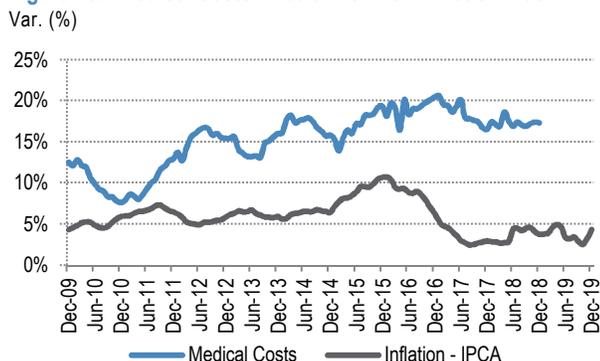
Source: World Bank and J.P. Morgan.

Plenty of room for consolidation in the industry. We have been seeing a heated M&A market for the healthcare sector. Still, the different sub-segments continue to be highly fragmented, and we would expect further M&A, though likely not large ones.

High medical inflation is a key ongoing theme. Medical cost inflation for healthcare plans has been hovering around the mid-to-high teens, 2-3x overall inflation. To cope with the high medical inflation, health plan operators need to increase prices well ahead of inflation to rebuild margins and preserve profitability.

Although a private health plan is a top 3 desire for most Brazilians, high price increases foster the migration to lower-end health plans, meaning lower average premium, or their cancellation, particularly for consumers that are paying for the plan out of pocket. Thus, the high price increases may drive higher revenues in the short-term, but in the mid-term it may start to impair volume growth given the high churn.

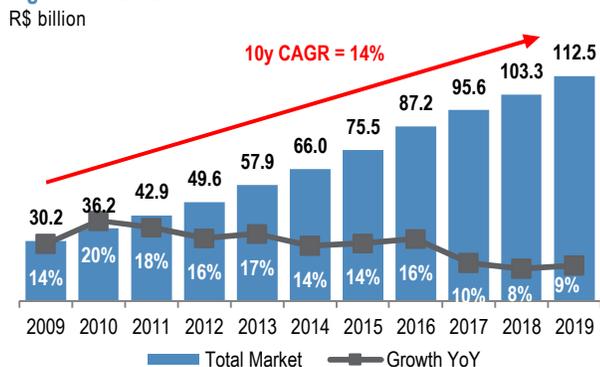
Figure 282: Medical Costs Inflation vs. IPCA Inflation Index



Source: IESS and IBGE.

Pharmaceutical chains are more resilient to the job market. Despite the deterioration in Brazilian consumption scenario seen in the previous years, pharmaceutical products have not experienced any major slowdown. In our view, this stems from its resilient demand, accelerated population aging process and significant consolidation opportunities. Also, different from health plans that are corporate sponsored and too expensive to pay out-of-pocket, drugs are more accessible by individuals, and are already part of the regular consumption habits as a staple.

Figure 283: Brazilian Pharmaceutical Market –sell out



Source: J.P. Morgan estimates, IMS Health.

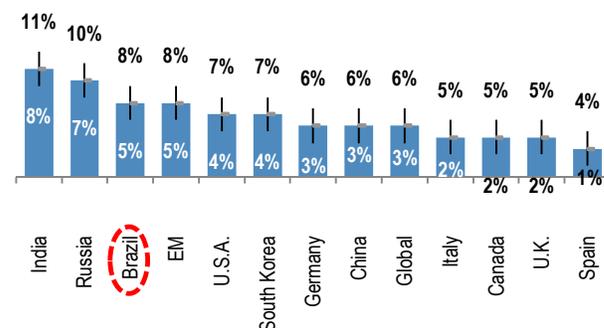
Brazilian market expansion should outpace growth in global market and emerging markets. The global pharmaceutical market should grow between 3% and 6% annually over the next five years, according to IMS Health, below the level expected for the Brazilian market, expected at 5-8%. Moreover, Brazil should grow in-line with emerging market expected growth. Drug sales in EM are forecast to grow between 6% and 9% per year through 2022, driven by the Brazilian, Indian, Russian and Chinese markets.

Table 90: Largest Global Pharmaceutical Markets

Rank	2013	2018	2023	2019-2023E CAGR
1	USA	USA	USA	4-7%
2	China	China	China	3-6%
3	Japan	Japan	Japan	-3-0%
4	Germany	Germany	Germany	3-6%
5	France	France	Brazil	5-8%
6	Italy	Italy	Italy	2-5%
7	U.K.	Brazil	France	-1-2%
8	Brazil	U.K.	U.K.	2-5%
9	Spain	Spain	India	8-11%
10	Canada	Canada	Spain	1-4%

Source: IMS Health and J.P. Morgan.

Figure 284: Global Pharmaceutical Markets expected growth



Source: J.P. Morgan estimates, IMS Health.

Table 91: Brazil's Healthcare Companies under Coverage

Company	Ticker	Rating	Market Cap. (US\$ Million)
Intermédica	GNDI3	OW	10,256
RD	RADL3	N	9,278
Hypera	HYPE3	N	5,520
Qualicorp	QUAL3	OW	2,825
Fleury	FLRY3	OW	2,328
OdontoPrev	ODPV3	UW	2,133
Hermes Pardini	PARD3	N	905
Ourofino	OFSA3	N	521

Source: Bloomberg, Company reports and J.P. Morgan estimates. Prices as of Feb 06, 2020.

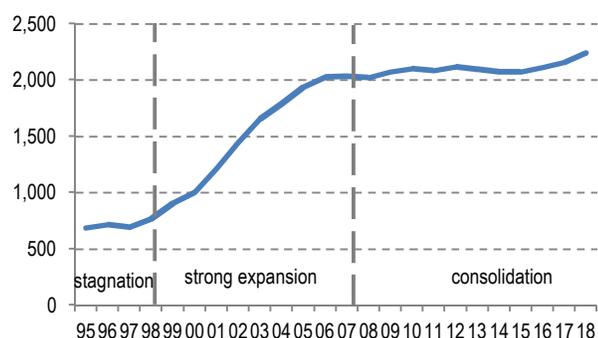
Education

Marcelo Santos ^{AC} and team
 (55-11) 4950-3756
 marcelo.p.santos@jpmorgan.com
 Banco J.P. Morgan S.A.

Historical perspective on for-profit higher education

Brazilian legislation was changed at the end of 1996 to allow for the operation of for-profit private institutions (only non-profit ones were allowed previously). The number of private institutions, which was stagnant prior to the new legislation, expanded sharply from 1998 to 2006, backed by substantial untapped demand for higher education in Brazil.

Figure 285: Number of Private Higher Education Institutions

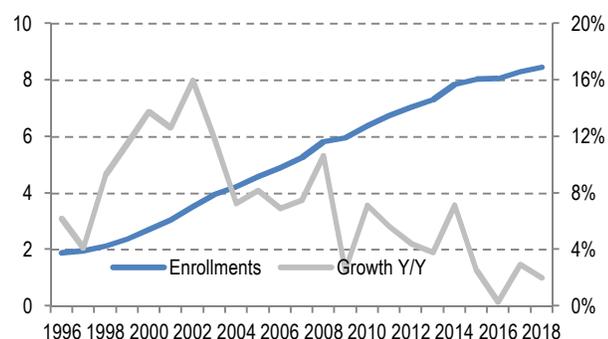


Source: INEP and J.P. Morgan estimates. Including for-profit and non-profit institutions.

Starting in 2004, student growth fell to single-digit rates, and in 2007 a consolidation phase started, led by large educational groups funded by capital markets: Anhanguera's IPO in March 2007, Kroton and Estácio in July 2007, and SEB in October 2007. These groups brought increased managerial capacity and productivity standards to the sector, posting stronger growth than smaller players, both organically and inorganically.

Figure 286: Enrollments Faced a Strong Growth Period After 1996

Million higher education enrollments



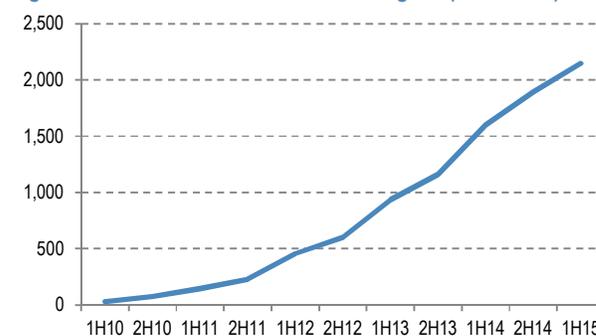
Source: INEP and J.P. Morgan estimates.

Until the end of 2014, the government was very supportive of Education. Two government programs were put in place to foster private higher education growth: PROUNI (scholarships) and FIES (loans). These programs, particularly FIES, were key to continued growth of the sector.

PROUNI: Introduced in 2004, this program offers exemption with respect to income and certain sales (PIS/COFINS) taxes on undergraduate activities for institutions that grant scholarships to low-income students who are selected by the government based on test scores. The program was to last for ten years ending in 2014, but was renewed for another term.

FIES: Reformulated in 2010, this program offers subsidized loans for low-income students at nominal interest rates of 3.4% (c. -3% real on average) and a long amortization period of 3x the course length, after a grace period of 18 months. Only institutions meeting certain quality requirements qualify for the program. Companies contribute 5.6% of their FIES revenues to a guarantor fund (FGEDUC), which should make up for 90% of FIES delinquency.

Figure 287: Cumulative FIES Contracts Signed (thousands)

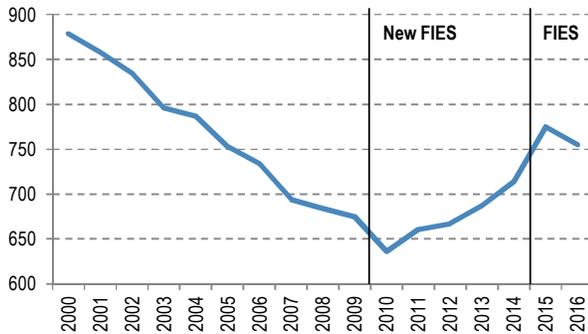


Source: MEC and J.P. Morgan estimates. Since the reformulation of FIES in April 2010.

Following FIES, the industry saw a reversal in the declining trend of tuition, which started to see real gains after 2010, only to halt when FIES was cut in 2015:

Figure 288: Tuition Increased When FIES Was Introduced

Average campus tuitions, deflated to 2016 by IPCA



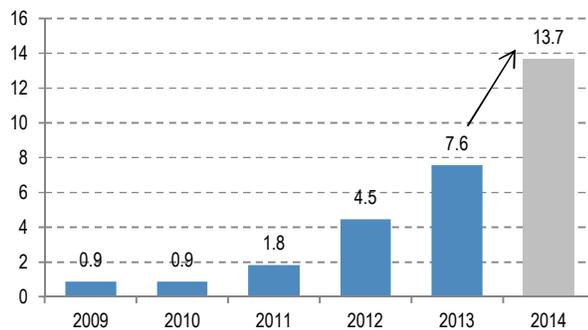
Source: Hoper, IBGE and J.P. Morgan estimates.

Drastic policy shift took place after 2014

The government started a drastic (and unannounced) review of its student loan program at the end of 2014, initially due to budgetary constraints over FIES budget, which was increasing at a fast pace.

Figure 289: Expenditure with FIES

R\$ billion

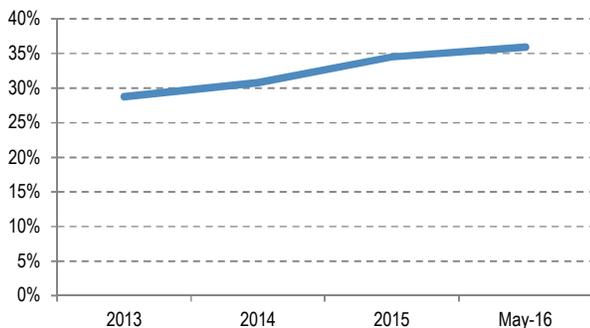


Source: SIAFI and J.P. Morgan estimates.

Later on, surging bad debt (36% late contracts by 60d+) added to concerns.

Figure 290: High Bad Debt Levels at FIES

% of FIES contracts in amortization phase late more than 60 days



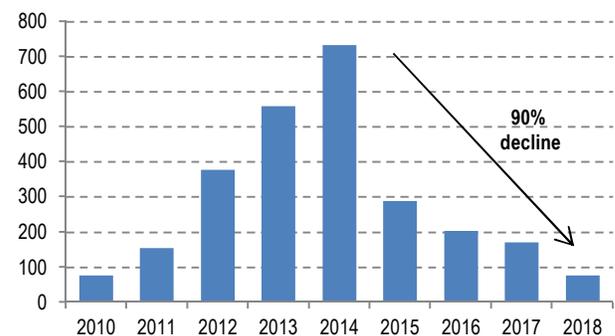
Source: Federal Audit Court and J.P. Morgan estimates.

There was substantial regulatory uncertainty during 2015, with limited transparency and discussion on new initiatives implemented, several of which were reverted afterwards, including a delay in FIES payments for large institutions (limited to the year of 2015) and price controls (only valid for 2H15, initially at 4.5% y/y, then 6.41%, and last eliminated). Other initiatives were kept, including a limitation on the number of FIES seats per semester, according to the approved budget, a prioritization of North/Northeast/Centerwest regions and a minimum score in ENEM (national high school exam).

There was a sharp contraction in new FIES loans offered, down 76% in 2017 vs peak levels in 2014.

Figure 291: Supply of new FIES loans declined significantly

New FIES loans



Source: FNDE and J.P. Morgan estimates.

In 7-Jul-17, government submitted a Provisionary Measure (MP 787/17) to congress with a complete redesign of FIES valid for 2018 and onwards that is still being debated by congress:

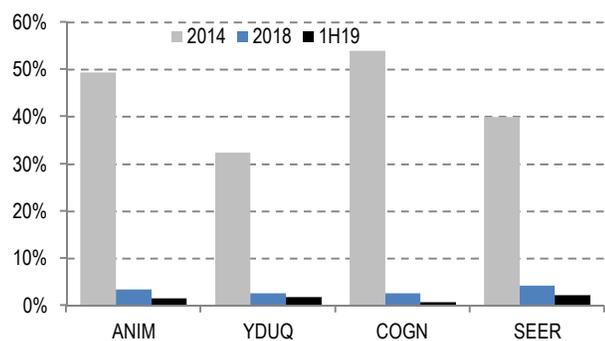
- **Companies and banks take most of the risk.** Previously, companies contributed 5.6% of FIES revenues to a guarantor fund and were responsible for 15% of bad debt. Under the new rules, the government will make a one-off R\$2bn contribution to a guarantor fund, and companies/banks will be responsible for the remaining bad debt, with the role of the government limited to providing subsidized funds.
- **New sources of funding include** regional development funds, the BNDES, besides the Treasury, which was the sole source before.
- **Direct deduction of salaries**, which should apply to part of the new FIES contracts funded by the Treasury, is limited to 10% of wages.

Please refer to our [report](#) published on 9-Jul-17 for more details on the new proposed FIES rules.

Companies have been able to cope with FIES cuts

While listed companies had a high dependence on FIES, with Cognia and Ser having 40% or more of their new students coming from the program, they were able to cope with fewer FIES loans by means of private loan programs, more aggressive marketing and price discounts.

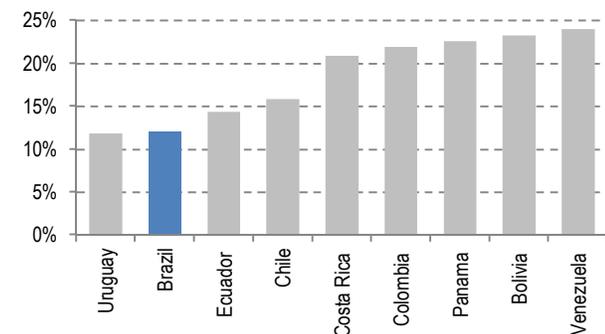
Figure 292: Companies Were Able to Replenish Lost FIES Intake
 FIES as % of new students



Source: Company reports and J.P. Morgan estimates.

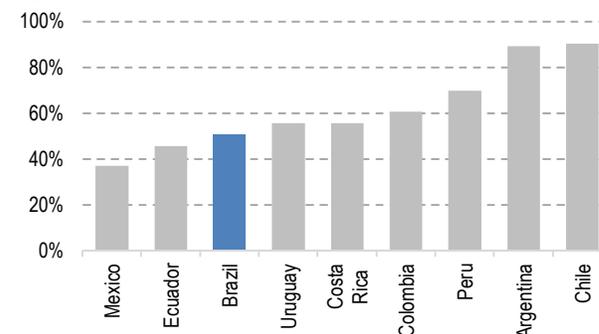
Where Brazil stands vs. peers in higher education. We see significant room for growth for the sector going forward. Despite substantial growth in enrollments since 1997, Brazil still significantly lags other countries in terms of higher education, both in terms of percentage of population with a higher degree as well as in terms of current enrollment ratios. The labor market reflects this shortage in supply of skilled personnel, with a substantial salary premium for those with degrees.

Figure 293: % of Population (25y+) with Higher Education (2015)



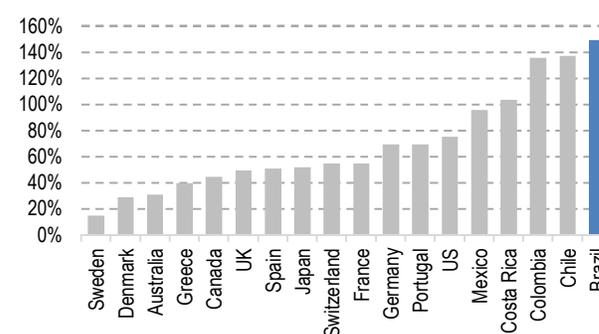
Source: Company reports and J.P. Morgan estimates.

Figure 294: Gross Enrollment Rate (GER), 2015



Source: UNESCO and J.P. Morgan estimates. GER = total enrollments/pop aged 18-22y, according to UNESCO definition.

Figure 295: Salary Premium of Graduates vs. Unskilled Labor

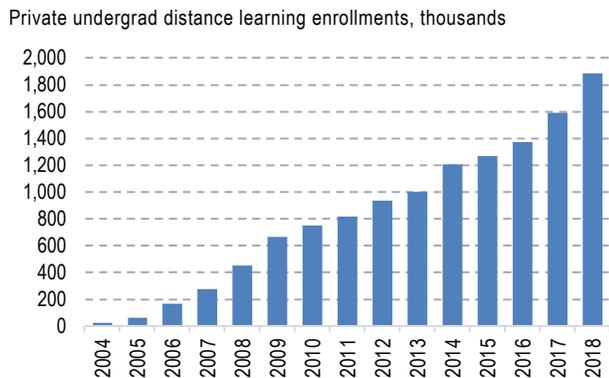


Source: OECD (2018) and J.P. Morgan estimates.

Distance Learning: Opportunities and Risks

In May 2017, the Brazilian government introduced new rules for distance learning education (please refer to our 26-May-17 [note](#)), easing its expansion by the elimination of the requirement for audit visits in each new unit opened, while prioritizing institutions with the highest scores. Distance learning represented 30% of private enrollments in Brazil during 2018 and is growing at a faster pace than campus enrollments (14% CAGR '15-18 vs -2%), which should only increase with new distance learning regulations and more limited FIES support for campuses.

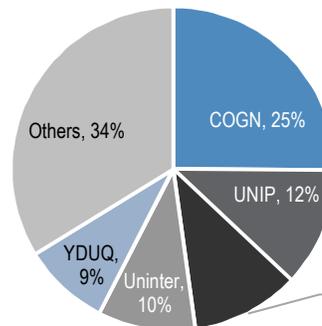
Figure 296: Distance Learning Enrollments Growing at a Fast Pace



Source: MEC/INEP and J.P. Morgan estimates.

The market is currently highly concentrated, with the top five players representing 65% of total enrollments. However, competition became more intense in the last 3 years, with the sector leader Cogna losing 12pp market share from 2015-18, harming margins and top line growth. On the other side, this presents opportunity for smaller players such as Ser to establish itself in the segment.

Figure 297: Distance Learning Is a Highly Concentrated Market
 % of private distance learning students, 2018



Source: MEC/INEP and J.P. Morgan estimates.

Outlook and views on stocks

The short-term outlook remains challenging due to high unemployment rate, although some recovery was already noted in 2H19 intake cycle, setting a more positive tone for a better 2020. Moreover, 2020 should be the last year with significant FIES deleveraging impact, removing this overhang from the sector. In the long-run, we expect demand to normalize, given that graduates enjoy a 120% salary premium to non-graduates, and are much less likely to become unemployed.

Food

Lucas Ferreira ^{AC} and team
(55-11) 4950-4217
lucas.x.ferreira@jpmorgan.com
Banco J.P. Morgan S.A.

Global protein powerhouse. Brazil is the world's #2 poultry producer by volume and #1 exporter with a ~30% share in global trade. The country ranks as the second-largest beef producer after U.S. and the #1 exporter surpassing India over the past two years with ~20% share. Last but not least, Brazil is the world's #4 pork producer and exporter.

Table 92: Brazilian Volumes in Poultry, Beef and Pork

'000 tons	Production	Consumption	Exports
Poultry	13,635	9,925	3,715
Beef	10,225	7,914	2,356
Pork	3,975	3,8117	860

Source: USDA (2019E).

The basic ingredients that led to this leadership position are a combination of natural resources (abundant land, water and therewith also grain, cattle) with ambitious entrepreneurs and government support, be it via capital deployment or policy to foment growth and open trade.

Brazil's largest and fastest-growing food category. Protein (and its derivatives) sales reached R\$145bn in 2018, having increased at a CAGR of ~10% since 2010, slightly above the food industry pace.

Table 93: Brazil Food Industry Size

Food industry sales (R\$bn)	2010	2018	10-'18 CAGR
Protein derivate	66	145	10.4%
Coffee, Tea and cereals	36	67	8.1%
Sugars	38	35	-1.1%
Dairy	33	69	9.6%
Oil and fats	29	52	7.5%
Wheat derivate	20	37	8.0%
Fruit and vegetables derivate	16	32	9.1%
Other	37	84	10.8%
Total Food Industry Sales	275	521	8.3%

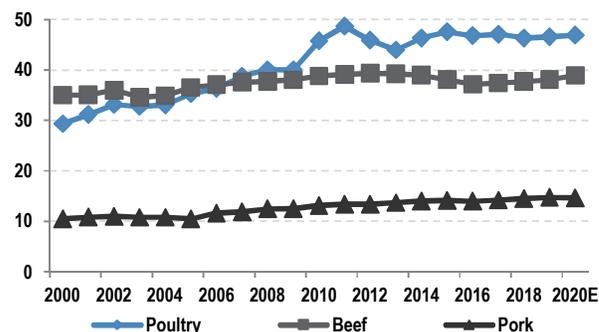
Source: ABIA.

Domestic protein consumption growing faster in poultry. Poultry surpassed beef as Brazil's most consumed protein in 2007. Its faster growth pace can be attributed to relatively lower poultry inflation and health concern trends, both likely to continue. Beef production costs are likely to structurally rise above those for poultry on the underlying costs related to land price appreciation and rancher formalization, especially to supply cattle for export beef. Pork consumption in Brazil lags that of other proteins, which we attribute to traditional preferences

(pork is mostly consumed via its derivative products in BZ), but this could change.

Figure 298: Brazilian Protein Volume Consumption Evolution

Per capita consumption (kg/year)

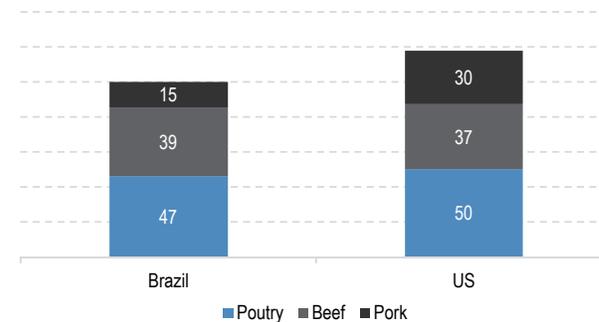


Source: ANS and J.P. Morgan.

High per-capita consumption levels; focus of further processing protein. Brazilian per capita consumption in beef and poultry is relatively high. Brazilians consume on average 39kg beef/year, similar to average American, for example. In poultry, Brazilians consume 47kg/year, also similar to Americans. Companies are thus increasing further processing into branded value-added products, looking to augment value and elevate margins.

Figure 299: Per-Capita Protein Consumption in Brazil Is Elevated in Poultry and Beef, Not Yet in Pork

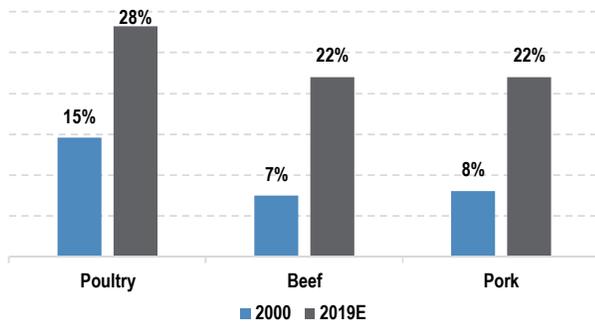
Per capita protein consumption (Kg/year)



Source: USDA (2019E) and J.P. Morgan estimates.

Exports should continue gaining relevance. Poultry export volumes are projected to increase from 15% of total production in 2000 to almost 30% in 2019E. The evolution in beef is more significant, from 7% to 22% in 2019E.

Figure 300: Export Volumes as % of Total Production in Brazil



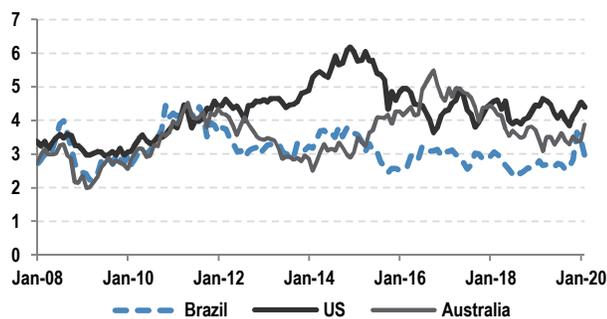
Source: USDA.

According to USDA forecasts, Brazil is likely to continue growing export volumes at rates above those for other major exports in the next decade.

Long-term opportunity to grow sustainable beef production. Brazil shows ample room to increase sustainable beef production via pasture and animal productivity gains. Both metrics can be grown by greater technological deployment without harm to the environment, helping Brazil gain competitiveness, credibility and therewith share of global trade. This potential must be jointly addressed by ranchers, meatpackers, and government agents. Higher sanitary and environmental standards are key for trade. Despite having competitive costs, Brazil currently does not export beef to some relevant global importers (i.e., Mexico) due to its low level of sanitation.

Figure 301: Brazil's Cattle Costs Are Generally Competitive

Cattle costs among world's main commercial beef exporters (\$/kg)

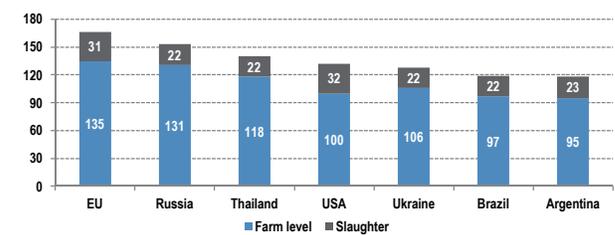


Source: USDA, ESALQ, EYCI.

Brazil is also competitive in poultry production and has captive markets. Brazil and the U.S. lead global poultry exports with a combined ~60% share. Both have similar production costs, with a small advantage in Brazil coming from the slaughter part of the process, as grain costs are similar. Export volumes for both have been moving in a similar manner, with the exception of 2015, when U.S. exports decreased. Both countries largely export to different countries. While the U.S. exports mainly to Mexico, Angola and Canada, Brazil ships mainly to Asia and the Middle East.

Figure 302: Brazil Has Similar Poultry Production Costs as the U.S.

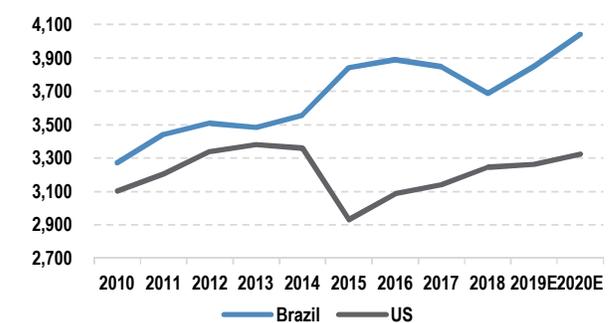
Broiler production and slaughter costs EUR/kg)



Source: Research paper published by Wageningen University, Netherlands; P.L.M. van Horne; N. Bondt; Dec'13.

Figure 303: Brazil and the U.S. Have Been Growing Poultry Exports

Poultry export volumes ('000 tons)



Source: USDA.

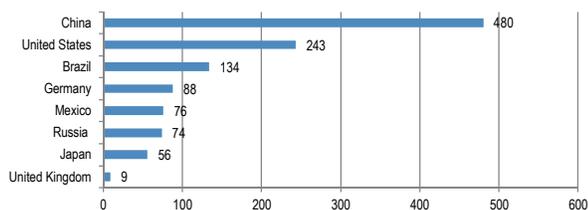
Beverages

Lucas Ferreira ^{AC} and team
 (55-11) 4950-4217
 lucas.x.ferreira@jpmorgan.com
 Banco J.P. Morgan S.A.

Brazil – the world’s #3 beer market. With ~135mn HL/year, Brazil is the world’s third largest beer market, behind only China and the U.S. It accounts for 7% of the global volume pie and ~40% of beer sold in Central and Latin America and the Caribbean.

Figure 304: Brazil Is Amongst the World’s Largest Beer Markets

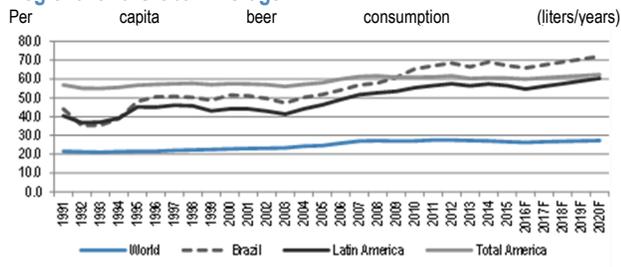
Global beer market volumes (mn HL, 2016E)



Source: Plato Logic

Elevated per-capita consumption levels. Per-capita consumption in Brazil in 2016F was 66 liters, ahead of the global average of 26 liters and the Latin America average of 55 liters, having increased with 2000-16 CAGR of 1.6%. Beer consumption per head is expected to continue to increase in the country, with 2016-2025F CAGR of 1.4% versus 0.8% worldwide and 1.6% for Latin America.

Figure 305: BZ Beer per Capita Consumption Has Overtaken the Regional and Global Average

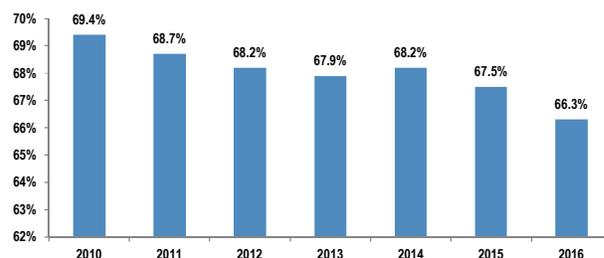


Source: Plato Logic

Market led by Ambev, an Anheuser-Bush-Inbev subsidiary. Ambev represents ~65% of Brazil’s beer volumes with leading mainstream (Brahma, Skol, Antarctica) and still-developing global premium brands (Budweiser, Stella Artois). Other relevant players include Heineken (~20%) and privately held Grupo Petropolis (~10% share).

Figure 306: Ambev Has Leading Market Share in BZ Beer

Ambev volume market share in Brazil beer



Source: Company presentations.

Returnables increasing off-premise affordability and margins. Off-premises (i.e., supermarket) have likely been gaining share over on-premises (i.e., bars) in Brazil over the last few years due to relative inflation trends as well as tougher economic conditions. Drinking in a bar can cost up to 2x as much as buying the same beverage in a supermarket. This trend brings a margin and return challenge for beer companies. In an effort to capture volumes from retailers, and at the same time be more competitive and retain profitability, returnable package efforts inside of supermarkets were resumed a few years ago. Off-premise returnables are a win-win for beer companies/consumers. Consumers pay today ~20-30% less per liter, and beer companies increase profit per liter vs. if the same content were sold via a one-time use package.

Electric Utilities

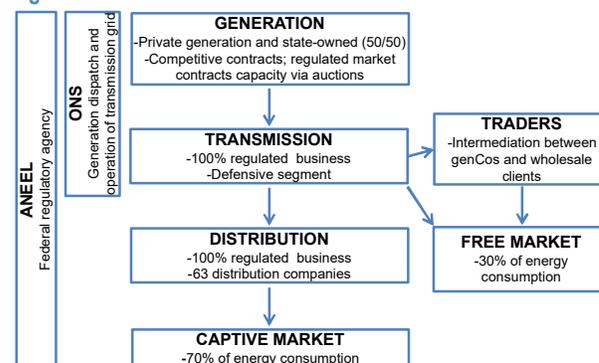
Fernando Abdalla^{AC} and team
 (55-11) 4950-3463
 fernando.abdalla@jpmorgan.com
 Banco J.P. Morgan S.A.

The Brazilian government sets the rules of the game through the National Council of Energy Policy (CNPE), the Ministry of Mines and Energy (MME) and the Electric Sector Monitoring Committee (CMSE), all of them under the umbrella of the President. Government agents define the energy policy, regulation, centralized dispatch/ operation and the commercialization of power in the country. Planning, operation and transaction accounting are undertaken by public companies and non-profit private companies.

The sector is segregated into three segments: generation, transmission and distribution. The commercialization segment, highly pulverized, is an intermediary between generators and customers. The first electric utilities were mostly publicly owned (controlled by the Federation or the states). The breaking-up of the sector started in the 1990s under a new economic and political agenda and, most importantly, post the publication of the “Concessions Law” in 1995. Several state-owned companies (or parts of them) were privatized at the end of that decade. By then, the regulatory model for generation was liberal, competitive and driven by market forces. Transmission and distribution utilities have always been natural monopolies, and hence largely regulated since their inception.

2001 power rationing was a landmark. In June 2001, after one of the driest rainy seasons in history, the Brazilian federal government decreed electricity rationing in Brazil as the only alternative to avoid blackouts and electricity shortages in the country. The government imposed a 20% compulsory reduction in electricity consumption so as to allow the recovery of water storage reservoirs. The rationing affected 80% of the Brazilian population at that time. Although bad hydrology was usually cited as the main cause of the energy rationing, it was not solely responsible for the energy crisis. Insufficient transmission network and back-up thermoelectric capacity also contributed to the crisis. The rationing stimulated huge investments in thermal capacity in the following years as well as the establishment of the New Regulatory Framework of the Electric Sector in 2004.

Figure 307: Power Market Structure



Source: Bloomberg New Energy Finance; J.P. Morgan

ANEEL is the regulatory and supervision agency. Today, electricity generation is partially regulated by ANEEL (free market and regulated market coexist), while electricity transmission and distribution are fully regulated. Generation/trading companies can sign bilateral, unregulated PPAs (power purchase agreements) with free market clients. Generation companies can only sell to distribution companies (captive or regulated market) through government-sponsored, price-regulated, competitive energy auctions. ANEEL implements annual adjustments and periodical resets of transmission revenues and distribution tariffs, according to rules established in concession contracts. Currently, transmission and distribution utilities are regulated by the incentive regime with the sharing of productivity gains with the customers, as opposed to a service cost model.

Table 94: Differences between Types of Consumers

Consumer Demand (MW)	Generation source		
Free	≥ 3.0	Conventional and renewable	Free negotiation
Special	≥ 0.5 and < 3.0	Renewable	
Captive	Any	Distribution companies	No negotiation

Source: CCEE.

The utilities sector is highly affected by politics. Unlike one would presume, the Brazilian utilities sector has posted strong price and earnings volatility in the recent decade due to controversial energy policies, political interference in the renewal of concessions, a power crisis, price and return controls, among others. Although many listed companies are privately run, the political agenda and the election outlook can materially impact utility stocks. In this sense, transmission companies are perceived as the most defensive due to fixed revenues insulated from volume risk. Transmission companies, and generation companies to a lesser extent, are prominent dividend payers due to the nature of their businesses, and hence favored by dividend yield

portfolios. The main example was the issuance of Provisional Measure 579 in 2012, which aimed to allow for a second renewal of expiring generation and transmission concessions. The government proposed a 30-year renewal in exchange for a 70% cut to generation and transmission revenues. Defined compensation for non-depreciated investments was also controversial. The publication of the MP579 led to a 9.5% devaluation in the IBOVIEE index in one month (IBOVESPA +4% in the same period).

Concessions in Brazil are finite. According to the legislation, the federal government (conceding power) authorizes companies (public or private) to operate generation, transmission and distribution assets through concessions. Distribution and transmission concessions usually last 30 years, while generation concessions have distinct periods (30 years for hydro, 15-30 years for thermal, and 20 years for solar and wind). The legislation establishes that concessions are reverted to the conceding power upon the expiration of the concession, and compensated for non-depreciated investments. Many concession contracts allow a first renewal (periods may vary) depending on the government’s discretionary analysis.

BNDES’s diminishing role in sector lending. The Brazilian national development bank (BNDES) has historically played a strategic role in the infrastructure landscape by providing attractive lending conditions through the combination of subsidized interest rates (average of TJLP + 250 bps) and longer amortization periods (which started at 12 years and reached 25 years). The bank is still the go-to resource for new generation projects but since 2015 has been pulling back from transmission projects. The government wants to stimulate new sources of funding for the utilities sector, especially infrastructure debentures.

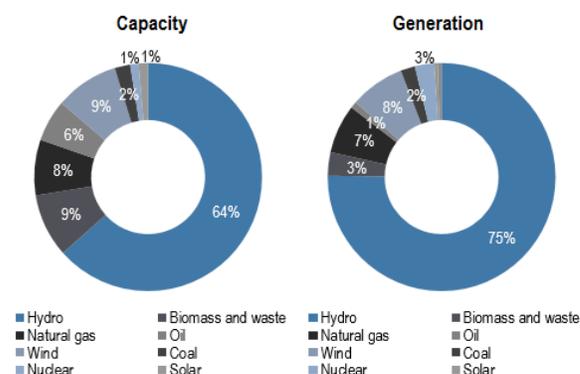
Electricity Generation

This segment is responsible for power output. GenCos generate electricity through hydro, thermal, nuclear, wind, solar and biomass plants and inject the commodity in the transmission network so it can reach the final customer. They get remunerated by the prices set in bilateral agreements with large customers, or by regulated prices set in competitive energy auctions through long-term contracts.

The Brazilian power generation matrix is one of the cleanest in the world. The country has a total installed generation capacity of 153 GW (audited figures as of August 2017), the ninth largest in the world, according to

the Global World Energy Council. About 65% of the capacity relies on hydro power plants, while other renewables (wind, solar) generate another 7%. The total renewable capacity reached 120 GW in 2016, ranking third in the world (Bloomberg New Energy Finance). Thermal plants – coal, gas & diesel-fired, biomass plus three nuclear reactors – represent 28% of the matrix. We highlight that hydro and thermal assets are concentrated in the hands of a few large conventional generators, while the more recent renewable segment is highly pulverized and mostly commanded by private players.

Figure 308: Breakdown of Capacity and Generation – 2018



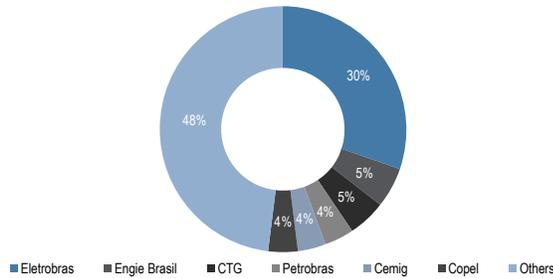
Source: ANEEL (Dec 2016 data), ONS, Bloomberg New Energy Finance, J.P. Morgan.

Brazil is home to two of the three largest HPPs. The country is a global benchmark when it comes to large hydro power plants. Binational Itaipu HPP (14 GW) and Belo Monte HPP (11.2 GW, under construction) are the second and third largest hydro dams in the world. Another iconic project is Tucuruí (8.4 GW). All of them are operated by Eletrobras.

State-owned generation companies still dominate the industry. The segment is rather pulverized, but federally owned Eletrobras is still the largest power generator in Brazil, holding 31% of the total installed capacity. The company also holds the monopoly of nuclear generation as per legislation. There are other bulky state-owned players such as Cemig, Cesp, Copel (8.5% combined share) and Petrobras (controls the majority of the thermal generation park, or 4.2% of total capacity). China Three Gorges (5% share) recently bought large existing power plants that were re-auctioned by the government and is actively engaged in consolidating other power plants that should be re-auctioned in the near future. Among private IPPs, we highlight Engie Brasil as the largest.

Figure 309: Market Share of the Largest Power Generators

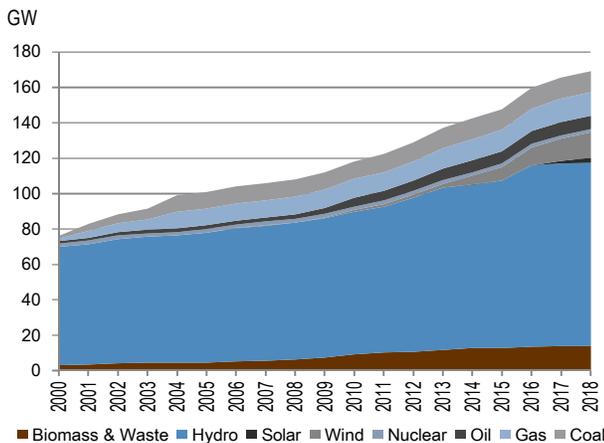
As a percentage of national installed generation capacity



Source: ANEEL, J.P. Morgan.

Power plants are built ahead of demand. New greenfield generation projects are tendered in the so-called “A-4” and “A-6” energy auctions, with plans to contract new capacity 4 and 6 years before the initial delivery date, respectively. The government also carries out reserve energy auctions dedicated to renewable sources, aimed to provide back-up capacity to the system.

Figure 310: Evolution of the Generation Capacity



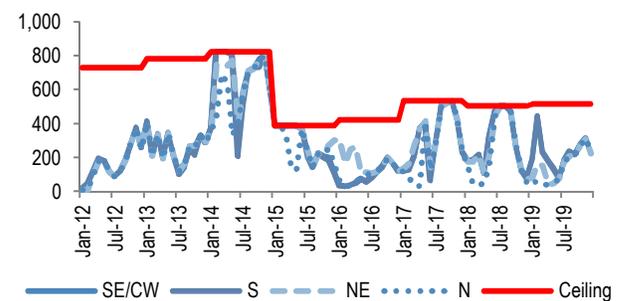
Source: ANEEL, Bloomberg New Energy Finance, J.P. Morgan.

Hydro output losing ground in the power matrix for wind and solar. Hydro generation used to dominate the electricity matrix for decades but has been losing space more recently due to the 2013-2015 water crisis, the heavy deployment of renewable sources (wind and, increasingly, solar) and the higher dispatch of thermal plants to withstand climate change conditions. Moreover, most of the hydro power plants that were built recently are run-of-the-river (i.e., lack storage reservoirs). Last, but not least, the country has embraced a strong stance toward renewable sources with the introduction of wind power auctions in 2009 and solar power auctions in 2014. Brazil, which boasts one of the cleanest energy matrixes in the world, should become even cleaner.

The Supply x Demand Balance looks sound. Between 2014 and 1H2015, Brazil faced severe electricity shortage risks that led spot prices to ceiling levels and a hydro-generation deficit (negative generating scaling factor, or GSF) to reach 9.3% and 15.8%, respectively. The disturbing conditions resulted from one of the driest rainy seasons in history, combined with record-high temperatures during the summer that boosted peak consumption and caused a sharp depletion of the main reservoirs in the SE/CW and NE regions.

Figure 311: Average Spot Price Evolution

In R\$/MWh

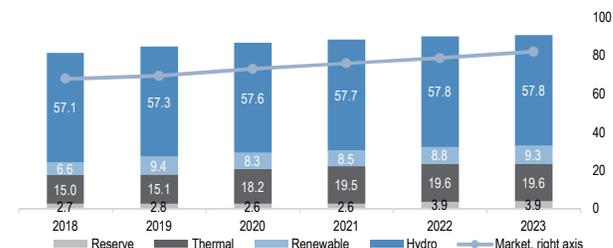


Source: CCEE.

The Supply x Demand Balance looks sound. Between 2014 and 1H2015, Brazil faced severe electricity shortage risks that led spot prices to ceiling levels and a hydro-generation deficit (negative generating scaling factor, or GSF) to reach 9.3% and 15.8%, respectively. The disturbing conditions resulted from one of the driest rainy seasons in history, combined with record-high temperatures during the summer that boosted peak consumption and caused a sharp depletion of the main reservoirs in the SE/CW and NE regions. However, 2016 brought relief: abundant rainfall combined with the economic recession that kept power consumption from surging

Figure 312: Power Supply x Demand Balance

In GW average

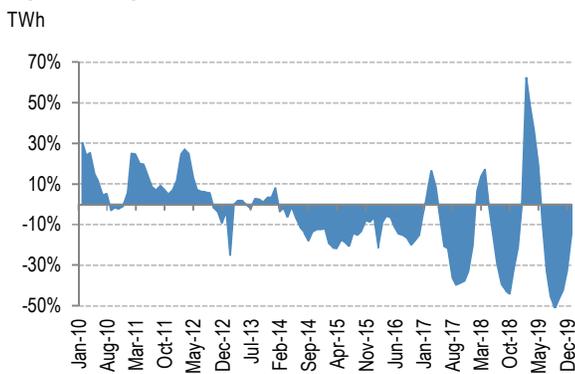


Source: ANEEL, ONS and J.P. Morgan estimates.

GSF <1.0x (or hydro generation deficit) is recurring. Hydro generation deficits became an issue in 2013 and repeated in the following years. The generation scaling

factor (GSF) measures the ratio between actual hydro output and contracted firm capacity. GSF below 100% means that all hydro plants inscribed in the MRE condominium cannot generate their global firm capacity, implying a deficit that must be covered by thermoelectric generation. The (apparently) structural change in climate conditions, combined with greater renewable and thermal generation, should continuously “force” hydro plants to operate below potential (and to continuously save as much water as possible), producing hydro generation deficits in the MRE on a sustainable basis.

Figure 313: Hydro Generation Surpluses/Deficits



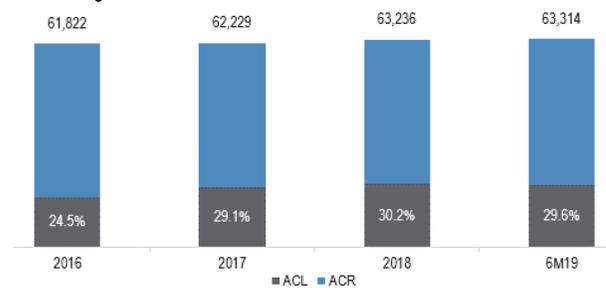
Source: ANEEL, J.P. Morgan.

Spot price volatility increasing. The commercialization chamber CCEE calculates the spot price per region for each consumption category (low, medium and high) on a weekly basis. At the end of 2014, the government cut the ceiling of the spot price to R\$388/MWh from R\$823/MWh, mitigating GSF losses to the hydro genCos. After the above-average hydrology witnessed in the 2015/16 rainy season, electricity reservoirs replenished materially and thermal plants were gradually shut down, leading spot prices to plummet in all regions in early 2016 towards the floor level of R\$30.25/MWh.

Client migration to the free market. With the strong decline in power prices in the free market during 2015, reflecting the weak economic activity and solid hydrology, several industrial and commercial clients that were previously supplied by distribution companies (captive market) decided to migrate to the free market to sign bilateral contracts with generators or trading companies at lower prices. The gap between prices in the regulated and in free markets currently reaches levels of 30%.

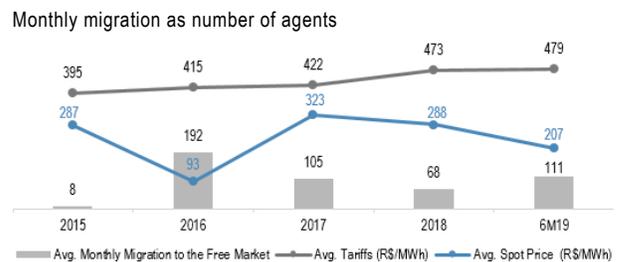
Given that special consumers buy energy exclusively from incentivized, renewable generation sources (small hydro-power plants, wind farms, solar PV and biomass), their significant migration from captive to free market has been widening the gap between power prices from conventional and renewables sources. The premium to renewables that in the recent past was ~R\$15/MWh has reached ~R\$50/MWh.

Figure 314: Participation of the free market in all power consumption
 MW Average



Source: CCEE, J.P. Morgan.

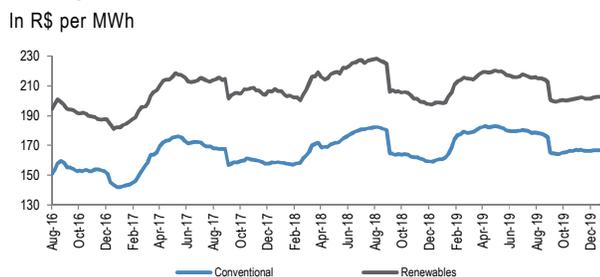
Figure 315: Migration to the free market



Source: CCEE, J.P. Morgan

Long-term power prices stabilized at R\$150/MWh. Companies and sector agents continue to indicate that forward prices for long-term bilateral PPAs (power purchase agreements) continue to hover around R\$150/MWh. This results from the fact that the Brazilian economy hasn't been growing strongly and that the Supply x Demand balance remains comfortable. Nonetheless, PPA prices for the coming months are higher – around R\$200/MWh – denoting greater uncertainty with short-term hydrology and below-average reservoir levels.

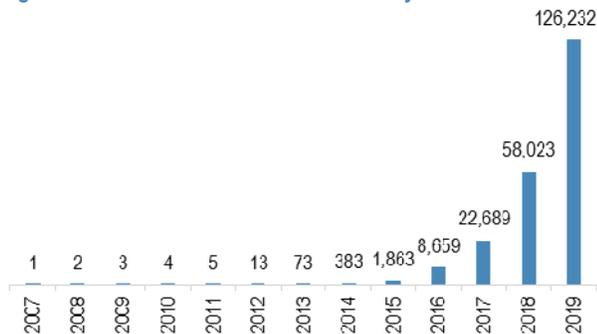
Figure 316: Prices for New Wholesale Contracts - Forward Looking



Source: Dcide

Distributed (micro) generation growing rapidly in Brazil. This refers to power generation at the point of consumption, in other words, when retail residential and commercial clients install their own generation systems. The spread of distributed generation facilities – mostly the installation of solar PV panels in households and commercial buildings – started to accelerate in Brazil as consumers sought shelter from rising electricity rates. The Brazilian legislation already allows consumers to abate their power invoices with their on-site generation (up to 75kW and based on renewables). Micro generation units already sum more than 1 GW installed capacity, as per ANEEL.

Figure 317: Number of Micro Generations Systems



Source: Brazilian Association of Distributed Generation, ANEEL

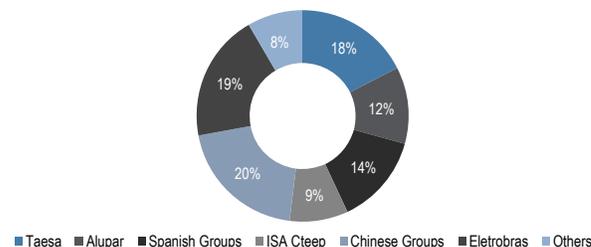
Electricity Transmission

Transmission companies connect generation companies and distribution customers. They transport large amounts of electricity produced by generation companies through high-voltage lines (i.e., above 230kV). The National Interconnected System (SIN) is a 141,000-kilometer continental grid that links the four subsystems in Brazil: South, Southeast/Center-West, Northeast and North. The SIN transports about 98% of the entire electricity volume generated and transitioned in Brazil; the remaining 2% is confined to “isolated systems” in the Amazon region in the North of Brazil.

This grid is one of the most extensive in the world. Power generation and transmission are operated and managed by the National Dispatch Administrator (ONS), an entity regulated and supervised by ANEEL

Figure 318: Largest Transmission Operators

As a % of total Annual Permitted Revenues

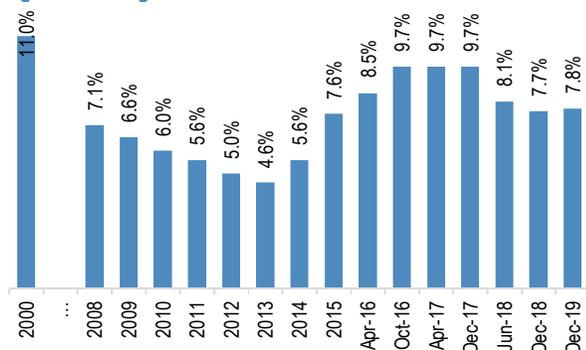


Source: ANEEL, J.P Morgan

State-owned players still dominate the industry in terms of length of the lines. Similar to generation, the transmission segment is fragmented. Eletronbras holds approximately 50% of the transmission capacity, but younger players own new lines that enjoy higher revenues.

From 2000 to 2013 we saw a continuous decline in target return rates for transmission projects in Brazil, denoted by the successive narrowing of regulatory WACC to calculate maximum allowed revenues for the transmission tenders. This downward movement was exacerbated by stiff competition from state-owned companies (mainly through Eletronbras), Spanish groups with low required return rates, and national construction companies. At that time, those two drivers, combined with the improving economic outlook (notwithstanding the 2008-09 financial crisis), were to blame for descending returns for most of the hydro-generation and transmission projects. The steep competition for infrastructure projects in a growing Brazil, in addition to rising environmental and execution risks, drove returns of greenfield projects to unappealing levels that reached ~3% equity IRRs for some transmission lines tendered between 2012 and 2013.

Figure 319: Reg. WACC for Transmission Auctions



Source: Companies, ANEEL and J.P Morgan. Note WACC in R\$ post-tax.

Inflection point occurred in 2014. Allowed, implicit returns in the tenders achieved such low and unsustainable levels that transmission tenders carried out in 2013, 2014 and 2015 printed record of bid absences. This was a clear market signal that the government had undermined the attractiveness of the transmission segment in Brazil, and only a few were willing to embark in new projects at arguably suboptimal returns. In 2015 transmission tenders were further jeopardized by lack of funding.

Government was forced to hike the WACC and consequently elevate project IRRs. Given the need to expand the breadth of the grid, to connect Amazon-based hydro projects to the Interconnected System (SIN), and to boost the exchange capacity among the subsystems to mitigate rationing risks in the future, the government hiked sharply the WACC for new transmission projects in 2014-2015 and consequently promoted higher equity IRRs for investors. From 2017 onwards, the cap return has been falling *pari passu* with the Selic rate.

Competitive environment is changing. The firepower of those aggressive giants is exhausted. Eletrobras was highly affected by Provisional Measure 579 in 2012 (~70% cut in G&T revenues), the 2014-15 drought, CapEx overrun in large greenfield projects (Belo Monte, Santo Antonio, Jirau, Angra 3) and delayed indemnification for the residual value of RBSE assets. Abengoa and Isolux filed for bankruptcy protection in Spain. State-owned Brazilian integrated utilities Cemig and Copel are also retracting. State Grid is dealing with CapEx overruns and delays in its Amazon-based transmission lines. In this context, domestic transmission, high-quality TransCos and newcomers from a number of backgrounds are now entering the transmission segment.

Indemnification of RBSE is a key sector issue. Reflecting concern that transmission companies

excluding Eletrobras would reject the renewal deal in September 2012, the Brazilian government stepped back. Another Provisory Measure (PM591) was issued in November 2012, stating that the government would also pay the compensation for non-depreciated investments tied to RBSE (a complete reversal vis-à-vis the original PM579). The MP language said that companies would receive this yet-to-be-calculated replacement cost-based indemnification via tariffs over a 30-year period, indexed annually by IPCA inflation (i.e., with zero real interest rates). This was still not enough to convince companies to accept the deal, as IPCA-only would not fairly cover their cost of capital. Government officials reportedly committed verbally to CTEEP, Cemig and Copel that the compensation would be paid in 30 years with IPCA + 4% p.a. interest rates, compelling the companies to accept the deal. After that, transCos presented to ANEEL evaluation report for RBSE, calculated with replacement cost methodology using average prices of the past five years (as opposed to spot capex prices).

The federal government finally set the terms for RBSE indemnification in April 2016. The Ministry of Mines and Energy (MME) established the terms and conditions for the indemnification of RBSE assets. The document specified the following: (i) the compensation value homologated by ANEEL will compose the Regulatory Asset Base of transmission companies entitled to compensation for residual value of RBSE; (ii) the indemnification, retroactive from Dec-2012, will be incorporated to the RAP (regulatory revenue base) and monetarily adjusted by IPCA inflation plus the regulatory Cost of Equity of transCos until July 2017 – we understand that the Cost of Equity is the 10.45% (real) embedded in the regulatory WACC of 6.64% (real post-tax); (iii) the payment will be made in installments, to be cashed in via tariffs and net of taxes. The installments will be annually adjusted by IPCA inflation + regulatory WACC (real) between July 2017 and July 2025 (8 years), which is the WACC defined by ANEEL in the periodic tariff reset of transmission companies. We believe MME is talking about a WACC of 6.64%. The total amount of compensation to all eligible transmission companies (mostly Eletrobras, ISA CTEEP, Copel and Cemig) sums to R\$62.5bn.

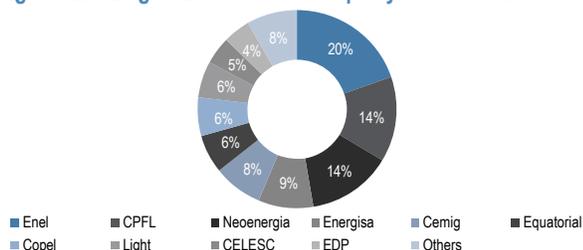
Free customers were granted an injunction against RBSE payment: In June 2017 regulatory agency ANEEL reduced the 2017/2018 RAP cycle for transmission companies eligible to receive the RBSE indemnification. The regulator decided to remove the “remuneration parcel,” which represents R\$8.9bn out of the total R\$62bn. The decision was taken after wholesale clients under the ABRACE association were granted

injunctions exempting them from paying the cost of equity adjustment of RBSE. As ANEEL is not able to calculate a personalized tariff for each company protected by injunctions, the agency decided to remove the “remuneration parcel” from the tariff for all consumers, including the captive market. The government is fostering an agreement between transmission companies and customers to end legalization on the matter and ensure payment to TransCos (Draft Bill 4,636/2019). The bill proposes the exchange of cost of equity (ke) remuneration for WACC remuneration in the RBSE adjustment formula, between the date of the contract extension and the effective payment. Such change in parameter would reduce the haircut in the total RBSE compensation from 15% currently to 5%. There is no timeline yet for the voting and approval of this bill.

Electricity Distribution

Electric disCos deliver power to retail clients (the vast majority of power clients). DisCos enjoy a fixed regulatory return for their asset base, realized through the application of a regulated tariff to energy sales to final customers.

Figure 320: Largest Distribution Groups by Market Share



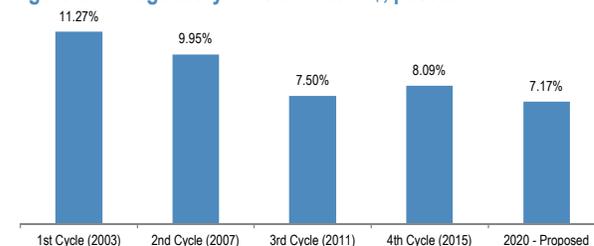
Source: ANEEL, J.P. Morgan.

Distribution companies are natural monopolies, totally supervised and controlled by regulatory agency ANEEL on a federal level. The prevailing regulatory framework was established in 2004 (Laws 10,847 and 10,848, and later resolutions). The new model has three main objectives: (a) guarantee the safety of power supply; (b) promote tariff moderation, i.e. the lowest possible tariff to the final consumer; and (c) integrate and universalize access to electricity, especially for low income users. Since its creation, the government has been enhancing the rules and legislation to improve the model, and we don't foresee a shift to a new regulatory framework, at least under the current federal administration.

Periodical Tariff Reset (RTP)

Every four years, on average, distribution companies undergo a complete rate review to assure they have a sufficient revenue base (through tariffs) to cover efficient operating costs and properly remunerate prudent investments made into the concession. The concession contracts specify different reset dates for each concessionaire, and the time span between the first and the last disCo to undergo the tariff review under the same cycle is usually 4 years. The duration of the cycle also varies: some last four years, some last five and one lasted three (Escelsa disCo). From 2015 to 2019, every tariff review cycle had the same remuneration WACC (8.09% post-tax, in real R\$). All tariff resets conducted in 2020 and onwards will input a different WACC valid for that particular year, and this rate is supposed to be reloaded every year.

Figure 321: Regulatory WACC – Real R\$, post-tax



Source: J.P. Morgan, ANEEL.

Part A

Parcel A represents the non-controllable costs incurred by the distribution company, namely electricity purchased for re-sale, transmission fees and regulatory charges (CDE, Proinfra, ONS, ANEEL supervision fees, among many others). Part A costs are affected by the yearly adjustment of power purchase agreements (PPAs), transmission fees, Itaipu costs (denominated in USD terms), to name a few. These costs are fully passed on to the final consumer, excluding electricity losses exceeding the regulatory limits. Distribution companies must fulfill their energy needs entirely through regulated energy contracts, awarded by the federal government in competitive bidding systems carried out on a periodical basis.

ANEEL sets a regulatory level of electricity losses for each concession (technical and commercial) in order to calculate the fair volume and cost of electricity purchased. The regulatory levels of electricity losses vary considerably among the disCos, explained by the substantial discrepancy of geographical and

socioeconomic complexities amongst different Brazilian states and regions. Companies that record electricity loss rates above this regulatory limit buy energy to supply their clients but don't have the right to pass this excess purchase thru their tariffs, printing suboptimal EBITDA.

Part B

Parcel B comprises what is known as the controllable or manageable costs of the distribution company, including the fair remuneration on assets and a regulatory depreciation quota. The Brazilian model is based on return on assets, meaning that distribution companies are allowed a regulated return specified for each cycle. The Regulatory Asset Base (RAB) is the value of all prudent investments tied to the electricity distribution business. The RAB is shielded and recalculated in the beginning of each cycle to update it monetarily by inflation, incorporate investments made in the previous cycle and deduct the regulatory depreciation of the assets, and write off assets that are no longer existent or fully depreciated, if that is the case. The sum of capital remuneration and regulatory depreciation comprehends the so-called regulatory EBITDA of the cycle. The regulatory EBITDA is the theoretical EBITDA to be recorded by the distribution company if all variables projected by ANEEL when resetting the tariffs transpire.

Part A + Part B are the Required Revenues of the concession. As the name suggests, the required revenues set for the cycle will pay the non-controllable costs (Parcel A), cover regulatory depreciation of the assets, shelter the efficient cost structure (including provisions for bad debt) and properly remunerate the RAB at the regulatory ROA (WACC) specified for the cycle that is about to start. Required Revenues are contrasted against the revenues that the distribution company would collect in the next 12 months if tariffs weren't to be reset (verified revenues). The ratio between the two yields the reset rate (increase/decrease).

Annual Tariff Adjustment (IRT)

Distribution companies have the right, established in their concession contracts, to adjust tariffs every year at a given, specified date (anniversary) aiming to update the tariff charged from their serviced consumers. The objective is to maintain the purchase power of the concessionaire, given that every year non-controllable costs (Part A) are adjusted by inflation or other indexes. In other words, the annual tariff adjustment aims to update the regulatory EBITDA by inflation, capped by productivity gains obtained in the 12 months previous to the annual tariff hike.

Part B is adjusted by IGP-M inflation, deduced by the X factor. The manageable costs set in the periodical tariff reset are corrected by the IGP-M inflation index, minus the X-factor, which aims to capture the productivity gains achieved by the distribution companies and pass them to the final customer, in favor of tariff moderation.

$$X \text{ factor} = Pd + T + Q$$

X factor changes every year. The new X factor formula was introduced in the third cycle (2011-2015) and is now defined "ex-post," i.e., in every annual adjustment. The X factor now encompasses the traditional productivity gain factor (Pd), the trajectory (T) factor (aims to converge the regulatory OpEx to the efficiency interval calculated by a benchmarking methodology), and the quality factor (Q) that awards/penalizes the disCo for improvement/worsening of service quality indexes, such as duration and frequency of power outages. The higher the X factor the worse, as the more it caps the annual tariff adjustment.

Part A variations (CVA) are the financial components of the process. Every year, distribution tariffs are adjusted based on the estimated Part A (non-manageable costs) for the upcoming 12 months. Reality doesn't necessarily follow the books, and actual costs tend to differ from those projected in the last tariff change (be it the tariff reset or the annual tariff adjustment). Variations in thermoelectric dispatch, FX changes, hydrology risk fees (negative GSF of quotas), involuntary exposure to the spot market, among others, can make distribution companies spend less/more of what was projected by the regulator. They account the positive/negative differences in a "graphic account" called CVA (Part A variations). Net CVA is appended in the next tariff change event (IRT or RTP) and liquidated in the 12 months subsequent. The average change perceived by the final consumers in every tariff event is, therefore, the economic tariff change (IRT or RTP, depending on the year) plus the CVA delta recorded in the past 12 months ($CVA_{t=0}$), minus the CVA delta that was already present in the tariffs and is supposed to have been neutralized (CVA_{t-1}).

Tariff flags mechanism. ANEEL allows distribution companies to slightly increase tariffs on a monthly basis to ensure they have extra cash to pay for thermal costs, triggered by swinging hydrology conditions. DisCos will publish every month in end-users' electricity bills a traffic light-inspired tariff component to inform consumers how much they are paying for the sake of energy supply safety.

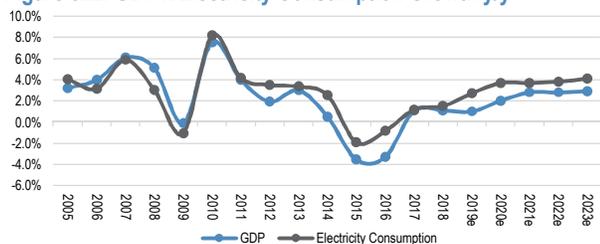
Table 95: Tariff Flags Mechanism - Instated on a monthly basis

Spot Price Trigger	Flag	Fee
R\$42.35/MWh ≤ PLD ≤ R\$80.67/MWh	Green	0
R\$80.68/MWh ≤ PLD ≤ R\$255.33/MWh	Yellow	+ R\$13.43/MWh
R\$255.34/MWh ≤ PLD ≤ R\$366.90/MWh	Red 1	+ R\$41.69/MWh
R\$366.91/MWh ≤ PLD ≤ R\$513.89/MWh	Red 2	+ R\$62.43/MWh

Source: ANEEL and J.P. Morgan

Electricity consumption is highly correlated to GDP growth. The economic crisis was far more pronounced and longer than projected a couple of years ago. As seen in the chart below, the growth of electricity consumption is linked to that of GDP and has been receding since 2014, reaching a contraction in 2015 and 2016. The National Operator System and Energy Research Company forecast that the growth of energy consumption should outpace that of GDP in coming years as Brazil resurfaces from the economic crisis.

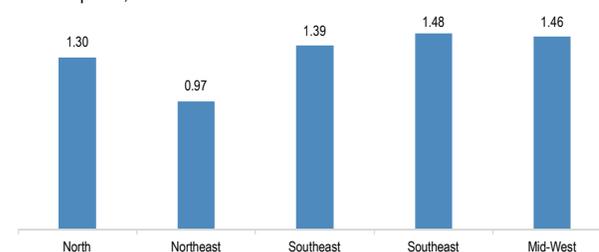
Figure 322: GDP x Electricity Consumption Growth y/y



Source: Central Bank, Energy Research Company, ONS, J.P. Morgan.

Brazil still lags developed countries in per capita power consumption. The Brazilian economy displays low power per capita consumption when compared to developed markets, suggesting great growth potential ahead. According to a report by the Energy Ministry published in 2012, Brazilians consume 2 MWh per capita per year, same of Mexico, but below China, Argentina and Chile (in the 3-4 MWh range). By contrast, per capita consumption per year reaches 8 MWh in the OECD countries and 13 MWh in the U.S. Additionally, low per capita residential consumption in the Northeast region of Brazil demonstrates that there still a lot of room to grow in that space.

Figure 323: Average Residential Consumption per Capital
 In MWh per 1,000 consumers



Source: Energy Research Company (EPE).

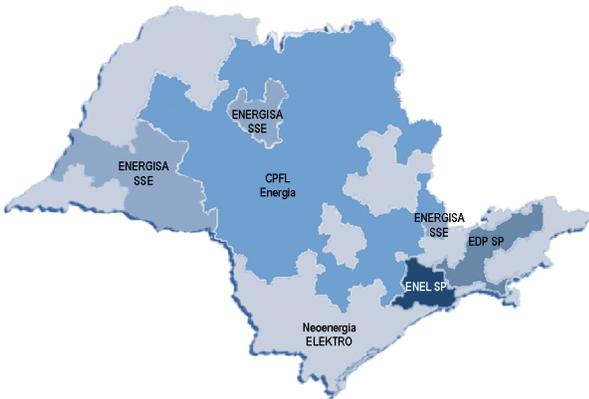
Client migration to the free market. With the strong decline of power prices in the free market during and after 2015, reflecting the weak economic activity and solid hydrology, *pari passu* to a surge in captive tariffs, several industrial and commercial clients that were previously supplied by distribution companies (captive market) decided to migrate to the free market to sign bilateral contracts with generators or trading companies at lower prices. The possible opening of the free market in the coming years, through the gradual reduction of the threshold to adhesion to the regime, may intensify this trend.

Client migration is not neutral to distribution companies. The migration of clients with energy demand above 2.0MW (free consumer) has a neutral impact on the system as distribution companies are allowed to reduce energy purchase contracts to adequately lower demand going forward, and generation companies will receive back this amount of energy, offsetting the higher demand triggered by the transfer. However, the migration of clients with energy demand between 0.5MW and 2.0MW (special consumers) poses a negative impact to the system as distribution companies are not allowed to reduce their energy purchase contracts and generators will not receive back this excess of energy to sign bilateral agreements with newly migrated clients.

We saw strong consolidation in the distribution segment. M&A was a key source of growth for Brazilian utilities in the recent past and, in our view, should remain so in the coming years, posing interesting opportunities for investors. Brazilian distribution companies were hit hard with the third periodical reset cycle (started in 2012, retroactively to 2011), the 2014-2015 power crisis and the 2015-2016 economic crisis. Some companies had a steep deterioration in their economic equilibrium, becoming potential acquisition candidates. Foundations to make this consolidation possible exist, such as regulations, support from the government and an improving regulatory framework, such as benign tariff review cycles, in our view.

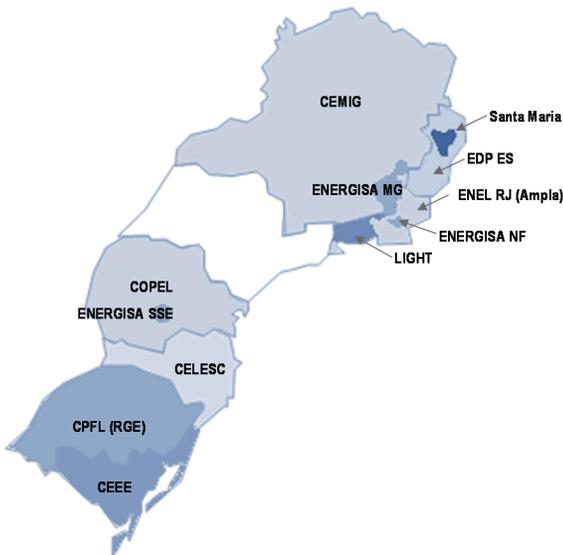
The Southeast and South regions house 2/3 of power consumed in Brazil. According to EPE (Energy Research Company), the South and Southeast combined account for 67% of Brazil’s electricity consumption. The two regions comprise seven states, but over 35 distribution companies and concessionaries. The market is indeed fragmented, posing much room for consolidation and streamlining, in our view.

Figure 324: Map of São Paulo-based Electricity Distribution Companies



Source: FIESP and J.P. Morgan. Note: (*) acquisition targets.

Figure 325: Map of South and Southeast Electricity DisCos (ex-São Paulo)

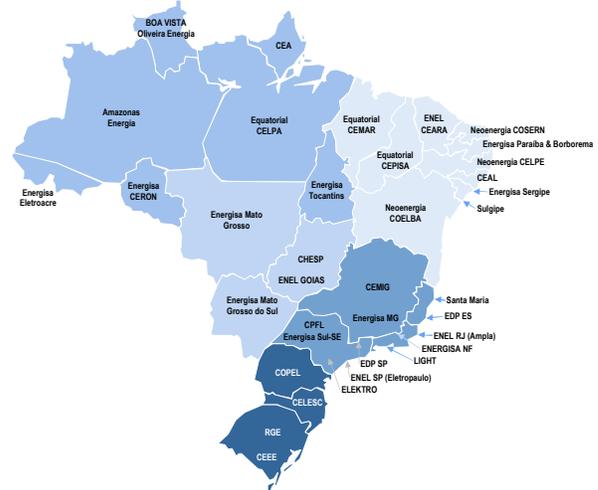


Source: Source: J.P. Morgan. Note: (*) acquisition targets.

The industrial class accounts for the 35% of total power consumption. Brazil has a population of approximately 210 million people (IBGE data), and residential clients represent about 29% of electricity consumed in the country. The commercial and other

classes stand for 19% and 17% of total consumption, respectively. Among the regions, we highlight the Southeast (São Paulo, Rio de Janeiro, Minas Gerais and Espírito Santo states) account for 50% of power consumption in Brazil, justified not only by the greater population concentration but also by the industrial activity. The South region comes in second, with 18% of total consumption. The Northeast, Center-West and North regions account for 17%, 8% and 7% of all electricity consumed in Brazil.

Figure 326: Map of North, Northeast and Center-West Electricity Distribution Companies



Source: J.P. Morgan. Note: (*) acquisition targets. Celg was acquired by Enel Americas.

Proposed changes to the regulatory regime

The Brazilian government is preparing important, positive changes to the regulatory framework. The Energy Ministry unveiled in July 2017 a 57-page document detailing proposed changes to the regulatory regime of the utilities sector (Public Consultation 33). Some of the changes aim to repair imperfections created by the infamous Provisional Measure 579 (2012), which created conditions for the renewal of expiring generation and transmission concessions that could not be extended for a second time under the prevailing legislation. The modifications were under public hearing through mid-August of that year, before the government started sending the draft to the Congress. We stress that these proposals could change depending on the market feedback the government received.

High level thoughts on the reform of the power sector.

The challenge of the reform is dealing with “butterfly effects”: a small change in one rule has implications in other parts of the regulatory framework, and must be addressed. The draft bill (and future law) will bring high-

level determinations, to be followed by several regulations and implemented over a long period of time. Some of the “hot topics” are the future of the MRE (energy reallocation mechanism), the split between “energy” and “ballast” prices and the “attributes” of generation sources, among others. These definitions should change deeply the operationalization of the generation segment in Brazil.

The main change being discussed is abolishing the quota regime established by Provisional Measure 579. Quota regime refers to old energy today being sold at around R\$60/MWh. The biggest shift will be the privatization of Eletrobras’ hydro power plants that amount to 14 GW of installed capacity (~10% of national capacity) that were renewed for 30 years in January 2013 by PM579. The government would charge a bonus grant to the new incumbents that would be able to freely commercialize the electricity but would take back the hydrology risk that was transferred to customers in 2013. Moreover, the sum collected in the auction would be shared evenly between government, Eletrobras and final consumers.

Mixed impact to distribution companies. According to local press (*O Estado de S. Paulo* on 08/24/2017), the abolishment of the quota regime and the sale of this capacity at market prices of R\$200/MWh could lead to a 3.8%-11.9% tariff increase for customers on average. Although energy purchases are a pass-through to tariffs, higher rates could escalate delinquency or energy losses. Again, we believe tariffs will reflect a realistic cost of electricity production in the country and give the right price signal to customers. On the other hand, the expansion of the free market may represent de-risking for the distribution segment, today the biggest risk taker and pillar of the sector. Ultimately distribution companies will get remunerated by the operation of the network, stepping away from the energy “trading” business.

Extension of the free market. The free market is currently restricted to those that consume at least 2.0 MW avg. of power. Power users consuming between 0.5 MW avg. and 2.0 MW avg. can buy in the free market from incentivized sources (renewable projects) and enjoy a 50% discount in transmission charges (subsidy). This should intensify the migration of regulated customers to the free market segment. We note that the government must address mechanisms to channel oversupply produced in the distribution companies into the free market to provide liquidity and curb potential upward pressure in power prices. The federal government published Decree 465/2019 announcing a phased opening of the free market. In January 2021, the bar will be reduced to 1.5 MW avg., and in January 2022, to 1 MW avg. We highlight that some agents consuming between 1.0 MW avg. and 2.0 MW avg. are already buying from incentivized sources, and therefore shouldn’t cause a mass migration from the captive market. The decree also ordered ANEEL and CCEE to present studies showing the impacts of the opening of the free market in January 2024 for consumers below 500kW.

Water & Sewage Utilities

Henrique Peretti ^{AC} and team
 (55-11) 4950-4229
 henrique.peretti@jpmorgan.com
 Banco J.P. Morgan S.A.

State-owned water & sewage companies dominate.

Water & sewage utilities produce and deliver potable water to the population, collect sewage, treat it before returning cleaned water to water resources. In Brazil, 95% of the population is serviced by state-owned utilities. Generally speaking, each state has its own water & utility company; some states such as the state of Sao Paulo have several, either controlled by the state itself or by larger municipalities. Smaller privately run companies exist but are exceptions in the market.

Figure 327: Largest Water & Sewage Utilities in Brazil

Company	State	Population serviced	
		Water	Sewage
Sabesp	SP	26.3	22.9
Copasa	MG	11.6	8.1
Cedae	RJ	12.3	3.9
Sanepar	PR	10.8	7.1
Embasa	BA	11.9	4.8
Corsan	RS	6.0	0.7

Source: Companies and J.P. Morgan. Latest data available.

National Sanitation Law was published in 2007, but regulation is regional.

This law determined that water utilities must be regulated on a state or municipal level, as opposed to federal, and many states are still crafting their water agencies and regulatory frameworks. According to the Association of Brazilian Regulatory Agencies, there are state-level regulatory agencies in 23 states, municipal-level agencies in 24 cities, and agencies for 3 pools of cities; these agencies regulate services in more than 2,700 cities, more than 50% of the total number of cities in the country. Regulatory risk does exist and is a consequence of political risk, in our view. Water & sewage utilities are more subject to government intervention than electricity utilities, in our opinion.

Regulatory models are very similar to electricity distribution.

Most of the regulatory frameworks applied to water & utility companies are greatly similar to electricity distribution, meaning ROA-RAB regulation with incentives (price cap system). There are tariff cycles and annual tariff adjustments, similarly. Each state has its own regulatory regime, but they tend to be pretty similar with small differences.

Tackling the water & sewage deficit is a priority of the new government.

The current administration, and most importantly BNDES development bank, stressed that investments in water & sewage infrastructure will be on top of the list in upcoming years. Brazil has historically underinvested in this segment, as underscored by the fact that 83% of the population has access to clean potable water, 52% of sewage produced in the country is collected, and approximately 46% of this volume is treated. The North, Northeast and Center-West regions have the largest deficits. Another deficiency is the ratio of water losses, which reaches 38.5% from a national standpoint. BNDES finances up to 80% of the CapEx of new water & sewage projects at subsidized rates, the highest share among all credit lines for infrastructure. Caixa Econômica Federal, Banco do Brasil and international agencies are also prominent lenders to the sector.

National Sanitation Plan targets 100% water coverage in urban areas by 2033, for over R\$300 billion in investments.

Including rural areas, the target is to reach 99% water coverage and 92% sewage collection coverage for the whole Brazilian population. SP-based Sabesp provides drinking water to 100% of the population in its concession area, collects 90% of sewage produced and treats 76% of it (2018 data), but the reality in the other states is far different.

Sabesp's water crisis in 2014-15.

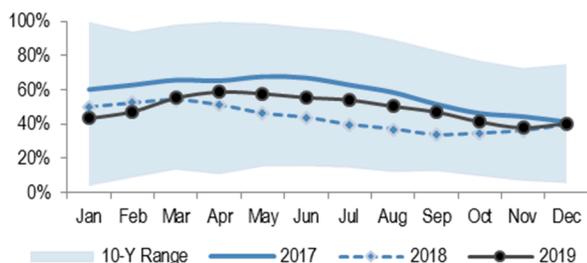
Sabesp, based in the state of São Paulo, is the largest water utility in Brazil and one of the largest in the world. The Cantareira reservoir out in the metropolitan region of São Paulo is responsible for ~50% of Sabesp's current water production capacity. The rainy period 2013/2014 (summertime in São Paulo) recorded the worst drought in history, leading to a fast depletion of Cantareira, and other neighboring water reservoirs to a lesser extent. Sabesp managed to avoid a catastrophic water rationing by pumping water from Cantareira's "dead volume" (a technical reserve below the 0% mark) and by adopting a severe bonus/surcharge program that lasted through 2015.

Sabesp's reservoir is now at normalized levels.

Thanks to good hydrology in early 2016 and to outflow control, the Cantareira system left the "dead volume" in the last days of December 2016 and replenished continuously in the following months. Favorable rainfall, the conclusion of emergency works to add production capacity and the construction of a whole new reservoir supported continued recovery of the reservoir in 2017-19. As seen in the chart below, Sabesp's reservoir levels (weighted average) are now at the 10-year high. This means

rationing risks for Sabesp are nearly eradicated, at least in the near term, in our view.

Figure 328: Sabesp – Cantareira Reservoir Levels



Source: ANEEL, J.P. Morgan.

Tariff reviews in 2017 put the sector in the spotlight.

Some of the largest water utility companies in Brazil underwent tariff revisions in that year. The tariff reset is an important milestone as it defines a fair remuneration for the asset base and grants earnings visibility during the regulatory cycle. Paraná-based Sanepar and Minas Gerais-based Copasa had their first rate resets in 1H17. SP-based Sabesp had its second periodical tariff review split in two phases: Phase 1 in October 2017, and Phase 2 in April 2018. We are hopeful that other Brazilian states will follow these initiatives in coming years. The application of reputable and market-friendly regulatory regimes is vital to promote more investments for the myriad of water utilities based in Brazil.

Brazilian states could privatize water utilities.

According to *Exame* magazine in October 2016, BNDES said that at least two-thirds of the states could privatize their water companies. Private companies are interested in investing heavily in the sanitation sector and in turn considerably improve quality of life, health, productivity and tourism in less developed states. We think BNDES will also promote the expansion of public-private partnerships (PPPs) in the water utilities sector. In our opinion, the rationale is to privatize state-owned companies with underperforming quality standards and shallow coverage of potable water and sewage collection.

Proposed changes to the regulatory model.

Private companies are interested in investing heavily in the sanitation sector and in turn considerably improve quality of life, health, productivity and tourism in less developed states. We think BNDES will also promote the expansion of public-private partnerships (PPPs) in the water utilities sector. In our opinion, the rationale is to privatize state-owned companies with underperforming quality standards and shallow coverage of potable water and sewage collection.

New regulatory model for water & sanitation allow states to privatize their SOEs.

In the last days of 2018, former President Michel Temer published a new Provisional Measure (#868) that intended to transform the National Water Agency (ANA) into a national water & sewage regulator. This measure could make the Brazilian water regulation more homogeneous among the states and municipalities, and as such boost investor confidence when bidding for such assets. A first attempt was made through Provisional Measure 844/2018 issued in July of that year. That provisional measure received negative reviews from several water utilities including Sabesp, and ended up expiring during the electoral period. Among many things, the second Provisional Measure aimed at allowing the establishment of sanitation programs between municipalities and private companies (paving the way for the privatization of state-owned water utilities), and assures operators compensation for non-depreciated investments at the end of their concession contracts

New Sanitation draft bill approved in the Lower House.

On Dec 11th the Lower House approved Sanitation Bill 4162/2019, initiated by the federal government, with 276 votes for versus 124 votes against. In a surprising move, the Lower House led by Deputy Rodrigo Maia (DEM-RJ) set aside the text approved by the Senate and didn't vote on Deputy Geninho Zuliani's text approved by the Lower House's special commission. This strategy makes the Lower House the initiating chamber, and the last one to have a say on the bill before presidential sanctioning.

Telecommunications

Andre Baggio ^{AC} and team
+1 (212) 622-3113
andre.baggio@jpmorgan.com
Banco J.P. Morgan S.A.

Historical perspective: The Brazilian telecommunications sector was opened to private investment with the enactment of the General Law of Telecommunications in 1997, which established a new regulatory structure, allowed competition and determined the privatization of Telebras, the state-owned company that was responsible for all telecom services in the country. In the following years, several players entered the segment through the acquisition of Telebras's operations as well as the launch of new operations, mostly in the mobile segment.

During the last several years, the sector experienced significant consolidation as well as migration toward better mobile service focused on data, with different auctions for the rights to operate such technologies, and four major groups emerged:

- **Telefonica Brasil**, comprising mobile operator Vivo, which leads subscriber share in Brazil, the incumbent wireline player Telesp in São Paulo state, and the second-largest cable TV player, TVA; acquired GVT from Vivendi in 2014 to increase its fixed and broadband service.
- **America Movil**, combining Claro's mobile operation with leading cable player Net Serviços as well as long distance incumbent Embratel, now also providing corporate data, fixed telephony through wireless technologies and DTH paid television. America Movil recently acquired NIHD mobile operations.
- **Tim Brazil**, controlled by Telecom Italia, mostly a mobile operation, although it acquired Intelig, a long distance operator that owns a large backbone and provides corporate data as well, and AES Atimus, which has an extensive fiber network in SP/RJ and started to provide fixed broadband.
- **Oi**, with diffused corporate control, combines incumbent wireline operations in all states except for São Paulo and a mobile operation. Oi is currently under judicial recovery, aiming to sell assets to fund investments in its fiber network.

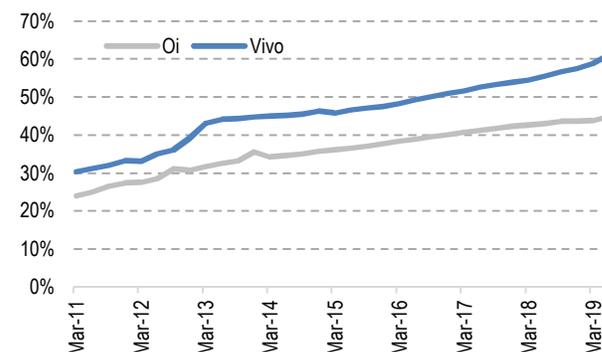
Wireline: Incumbents under pressure

We divide wireline history post-privatization into three distinct phases. In general, the segment is facing

increasingly higher competitive pressure as technology allows for altnets challenging incumbents.

- **Fixed-line growth (1998-2004):** During this period, incumbents reported significant growth in lines in service (LIS) and revenues, as there was significant unmet demand for the service.
- **Broadband adoption (2005-10):** Incumbent LIS reached a peak in 2004, and in the following years companies started to lose subscribers to alternative players (mostly cable companies) or just due to fixed-to-mobile substitution. Nevertheless, revenue growth remained in positive territory on increasing broadband internet adoption.
- **Intensification of competition (2011-14):** As technology progressed, altnets, including cable companies such as Net Serviços, and wireline attackers, such as GVT, started to (1) offer increasingly higher broadband speeds, above 8mpbs, which could not be matched by incumbents' legacy networks; and (2) increase their geographical reach. These developments are keeping incumbents under intense pressure due to price cuts and higher investments needed to match competition.
- **Vivo buys GVT (2014)**, boosting its capabilities to compete against AMX/Net with a 4P offer.
- **Small players gain share (2014-present):** Small broadband players have reached 26% market share in 3Q19, vs 14% two years ago, posting significant competition to incumbents. Usage of fiber, focus on small and underpenetrated cities, and an important fiscal arbitrage are among the reasons why these players have become so relevant.

Figure 329: Broadband Subs as % of Lines in Service



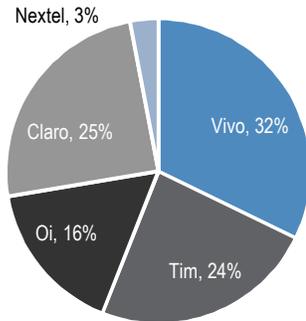
Source: Company data and J.P. Morgan estimates.

Mobile: competitive environment improving

Brazilian mobile market was always highly competitive, fueled by the existence of four established players with relatively similar share (from Oi's 16% to Vivo's 32%), putting pressure on growth and margins.

Figure 330: Four Large Competitors in Brazilian Mobile

Mobile subscriber share, 3Q19



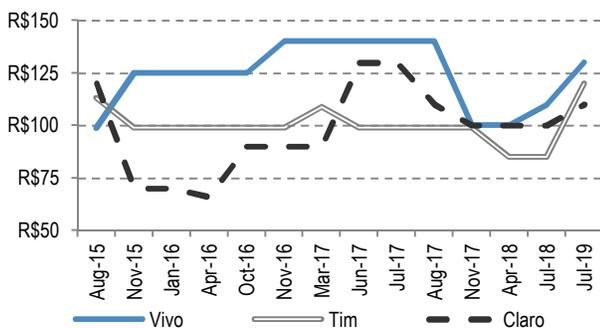
Source: Company reports and J.P. Morgan estimates.

However, at the end of 2018, the mobile market became more benign. Most companies adopted a more-for-more strategy, whereby prices are increased in exchange for more services provided for the consumer, including higher data allowances, services such as free WhatsApp use, free music subscriptions, free backups and magazine subscriptions.

Thus, mobile service revenues resumed their acceleration path in 3Q18, which should continue in the following quarters, especially with Oi's struggle to remain competitive.

Figure 331: More-for-More Strategy Leading to Higher Prices

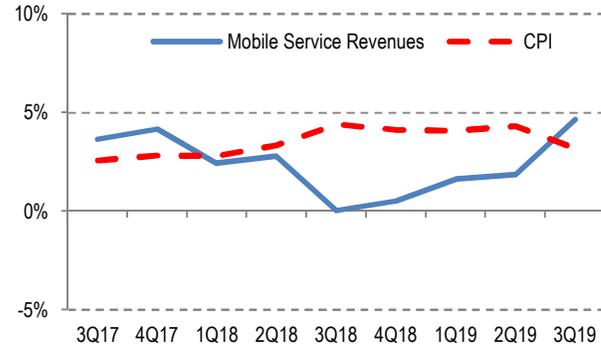
Monthly fee (R\$) for low-end postpaid plans



Source: Company data and J.P. Morgan estimates.

Figure 332: Rebound in Mobile Service Revenue Trends

Mobile Service Revenues, % change y/y



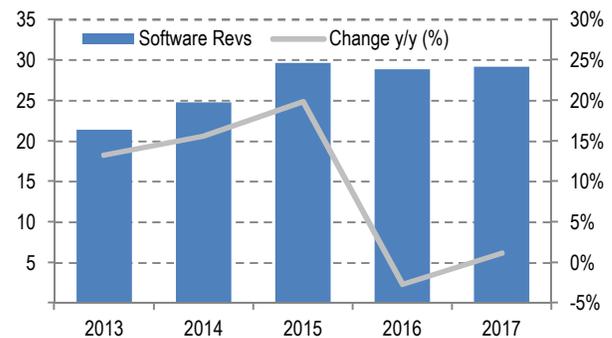
Source: Company reports and J.P. Morgan estimates.

Tech enjoying a growth momentum

Software spending was under pressure in 2016-17 due to Brazilian economic crisis, as demand for tech companies is usually leveraged on the economy growth, which drives new investments in software. With the beginning of the recovery in 2018-19, Brazilian names started to benefit from the healthier macro environment, opening room for top-line and margin expansion.

Figure 333: IGP-M Should Negatively Impact Revenues

Brazilian software revenues (R\$bnn)

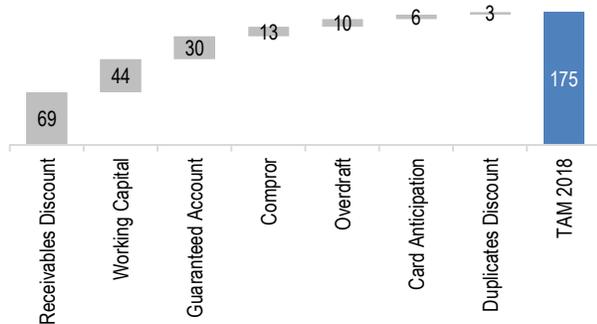


Source: ABES/IDC and J.P. Morgan estimates.

Also, tech companies are now beginning to explore fintech opportunities: Linx launched its sub-acquiring business in October-18, already reaching the impressive mark of R\$2bn/year in TPV (annualizing its June-19 performance). Totvs entered the B2B credit business in October-19 through the acquisition of Supplier, an enabler of credit transactions between clients and suppliers. According to the company, total addressable market of the segment reaches R\$175m, and is currently its most important fintech initiative, followed by retail payments.

Figure 334: B2B Credit Total Addressable Market

R\$m



Source: IBGE, FGV and J.P. Morgan estimates.

Outlook and views on stocks

We now favor Technology names over Telco ones, given the stronger growth momentum within the tech space coupled with important fintech optionalities. On the Telco side, demand is still very soft, especially in the fixed-line business of Brazil and Mexico. Mobile is seeing a positive momentum in both countries, but not enough to offset sluggish wireline performance.

Transportation

Fernando Abdalla ^{AC} and team
 (55-11) 4950-3463
 fernando.abdalla@jpmorgan.com
 Banco J.P. Morgan S.A.

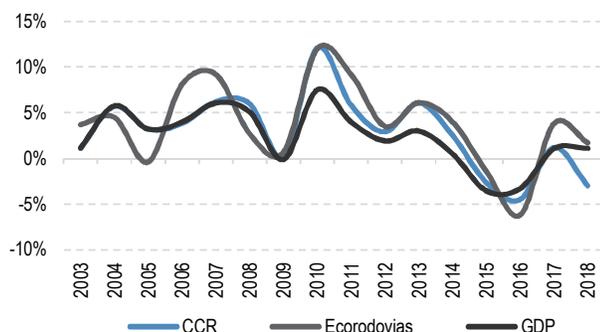
Highways

Brazil has the fourth-largest highway system in the world, with over 1.7 million kilometers of roads, of which only around 13% is paved. Highways are the main means of transportation in the country, both in number of passengers and in terms of freight and goods transported. It is estimated that roads represent more than 60% of the Brazilian transportation matrix. While the Southern and Southeastern regions of Brazil are well connected by paved highways, the northern region has a much weaker network, partially explained by the presence of the Amazon rain forest.

The major Brazilian paved highways are operated by private players and therefore have toll stations. The highway system of Sao Paulo is the largest statewide paved road transportation system in Brazil, with nearly 35k km of roads. Around 3% of this system consists of federal roads, 34% municipal and 63% state. In the late '90s, the government pushed for privatization of state-controlled paved highways in a bid to generate extra revenues. Currently the two major toll road operators that are publicly listed are CCR and Ecorodovias.

The traffic growth of toll road companies is tied (in part) to GDP, as heavy vehicle traffic is a function of the intensity of economic activity/industrial production. Traffic on the two above-mentioned concessionaires' highways has typically increased at a 1-1.5x multiple of GDP growth, on average. In addition, as toll fares are contractually adjusted by inflation once per year (IPCA, IGP-M or a basket of indexes), the toll road companies are seen as defensive plays when inflation is high.

Figure 335: Road Traffic Growth (y/y) vs. GDP Growth (y/y)



Source: Company reports and J.P. Morgan.

The privatization of highways in Brazil started in 1995, with the “Brazilian Toll Roads Concession Program” and the auction of Ponte Rio-Niterói, operated by CCR up until May/2015, at which time it was re-auctioned and is now controlled by Ecorodovias. At that time, uncertainties regarding the macroeconomic environment and the regulatory framework led the average of real unleveraged IRR of the projects to reach levels of 17%-20% in BRL terms. The federal auctions held in October 2007 were a landmark for the toll road sector as they focused on lowering tolls to the end user, instead of maximizing grants paid to the government. At that time, average real unleveraged IRR in BRL dropped to 8%-9%, reflecting the consolidated regulatory framework and low barriers to entry due to the concession model adopted by the government, which stimulated competition. More recently (2013/14), the federal government still focused on obtaining low tariffs for new concessions, although it ended up not working well given the economic crisis and the corruption investigations (companies involved in the *Car Wash* scandal did not receive BNDES funding).

Regarding future opportunities, the federal government has several projects on the pipeline within the *Projeto Crescer/Investment Partnership Program* (PPI – more details [here](#)), comprising projects in highways, railroads, ports and airports. Specifically on highways, there are at least seven projects that should be auctioned in 2020. The PiPa project (Piracicaba-Panorama stretch) in the state of São Paulo was the first auction in 2020, won by Pátria Investimentos and GIC, implying investments of around R\$14bn.

In terms of funding, BNDES has historically played a relevant role on the infrastructure segment, granting subsidized loans to stimulate the sector. In our view, the historical low Selic rate should allow for more competitive funding conditions, reducing the dependency on the public bank.

Aviation

Air travel has been growing rapidly in Brazil, despite the recent crisis in the past years. Data from ANAC show that between 2008 and 2019, PAX traffic grew at a CAGR of 6.0% (+6.0% on domestic and +6.4% on international). This sequential growth was not followed by investments in the corresponding infrastructure, resulting in overcrowded airport terminals. Consequently, the federal government decided to privatize major Brazilian airports in order to solve capacity constraints and boost investment in this segment.

In 2012/13, five of the country's most relevant airports (Guarulhos, Viracopos, Brasília, Galeão and Confins) were successfully sold into private hands. The bidding process for these assets was very competitive, and winning companies offered strong premiums over minimum concessions fees.

Table 96: 2012/13 Airport Auctions

Location	Project	CapEx (R\$bn)	Winner	Premium
SP	Guarulhos	6.2	Invepar/ACSA	373%
SP	Viracopos	11.5	Triunfo/Egis	158%
DF	Brasília	3.7	Engevix/ Corp. America	673%
RJ	Galeão	5.8	Odebrecht Trans.	294%
MG	Confins	3.6	CCR	66%

Source: Brazilian Federal Government and J.P. Morgan.

In 2017, the government once again successfully privatized four more airports, with total investments amounting to R\$6.5bn. And in early 2019, three blocks were auctioned, including several small projects on each of them, amounting R\$3.6bn.

Important to say that some of these concessions currently face financial constraints, a reflection of the aggressive bids and the economic crisis in 2015-16.

Table 97: 2017 Airport Auctions

Location	Project	CapEx (R\$bn)	Winner	Premium
SC	Florianópolis	0.96	Zurich	14.8%
CE	Fortaleza	1.37	Fraport	4.5%
RS	Porto Alegre	1.90	Fraport	213.1%
BA	Salvador	2.30	Vinci	28.2%

Source: Brazilian Federal Government and J.P Morgan

Table 98: 2019 Airports Auctions

Location	CapEx (R\$bn)	Winner	Premium
Northeast block	2.2	AENA	1011%
Mid-west block	0.6	Zurich	830%
Southeast block	0.8	Aeroeste Consortium	4739%

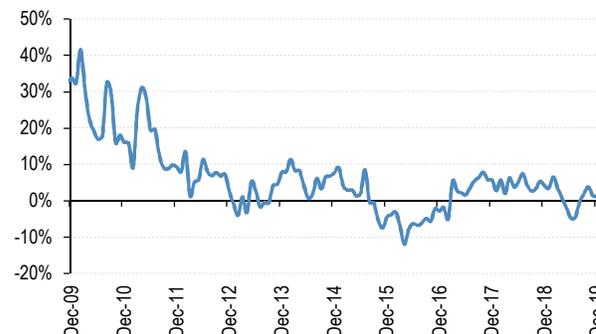
Source: Brazilian Federal Government and J.P Morgan

Going forward, the government still plans to privatize regional airports and the jewels of the crown (Congonhas-SP and Santos Dumont-RJ). Within the PPI program, the auctions of the South, North and Central blocks are expected for 4Q20.

GOL and LATAM are the two largest airlines in Brazil, followed by Azul. In 2019, GOL had 37.6% market share in the domestic market, while TAM had 34.6% and Azul a 23.6% stake (measured in terms of RPK). Demand for air travel in Brazil deteriorated during crisis years, starting to recover in 2017. The bankruptcy of Avianca Brasil in 1H19 impacted the supply of the industry, which has been

partially redeemed mainly by the top-3 players. Going forward, we hold a positive outlook for the sector, as (i) demand is expected to recover as Brazilian GDP gains traction, and (ii) gradual margin improvement on lower costs related to new generation of aircrafts.

Figure 336: Domestic RPK Growth (Y/Y)



Source: ANAC

Ports

With 8,500km of seacoast and 35 ports, the Brazilian port sector handles 1.1mn tons annually, representing ~90% of the country's foreign trade. Comprising public and private terminals, the sector suffered major changes during the 1990s, when the Port Modernization Law (8.630/93) was enacted and most of current terminals were ceded to private players.

As a result of the strong growth from the BRIC economies over the past years, there was a significant increase in trade in the Southern hemisphere, with the Brazilian ports witnessing strong growth in demand for maritime transportation services. The figure below shows some of the major ports on the Brazilian coast.

Figure 337: Main Brazilian Ports



Source: J.P. Morgan.

Despite the increase in investment in the sector since the port reforms of the 1990s, Brazilian ports remain a bottleneck to the economy and have elevated operating costs. Among the major issues faced by Brazilian ports, we highlight: (i) poor access (both maritime and land), (ii) narrow channels, (iii) insufficient dredging works, (iv) busy terminals, and (v) deficient infrastructure.

The Port of Santos, located in the state of São Paulo, is the main port in the country. Over 50% of Brazilian GDP is concentrated in the economic operating area of this port, primarily covering the states of São Paulo, Minas Gerais, Goiás, Mato Grosso and Mato Grosso do Sul. Approximately 90% of Sao Paulo's industrial base is located less than 200km from the port.

In order to increase investment in the sector, PPI has 21 projects on the pipeline related to the ports segment, including concessions, privatizations and renewals. Accordingly, the government expects an additional R\$6.7bn investment in the sector between 2020 and 2021.

Table 99: Upcoming Port Projects under PPI

Project type	Project	CapEx (R\$ mn)
Auction	Aratuba - Solid Bulk Terminal	230
Auction	Itaqui - Liquid Bulk Terminal (IQI 03)	59
Auction	Itaqui - Liquid Bulk Terminal (IQI 11)	64
Auction	Itaqui - Liquid Bulk Terminal (IQI 12)	177
Auction	Itaqui - Liquid Bulk Terminal (IQI 13)	179
Auction	Paranaguá - General Cargo Terminal	NA
Auction	Santos - Liquid Bulks Terminal (08)	NA
Auction	Santos - Pulp Terminal (14)	134
Auction	Santos - Pulp Terminal (14A)	146
Auction	Suape - Vehicles Terminal (01)	8
Auction	Suape - Containers Terminal (05)	1,205
Auction	Paranaguá - Grains Terminal	921
Auction	Santana - Chips Terminal	-
Auction	Paranaguá - Vehicles Terminal	80
Auction	Mucuripe - Passengers Terminal	NA
Destatization	CODESA	1,000.0
Destatization	São Sebastião	574.4
Destatization	CODESP	1,500.0
Promotion Policy	BR do Mar	-
Renewal	Suape - Agrovia Terminal	129.3
Renewal	Decal	283.0

Source: Projeto Crescer/PPI

In addition, in 2013 the government published a new port regulation (through Provisional Measure 595), which, after a long debate in Congress, was approved in June (Law 12.815/13). Among the main changes introduced by the New Port Law, we flag (i) the ability to renew concessions granted after 1993 prior to the end of the original term in exchange for CapEx deployment (no need for grants to be paid to the government); (ii) the re-auctioning of concessions granted before 1993 once

original concession terms expire; and (iii) the removal of differentiation between owned cargo and third-party cargo.

Additionally, through Decree 9,048/17, the government established a regulatory framework for the renegotiation of concessions, including eventual amendments/extensions as well as potential changes in the initial contract (i.e., investment plan).

Railroads

Brazil has a railway network of ~31 thousand km, which, in our view, is modest considering the country's size and commodity-based economy. The recent phase of Brazilian railways began with the privatization process during the 1990s, when a new regulatory framework was established and railroads were moved into the private sector in order to increase investments and improve their efficiency.

The Brazilian railway development was not centrally coordinated, which resulted in a lack of integration of current stretches and different gauges (large and metric) over the network. The railways generally link commodity-producing regions to ports. The major operators are Rumo, MRS, Vale and CSN, and since privatization they have continuously increased investments, mostly on tracks and acquisitions of rolling stock. On the other hand, investments from the government remained very modest until 2007, when the construction of North-South railway resumed. During the first Logistics Investment program (started in 2010), the government tried to auction railway projects but did not succeed due to the lack of a solid regulatory framework and VALEC risk.

In 2017 the government concluded for the first time in a long period the auction of a new railway, named North-South, which was won by Rumo. As was the case for other sectors, PPI announced a new investment package for railways. The government estimates investment of around R\$60bn in the sector, with ~R\$26bn coming from new assets and R\$34bn from the early renewal of five concessions (including Rumo's *Malha Paulista*). The new Infrastructure Minister should prioritize this segment as it considered essential for cargo (mostly grain) transport in the country.

Table 100: Upcoming Railways under PPI

Project	Investment (R\$ bn)
New concession	
EF-354 (Mid-West)	2.7
Ferroanel North	3.4
EF-170 - Ferrogrão	16.6
EF-344 - FIOLE	3.3
Concession renewal	
Rumo Paulista Network	
MRS	
FCA	34.0
EFVM	
EFC	

Source: *Projeto Crescer/PPI*

Capital Goods

Marcelo Motta ^{AC} and team
 (55-11) 4950-6712
 marcelo.g.motta@jpmorgan.com
 Banco J.P. Morgan S.A.

The Capital Goods space encompasses a variety of names, most of them tied to the automotive industry (light vehicles and trucks), aircraft manufacturers (Embraer) and general investment in gross fixed capital, infrastructure and Electrification (WEG). Capital Goods exposed to the Brazilian economy are currently facing a positive scenario, due to the low level of interest rates and the pickup in economic activity. Additionally, recently announced trade deals and those currently under negotiation could offer avenues for growth in the long term. As another positive, we believe the stabilization in Argentina's economic crisis during 2020, will help Brazilian companies to have a better performance, since during 2019 Argentina caused several write-offs on company's P&Ls and balance sheets. Keep in mind that Argentina represents the main trade partner for Brazilian vehicle exports. On the bear side, global vehicle production for 2020 remains challenging, especially in Europe and Asia, while in the U.S. markets should be flattish for light vehicles and likely down for heavy vehicles.

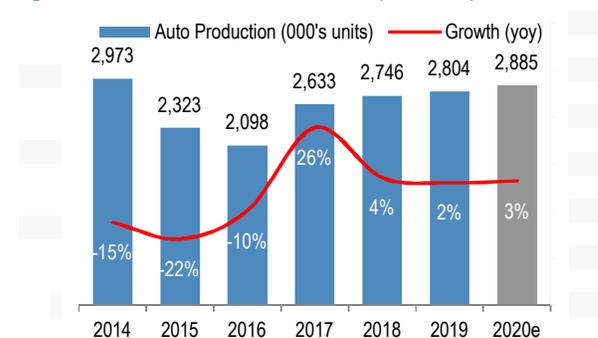
Automotive Industry

The Brazilian auto industry had been hit hard during the crisis starting in 2014 by a combination of (i) continued economic/BRL weakness; (ii) a relatively young light/heavy vehicle fleet, and (iii) low visibility into recovery, which caused a contraction of 40% in auto production from 2013 to 2016. After strong growth in 2017 of 24% yoy and a 6% expansion in 2018, the sector faced some stabilization in 2019 with auto production up 2% yoy impacted by weak exports to Argentina. For 2020 we expect production to be up 8% yoy vs ANFAVEA guidance of 9% yoy, helped by a stabilization in exports to Argentina. When looking at the heavy vehicle segment, the imbroglio regarding the fixed freight prices table and solid 2019/2020 crop data have fueled higher demand in the truck and truck trailers segment, which is outperforming the light vehicle sector, delivering an expansion in production of 7.5% yoy in 2019; for 2020 we expect the segment to outperform again, growing 12% yoy.

Light vehicle market. The Brazilian light fleet has increased at a slower pace in the past 3 years, reaching a total of 42mn vehicles by the end of 2018, according to Sindipeças data. The past few years were challenging for

the industry, due to a combination of slower economic growth, tighter credit conditions and high unemployment rate, a scenario that should change this year as GDP should accelerate again reaching 2.0% this year after 3 years being at ~1.0%. On the positive side, we don't see EVs as a short-term threat for the light vehicle sector, since Brazil still lacks a feasible infrastructure for it, namely a lack of recharging networks. Additionally EVs' higher prices vs. traditional internal combustion engine vehicles also prevent a higher penetration in Brazil as less than 5% of total LV sold has a price range compatible with EV entry level prices.

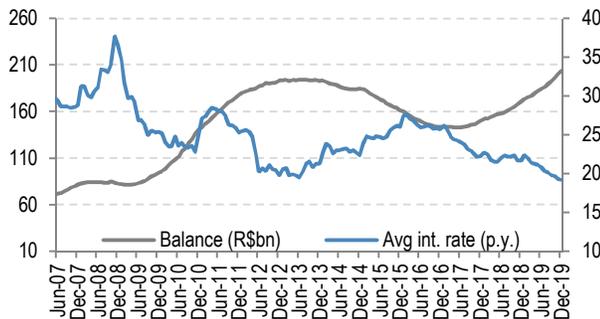
Figure 338: Auto Production Evolution (LV + LCV)



Source: Anfavea and J.P. Morgan Estimates

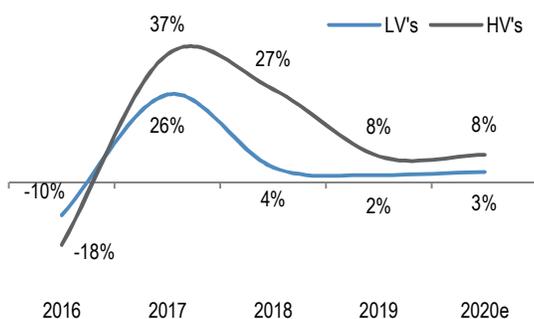
Credit conditions still improving. During the crisis in Brazil from 2015 to mid-2017, increasing delinquency rates and high interest rates led major banks to tighten restrictions on auto credit loans, with average interest rates per year of ~24-28% in the period. Consequently, the general population's decision to renew/acquire vehicles was postponed until there was greater visibility for an economic recovery. However, given Brazil's economic rebound, albeit at a slow pace, figures have continued improving in 2019, aided by a continued lowering of Brazil's interest policy rate – Selic – a trend we expect to continue and that should result in higher demand for vehicles domestically. Over the past 12 months auto loan portfolio grew 19% yoy reaching new highs (R\$197bn in outstanding loans) at the end of 2019; additionally, interest rates for those lines were down 2.4pp to ~19%.

Figure 339: Outstanding Autos Loan Balance has rebounded



Source: Brazilian Central Bank, J.P Morgan estimates.

Figure 340: LV + HV production growth (%yoy)

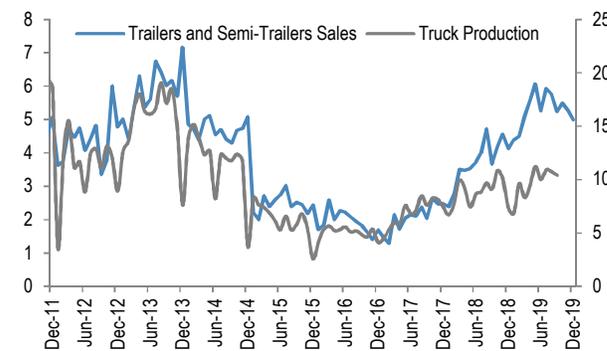


Source: J.P Morgan estimates, Anfaeva.

Truck and Truck Trailer Markets

Truck production in Brazil has grown at a strong pace in the past 2 years – helped by strong agribusiness growth – up 37% yoy in 2017, 27% yoy in 2018 and 7.5% yoy in 2019, still 49% below its peak of 240k units in 2011. We expect the sector to continue to have a strong year in 2020 growing 12% vs ANFAVEA guidance of 16% yoy, helped by a GDP rebound, which has been below 1% in the past 3 years. When looking at trailers and semi-trailer sales, the main product for Randon (RAP4, OW), the sector reported strong growth of 42% yoy in 2019, totaling 63k units, comparing with a peak of 70k units in 2013.

Figure 341: Trailers and Semi-Trailers Sales & Truck Production

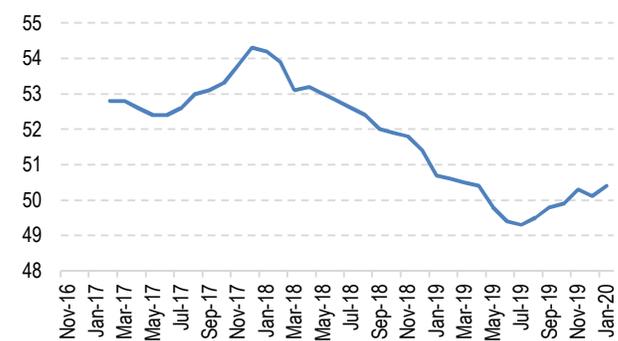


Source: ANFAVEA and ANFIR.

Exporters.

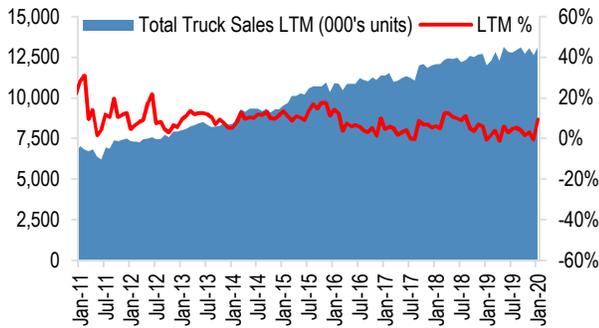
The Brazilian auto parts and machinery companies benefited by BRL depreciation in the past few years, reporting top-line growth of around 23-40% in the past 3 years, and also benefitting by an acceleration in growth in the heavy vehicles segment in the U.S. market. However, the slowdown in global PMIs, on the back of the trade war concerns, the coronavirus potential impact, slowdowns in European and Chinese economies and recession fears in the US have started impacting volumes and Capex, indicating that top-line growth could decelerate for those companies. Additionally, BRL depreciation should play less of a role going forward, with the JPM Economics team estimating only a ~7% depreciation vs. USD in 2020, compared with an average yearly depreciation of 11% between 2018 and 2019.

Figure 342: Global PMI – Better trend recently but still suboptimal (Points)



Source: Bloomberg.

Figure 343: US Total Truck Sales – LTM

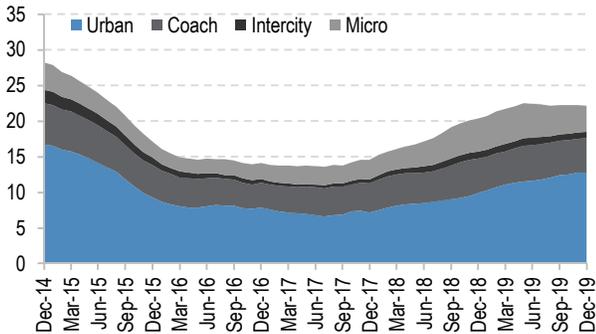


Source: Bloomberg; J.P. Morgan.

Buses

After a flattish year in 2019, when production was down 3% yoy at 28k units, we expect the sector to grow in 2020 helped by the demand driven by municipal elections during the year, which should drive demand for Caminhos da Escola and Urban buses as usually those lines of business are stronger in election years. Additionally as their utilization capacity increases, companies have the benefit from higher operational leverage delivering better margins and returns.

Figure 344: Buses Bodywork Production by Segment



Source: FABUS; J.P Morgan estimates

Appendix I: Brazil Local Markets Guide (May 2018)

After years of seeming excesses in economic policy that led to a 22%-pt of GDP surge in public debt from 2010 to 2017, the economic policy framework shifted dramatically in 2016. Much has been done since then, but still, the agenda is incomplete, especially on the fiscal front, and the continuation of market-friendly policies is not assured.

In the past couple of years, the government approved a series of reforms that should favor the sustainability of economic growth by improving the business environment and reducing constraints to productivity gains. Financial reform, which created the TLP as the new BNDES benchmark rate, should improve the monetary policy efficiency, promote better allocation of capital, and reduce fiscal costs. Labor reform should improve productivity and reduce litigation costs. The government also approved a spending ceiling for public expenses. However, pension reform, essential to keep spending under control, was not approved.

The continuation of market-friendly policies, in particular pension reform, will depend on the 2018 general elections, which will not only elect the new president but also all members of the Lower House and 2/3 of the Senate. Our base-case scenario is that the

economic upturn, party structures, and TV time will favor reformist candidates who support the market-friendly economic policy framework. However, there are increasing risks to this scenario, including the intrinsic unpredictability of an election with changed rules, the role of former president Lula given his legal situation, the division of the center-right camp and the rising support for far-right policies. And as of now, the uncertainty is very high, and the election result seems wide open.

Still, we think that the growth recovery is assured given the restoration of business and household confidence after changes to the economic policy framework. On the top of that, the lagged effects of the sharp monetary easing already adopted by the Central Bank and the synchronized global economic growth seen recently should help to boost growth in Brazil.

The Brazilian Central Bank has slashed rates from the multi-year high of 14.25% in the beginning of 2016, to 6.5% recently, an historical low. The easing was sustained by the inflation fall from two-digits to below 3% (we estimate it at 3.6% by the end of the year) and also the policy changes and reforms.

The cycle has also allowed external accounts to adjust. Currently, FDI is running 4x times above the current account balance, which is posting a small negative balance, a multi-year low. On the top of that, the country continues with enough cushion on the external front, particularly the high level of reserves (~US\$ 380bn).

Table 101: Government Bond Securities

Fixed rate	Description	Average size and turnover	Main Holders (% of stock)	Auction frequency	Clearance & Taxation	Conventions & Settlements	ISIN/common BBG tickers
NTN-F	<ul style="list-style-type: none"> 10% fixed rate coupon paid semiannually Maturities: Up to 2029 	<ul style="list-style-type: none"> Stock size: USD 122bn Trade size: USD 15mn Daily turnover: USD 650mn Bid offer spread: -4bp 	Foreigners: 52%, Pension funds: 18%, Financial institutions: 11%, Investment Funds: 8%, Other: 11%	Weekly on Thursdays	<ul style="list-style-type: none"> OTC and BMF 	<ul style="list-style-type: none"> Day count: BUS DAYS/252 Primary market: T+1 Secondary market: T+0 	BNTNF, BRSTNCNTF + 3 digit code
LTN	<ul style="list-style-type: none"> Zero coupon Maturities: Up to 2022 	<ul style="list-style-type: none"> Stock size: USD 303bn Trade size: USD 15mn Daily turnover: USD 1200mn Bid offer spread: -2bp 	Financial institutions: 39%, Foreigners: 22%, Pension funds: 15%, Investment Funds: 14%, Other: 10%	Weekly on Thursdays	<ul style="list-style-type: none"> OTC and BMF 	<ul style="list-style-type: none"> Day count: BUS DAYS/252 Primary market: T+1 Secondary market: T+0 	BLTN, BRSTNCLTN + 3 digit code
Inflation linked	Description	Daily Reference rate		Auction frequency	Clearance & Taxation	Conventions & Settlements	ISIN/common BBG tickers
NTN-B	<ul style="list-style-type: none"> Inflation-linked bond with a 6% semiannual coupon Maturities: Up to 2055 Trade size: USD 10mn Daily turnover: USD 1200mn 	<p>Note: There is a fixing preview, as the inflation accrual period overlaps with the reference month. CPI has a 15-day lag and is released on the 9th of the month</p> <p>m = reference month, bd = business days, CPI^e = inflation expectation for m, CPI^a = actual inflation for m</p> <p>Inflation accrual period: CPI of month t is accrued from the 15th day of the t to the 15th day of month $t+1$</p> <p>Daily factor previewed (df_t): $df_t = (1 + IPCA_m^e)^{bd}$, where $IPCA_m^e$ = inflation expectations published by ANBIMA on the day 15m and revised by the release of the IPCA-15.</p> <p>Daily fixing (df): $df = (1 + IPCA_m^a)^{bd}$, where $IPCA_m^a$ = Actual inflation for month m, published by the second week of $m+1$, and applied retroactively on the principal</p>		Bi-weekly on Tuesdays	<ul style="list-style-type: none"> OTC and BMF 	<ul style="list-style-type: none"> Day count: BUS DAYS/252 Primary market: T+1 Secondary market: T+0 	BNTNB, BRSTNCNTB + 3 digit code
Floater	Description	Average size and turnover	Main Holders (% of stock)	Auction frequency	Clearance & Taxation	Conventions & Settlements	ISIN/common BBG tickers
LFT	<ul style="list-style-type: none"> Floating rate bond Maturities: Up to 2024 	<ul style="list-style-type: none"> Stock size: USD 355bn Trade size: USD 25mn Daily turnover: USD 200mn Bid offer spread: 2bp 	Investment funds: 49%, Financial institutions: 24%, Pension funds: 17%, Other: 10%	Bi-weekly on Thursdays	<ul style="list-style-type: none"> OTC and BMF 	<ul style="list-style-type: none"> Day count: BUS DAYS/252 Primary market: T+1 Secondary market: T+0 	BLFT, BRSTNCLF + 4 digit code Selic Rate: BZSTSETA Index

Source: J.P. Morgan

Table 102: FX and derivatives

FX	Actively traded pair	Maturities	Daily market volume*	Transaction size*	Bid/offer spread
Spot	USD/BRL	-	\$20bn	\$15-20mn	10pips
Forwards	USD/BRL	Up to 10 years	\$2-5bn	\$20mn	2-40pips (wider bid-offer at longer tenors)
Options	USD/BRL	Up to 5yrs	\$1-1.5bn	\$30-50mn	0.3vega
Futures	USD/BRL	2-months	\$15-25bn	\$5mn	5pips

Rates derivatives	Fixing	Maturities	Daily market volume*	Transaction size*	Bid/offer spread*	Day count convention
Interest rate swap (Zero coupon DI swap)	Floating leg: CDI rate (BZDIOVRA Index)	Up to Jan30	200k DV01	25k DV01	1bp	Floating leg: BUS/252
	Fixed leg: Zero coupon					Fixed leg: BUS/252

Source: J.P. Morgan

Appendix II: Historical Economic Data and Forecasts

Table 103: Main Economic Indicators – Yearly

	Real GDP % change oya nsa	Consumer prices - IPCA % Dec/Dec nsa	Wholesales price - IGP- M % Dec/Dec nsa	Selic nominal cop % a.r.	Selic nominal avg % a.r.	Selic real deflated by IPCA avg. % a.r.	Exchange rate BRL / US\$ eop	Exchange rate BRL / US\$ avg
1995	4.4	22.4	15.2	53.1	53.4	25.3	0.97	0.92
1996	2.2	9.6	9.2	27.1	38.1	26.0	1.04	1.00
1997	3.4	5.2	7.7	24.7	23.7	17.6	1.12	1.08
1998	0.3	1.7	1.8	28.4	27.5	25.3	1.21	1.16
1999	0.5	8.9	20.1	25.1	29.0	18.5	1.79	1.82
2000	4.4	6.0	10.0	17.3	19.5	12.7	1.95	1.82
2001	1.4	7.7	10.4	17.2	16.5	8.2	2.32	2.35
2002	3.1	12.5	25.3	19.2	18.4	5.2	3.53	2.93
2003	1.1	9.3	8.6	16.5	23.0	12.5	2.89	3.08
2004	5.8	7.6	12.4	17.8	16.4	8.2	2.65	2.93
2005	3.2	5.7	1.2	18.0	19.1	12.7	2.34	2.44
2006	4.0	3.1	3.8	13.3	15.1	11.6	2.14	2.17
2007	6.1	4.5	7.8	11.3	12.0	7.2	1.80	1.94
2008	5.1	6.0	9.8	13.75	12.5	6.2	2.40	1.84
2009	-0.1	4.3	-1.7	8.75	9.9	5.4	1.74	2.00
2010	7.5	5.9	11.3	10.75	10.0	3.9	1.66	1.76
2011	4.0	6.5	5.1	11.00	11.7	4.9	1.86	1.67
2012	1.9	5.8	7.6	7.25	8.5	2.5	2.10	1.99
2013	3.0	5.9	5.5	10.00	8.4	2.4	2.36	2.18
2014	0.5	6.4	3.7	11.75	11.0	4.3	2.66	2.36
2015	-3.5	10.7	10.5	14.25	13.6	2.6	3.96	3.39
2016	-3.3	6.3	7.2	13.75	14.2	7.4	3.25	3.45
2017	1.3	2.95	-0.5	7.00	9.9	6.7	3.31	3.20
2018	1.3	3.75	7.5	6.50	6.56	2.7	3.88	3.68
2019*	1.1	4.3	7.3	4.50	5.91	1.5	4.02	3.94
2020*	1.9	3.4	2.5	4.50	4.29	0.9	4.30	4.23
2021*	2.4	3.75	4.4	5.5	5.25	1.4	4.40	4.31

Source: J.P. Morgan. Note: *J.P. Morgan Forecast, a.r.: annual rate, nsa: non-seasonally adjusted, eop: end of period, avg: average. As of February 7, 2020.

Table 104: Main Economic Indicators – Quarterly

	Real GDP % change oya nsa **	Consumer prices - IPCA % oya nsa **	Wholesales price - IGP-M % oya nsa **	Selic nominal eop % a.r.	Selic nominal avg % a.r.	Exchange rate BRL / US\$ eop	Exchange rate BRL / US\$ avg
10Q1	9.2	4.9	0.5	8.75	8.75	1.78	1.82
10Q2	8.5	5.1	4.1	10.25	9.75	1.79	1.78
10Q3	6.9	4.6	6.9	10.75	10.75	1.70	1.74
10Q4	5.7	5.6	10.1	10.75	10.75	1.66	1.69
11Q1	5.2	6.1	11.2	11.75	11.42	1.63	1.65
11Q2	4.7	6.6	9.7	12.25	12.08	1.56	1.57
11Q3	3.5	7.1	7.9	12.00	12.17	1.85	1.66
11Q4	2.6	6.7	6.0	11.00	11.17	1.86	1.79
12Q1	1.7	5.8	3.7	9.75	10.25	1.82	1.76
12Q2	1.0	5.0	4.4	8.50	8.67	2.01	1.97
12Q3	2.5	5.2	7.5	7.50	7.67	2.03	2.04
12Q4	2.5	5.6	7.4	7.25	7.25	2.08	2.11
13Q1	2.7	6.4	8.1	7.25	7.25	2.02	1.99
13Q2	4.0	6.6	6.6	8.00	7.83	2.21	2.11
13Q3	2.8	6.1	4.5	9.00	8.83	2.22	2.30
13Q4	2.5	5.8	5.5	10.00	9.83	2.36	2.31
14Q1	3.5	5.8	6.2	10.75	10.67	2.25	2.33
14Q2	-0.4	6.4	7.4	11.00	11.00	2.21	2.23
14Q3	-0.6	6.6	4.6	11.00	11.00	2.45	2.32
14Q4	-0.2	6.5	3.4	11.75	11.42	2.66	2.56
15Q1	-1.6	7.7	3.7	12.75	12.42	3.19	2.92
15Q2	-2.7	8.5	4.4	13.75	13.42	3.11	3.10
15Q3	-4.3	9.5	7.6	14.25	14.25	3.95	3.67
15Q4	-5.5	10.4	10.4	14.25	14.25	3.96	3.90
16Q1	-5.2	10.1	11.5	14.25	14.25	3.55	3.86
16Q2	-3.2	9.1	11.3	14.25	14.25	3.20	3.42
16Q3	-2.5	8.7	11.3	14.25	14.25	3.24	3.24
16Q4	-2.2	7.0	7.7	13.75	13.92	3.25	3.27
17Q1	0.4	4.9	5.6	12.25	12.50	3.16	3.14
17Q2	0.9	3.6	1.4	10.25	10.92	3.30	3.24
17Q3	1.6	2.6	-1.6	8.25	8.92	3.16	3.15
17Q4	2.4	2.8	-0.9	7.00	7.33	3.31	3.28
18Q1	1.5	2.8	-0.2	6.50	6.75	3.31	3.24
18Q2	1.1	3.3	4.4	6.50	6.50	3.85	3.69
18Q3	1.5	4.4	9.1	6.50	6.50	4.00	3.96
18Q4	1.2	4.1	9.3	6.50	6.50	3.88	3.82
19Q1	0.6	4.1	7.5	6.50	6.50	3.90	3.75
19Q2	1.1	4.3	7.6	6.50	6.50	3.81	3.90
19Q3	1.2	3.2	4.9	5.50	5.83	4.16	4.02
19Q4*	1.6	3.4	4.8	4.50	4.83	4.02	4.09
20Q1*	2.0	3.8	6.6	4.25	4.33	4.20	4.12
20Q2*	1.8	3.3	3.4	4.25	4.25	4.25	4.23
20Q3*	1.9	3.9	3.2	4.25	4.25	4.28	4.27
20Q4*	1.9	3.9	3.4	4.50	4.33	4.30	4.29
21Q1*	2.2	4.0	3.0	5.00	4.75	4.25	4.27
21Q2*	2.5	4.2	4.6	5.50	5.25	4.30	4.28
21Q3*	2.4	4.0	5.0	5.50	5.50	4.35	4.33
21Q4*	2.4	3.9	4.6	5.50	5.50	4.40	4.38

Source: J.P. Morgan. Note: *J.P. Morgan Forecast, a.r.: annual rate, nsa: non-seasonally adjusted, eop: end of period, avg: average. As of February 7, 2020.

Figure 345: Main Economic Indicators - Quarterly

	Real GDP % change QoQ saar	Consumer prices - IPCA % qoq nsa	Wholesales price - IGP-M % qoq nsa	Selic nominal eop % a.r.	Selic nominal avg % a.r.	Exchange rate BRL / US\$ eop	Exchange rate BRL / US\$ avg
10Q1	7.4	2.1	1.6	8.75	8.75	1.78	1.82
10Q2	6.1	1.0	2.9	10.25	9.75	1.79	1.78
10Q3	4.3	0.5	2.0	10.75	10.75	1.70	1.74
10Q4	5.2	2.2	3.3	10.75	10.75	1.66	1.69
11Q1	4.4	2.4	2.6	11.75	11.42	1.63	1.65
11Q2	5.0	1.4	1.4	12.25	12.08	1.56	1.57
11Q3	-0.1	1.1	0.4	12.00	12.17	1.85	1.66
11Q4	1.3	1.5	1.4	11.00	11.17	1.86	1.79
12Q1	0.0	1.2	0.4	9.75	10.25	1.82	1.76
12Q2	2.9	1.1	2.0	8.50	8.67	2.01	1.97
12Q3	6.3	1.4	3.4	7.50	7.67	2.03	2.04
12Q4	1.1	2.0	1.3	7.25	7.25	2.08	2.11
13Q1	-0.3	1.9	1.1	7.25	7.25	2.02	1.99
13Q2	9.6	1.2	0.6	8.00	7.83	2.21	2.11
13Q3	1.5	0.6	1.4	9.00	8.83	2.22	2.30
13Q4	0.1	2.0	2.3	10.00	9.83	2.36	2.31
14Q1	2.0	2.2	1.8	10.75	10.67	2.25	2.33
14Q2	-5.0	1.5	1.7	11.00	11.00	2.21	2.23
14Q3	0.8	0.8	-1.3	11.00	11.00	2.45	2.32
14Q4	1.8	1.7	1.2	11.75	11.42	2.66	2.56
15Q1	-4.5	3.8	2.0	12.75	12.42	3.19	2.92
15Q2	-8.5	2.3	2.3	13.75	13.42	3.11	3.10
15Q3	-5.6	1.4	1.9	14.25	14.25	3.95	3.67
15Q4	-3.2	2.8	3.9	14.25	14.25	3.96	3.90
16Q1	-3.4	2.6	3.0	14.25	14.25	3.55	3.86
16Q2	-0.7	1.7	2.9	14.25	14.25	3.20	3.42
16Q3	-2.6	1.0	0.5	14.25	14.25	3.24	3.24
16Q4	-1.9	0.7	0.7	13.75	13.92	3.25	3.27
17Q1	6.8	1.0	0.7	12.25	12.50	3.16	3.14
17Q2	1.6	0.2	-2.7	10.25	10.92	3.30	3.24
17Q3	0.2	0.6	-0.2	8.25	8.92	3.16	3.15
17Q4	1.3	1.1	1.6	7.00	7.33	3.31	3.28
18Q1	2.6	0.7	1.5	6.50	6.75	3.31	3.24
18Q2	-0.1	1.9	3.9	6.50	6.50	3.85	3.69
18Q3	2.1	0.7	2.8	6.50	6.50	4.00	3.96
18Q4	0.4	0.4	-0.7	6.50	6.50	3.88	3.82
19Q1	0.0	1.5	2.2	6.50	6.50	3.90	3.75
19Q2	1.9	0.7	2.2	6.50	6.50	3.81	3.90
19Q3	2.5	0.3	-0.3	5.50	5.83	4.16	4.02
19Q4*	2.2	1.8	3.1	4.50	4.83	4.02	4.09
20Q1*	1.3	0.5	0.3	4.25	4.33	4.20	4.12
20Q2*	1.3	1.1	-0.2	4.25	4.25	4.25	4.23
20Q3*	2.9	0.5	0.6	4.25	4.25	4.28	4.27
20Q4*	2.1	1.3	1.8	4.50	4.33	4.30	4.29
21Q1*	2.5	1.4	1.3	5.00	4.75	4.25	4.27
21Q2*	2.5	0.9	1.1	5.50	5.25	4.30	4.28
21Q3*	2.4	0.4	0.7	5.50	5.50	4.35	4.33
21Q4*	2.4	1.0	1.2	5.50	5.50	4.40	4.38

Source: J.P. Morgan. Note: *J.P. Morgan Forecast, a.r.: annual rate, nsa: non-seasonally adjusted, eop: end of period, avg: average. As of February 7, 2020

Appendix III: List of Tables and Figures

Tables

Table 1: Top 5 Countries in the World by Area.....	4
Table 2: Regional Profile (2018).....	4
Table 3: Largest Populations in the World (Mid-2019).....	5
Table 5: Bolsa Família Main Benefits.....	11
Table 7: Economic Classes: Household Earnings per Month (BRL).....	12
Table 8: Population Distribution per Economic Class (% of Total).....	12
Table 9: Distribution of Economic Classes.....	12
Table 10: Happiness Ranking.....	13
Table 11: IDEB Results.....	16
Table 12: FIES as a % of GDP and Total Expenditures.....	17
Table 13: Brazil and Peer Countries' Ranks on Crime/ Violence.....	18
Table 14: Global Corruption Perception Index 2018.....	19
Table 15: Travel and Tourism Competitiveness Rank.....	21
Table 16: T&T Competitiveness Index Breakdown (2019).....	22
Table 17: Global Competitiveness Index 4.0 2019 GCI.....	24
Table 18: Brazil's Classification Breakdown (2019).....	25
Table 19: Infrastructure Pillar Breakdown (2019).....	25
Table 20: Nominal GDP.....	30
Table 21: Real GDP Growth by Demand Components.....	31
Table 22: Regional GDP and Population Distribution.....	32
Table 23: States: GDP growth and Participation.....	32
Table 24: Structure of Federal State Owned Companies.....	35
Table 25: 2019 Divestment Results.....	36
Table 26: BNDESpar Equity Portfolio (3Q19).....	37
Table 27: Ranking of Domestic Market Size - Brazil Is 8th.....	41
Table 28: Brazilian Auto Fleet: 7th Largest.....	41
Table 29: Inhabitants per Vehicle.....	41
Table 30: Services Index, Breakdown.....	42
Table 31: Consumer Spending Breakdown as a % of Total Household Consumption (2018).....	42
Table 32: Occupation Position.....	44
Table 33: Occupation Activity.....	45
Table 34: Main Aspects of Labor Reform.....	46
Table 35: Inflation-Targeting System – History.....	47
Table 36: IPCA Weight per Category and Metropolitan Region.....	49
Table 37: IGP Price Index Calendar.....	49
Table 38: IPCA Weight and Variations.....	51
Table 39: IPCA per Category.....	51
Table 40: Brazil Central Bank Governors Since 1985.....	51
Table 41: Open Markets Index Country Ranks, 2017.....	55
Table 42: Top 10 Brazilian Exports.....	57
Table 43: Destination of Brazilian Exports.....	57

Table 44: Origin of Brazilian Imports (2019).....	58
Table 45: Brazil – China Trade (2019).....	58
Table 46: Brazil – US Trade (2019).....	59
Table 47: Current Account by Country	60
Table 48: FDI Distribution per Sector	61
Table 49: External Debt Stock	62
Table 50: Brazil Corporate external bond retirement (US\$ mil).....	62
Table 51: Metrics of BBB/BB rated EM countries at the time of Brazil's IG loss	64
Table 52: Composition of the Federal Public Debt	70
Table 53: Average Debt Maturity by Type	70
Table 54: Brazil Sovereign Ratings History	71
Table 55: Complexities of the Brazilian Tax System	71
Table 56: General Government Tax Profile - 2018.....	72
Table 57: Tax System Is Among the Worst in the World.....	73
Table 58: Main Taxes Charged in Brazil.....	74
Table 59: Income Tax Contribution by Income Level for FY2019.....	75
Table 60: Financial Product Taxes for Non-Residents	75
Table 61: Financial Product Taxes for Residents.....	76
Table 62: INSS (Payroll) Contribution by Wage Level (2019).....	76
Table 63: FGTS Withdrawal Rules from 2020 onwards	76
Table 65: Non-Earmarked Loans to Individuals + Mortgages.....	79
Table 66: Average Loan Maturity.....	82
Table 67: BNDES's Disbursements by Sector (Jan-Sept 2019).....	85
Table 68: Sector Distribution of BNDES Equity Holdings (3Q19).....	86
Table 69: Brazil's Ten Largest Companies by Market Cap.....	87
Table 70: Bovespa by Sector	87
Table 71: Number of IPOs and Size by Year in Brazil.....	88
Table 72: Annual Bovespa Performance, 2000-2019.....	89
Table 73: Summary of Corporate Governance Levels for Bovespa Companies	90
Table 74: MSCI Brazil Weighting by Sector	90
Table 75: Top Ten Brazilian Pension Funds (2019).....	93
Table 76: Mutual Fund Industry	94
Table 77: Lower House Composition by Party	98
Table 78: Senate Composition by Party	99
Table 79: Main Measures Approved in 2019.....	102
Table 80: Brazilian Presidents	105
Table 81: Brazil's Major Listed Oil, Gas and Petrochemical Companies.....	109
Table 82: Major Listed Metals and Mining Companies	111
Table 83: Market Share: Government, Private Domestic and Foreign Banks.....	114
Table 84: Directed and Non Directed Lending (Y/Y)	116
Table 85: Brazil's Major Listed Financials Companies.....	118
Table 86: Auto Market Share (written premiums)	122
Table 87: Brazil's Major Listed Non-Bank Financial Companies	122
Table 88: Brazilian Shopping Malls Under Coverage.....	126
Table 89: Brazil's Retail/HPC Companies under Coverage	129
Table 90: Largest Global Pharmaceutical Markets	132

Table 91: Brazil’s Healthcare Companies under Coverage	132
Table 92: Brazilian Volumes in Poultry, Beef and Pork.....	137
Table 93: Brazil Food Industry Size.....	137
Table 94: Differences between Types of Consumers	140
Table 95: Tariff Flags Mechanism - Instated on a monthly basis.....	148
Table 96: 2012/13 Airport Auctions.....	157
Table 97: 2017 Airport Auctions	157
Table 98: 2019 Airports Auctions.....	157
Table 99: Upcoming Port Projects under PPI	158
Table 100: Upcoming Railways under PPI.....	159
Table 101: Government Bond Securities.....	164
Table 102: FX and derivatives	164
Table 103: Main Economic Indicators – Yearly	165
Table 104: Main Economic Indicators – Quarterly	166

Figures

Figure 1: Brazilian Regions	4
Figure 2: Population Projections (2000 – 2060).....	5
Figure 3: Population Growth Rate (%) Projection	5
Figure 4: Population Density by State in 2010.....	6
Figure 5: Urban Population as % of Total	6
Figure 6: Inhabitants that come from another region (% of total).....	6
Figure 7: Life Expectancy at Birth (2018).....	7
Figure 8: Fertility Rate (2018)	7
Figure 9: Mortality Rate by Region (2018).....	7
Figure 10: Population Pyramid (2000)	7
Figure 11: Population Pyramid (2018)	7
Figure 12: Population Pyramid (2025)	7
Figure 13: Population Pyramid (2050)	8
Figure 14: Age Distribution of the Population over Time (2018)	8
Figure 15: % of the population 65 years old and older over time.....	8
Figure 16: Dependency Ratio (the "Demographic Bonus") - 2019	8
Figure 17: Brazil Dependency Ratio Estimates.....	8
Figure 18: Historical Evolution of the Gini Coefficient	9
Figure 19: Recent Evolution of the Gini Index – Slower Gains	9
Figure 20: Per capita wage income change by income levels during the recent crisis	10
Figure 21: Real average wage distribution (2018)	10
Figure 22: % of the Poor Population Relative to Total.....	10
Figure 23: Multidimensional Poverty Index	10
Figure 24: Number of Families Benefiting from Bolsa Família.....	11
Figure 25: Bolsa Família Cost as a % of GDP	12
Figure 26: Happiness Ranking (Gallup).....	13
Figure 27: Brazil’s main problems.....	13

Figure 28: Number of Beneficiaries of Private Health Insurance.....	14
Figure 29: Total Expenditure on Health as % of GDP (2016)	14
Figure 30: Illiteracy Rate of People 15 Years or Older by Region.....	15
Figure 31: Illiteracy Rate for People 15 Years or Older (%) (2018)	15
Figure 32: Mean Years of Schooling (2018).....	15
Figure 33: Education Level of People Aged of 25 Years or More	15
Figure 34: Evolution of Students' Grades in Math and Reading.....	16
Figure 35: Performance in the Pisa Math Evaluation (2018).....	16
Figure 36: Quotas in Federal Universities (2017)	17
Figure 37: Intentional Homicide Rate per 100,000 People (2017).....	18
Figure 38: Murder Rate per 100,000 Inhabitants: Mexico vs. Brazil	18
Figure 39: Historical Murder Rate by Firearm and Total	18
Figure 40: Brazil's Corruption by institution (2019).....	19
Figure 41: Poll: What will happen to corruption post Lava Jato?	20
Figure 42: Top 10 Travel Destinations in the Americas.....	20
Figure 43: Tourist Arrivals in Brazil	21
Figure 44: Revenues from International Travelers in Brazil.....	21
Figure 45: Main Travel Destinations.....	21
Figure 46: Main Brazilian Biomes	22
Figure 47: Yearly track of fire activity in Legal Amazon.....	23
Figure 48: 2019 Monthly track of the fire activity in Legal Amazon	23
Figure 49: DETER: Deforestation in the Legal Amazon.....	24
Figure 50: PRODES: Annual Deforestation at the Legal Amazon.....	24
Figure 51: PRODES: Variation of deforestation.....	24
Figure 52: Cost of Stimulus Measures 2012-2014 (R\$ mil)	26
Figure 53: Fiscal Stimulus per Sector (2013-2014).....	27
Figure 54: Primary Surplus During Presidents' Lula and Dilma Administrations.....	27
Figure 55: Brazilian GDP Growth and Economic Policy Cycles	28
Figure 56: Main Macro Guidelines of the Bolsonaro Administration	28
Figure 57: Brazil Real GDP Since 1901	29
Figure 58: Recession past and present anatomy (GDP SAAR %).....	29
Figure 59: Consensus GDP for YE 2020	29
Figure 60: Consumption and Capex	29
Figure 61: Estimated Potential GDP for LatAm Countries.....	30
Figure 62: Economic Growth: Brazil vs. LatAm, EM, and World.....	30
Figure 63: Latin America Countries' GDP – 15 Year Average	30
Figure 64: GDP Components by Expenditure (Demand Side).....	31
Figure 65: GDP Components by Sector (Supply Side).....	31
Figure 66: GDP per Capita in USD	32
Figure 67: Regional Real GDP Growth % oya (2017)	32
Figure 68: Gross Fixed Capital Formation - Brazil.....	33
Figure 69: Gross Capital Formation – Selected Countries (2018).....	33
Figure 70: Investment Rate Comparisons by Major Country Groups	33
Figure 71: Fixed Capital Formation	33
Figure 72: Exports Prices vs. Fixed Capital Formation Growth.....	34
Figure 73: Capacity Utilization (% of total installed capacity)	34

Figure 74: Investment Partnership Program	35
Figure 75: # of SOEs at Selected Countries.....	35
Figure 76: Federal SOEs Distribution by Sector	35
Figure 77: Poll: Opinion on Privatizations	36
Figure 78: % of Households with Access to Sewage	37
Figure 79: Share of Industry in Overall GDP	38
Figure 80: Industrial Production	38
Figure 81: Industrial Production by Category.....	38
Figure 82: Industrial Production by Sector	39
Figure 83: Industrial Business Confidence	39
Figure 84: Household Consumption.....	40
Figure 85: Consumer Confidence	40
Figure 86: Retail Sales	40
Figure 87: Retail Sales by Category (y/y).....	41
Figure 88: Services Revenue Index.....	42
Figure 89: Consumption Allocation by Region.....	42
Figure 90: Unemployment Rate (%)	43
Figure 91: Labor Force (Economic Active Population).....	44
Figure 92: Real Wages	44
Figure 93: Level of Occupation	44
Figure 94: Net Formal Job Creation (Hires minus Fires).....	45
Figure 95: Net Job Creation per Sector (2019)	45
Figure 96: Minimum Wage Evolution.....	45
Figure 97: CPI, Target and Bands.....	47
Figure 98: Inflation expectations for YE2020.....	48
Figure 99: IPCA vs. INPC.....	49
Figure 100: IGP-M and Its Components.....	50
Figure 101: IPCA vs. IGP-M.....	50
Figure 102: IPCA Components.....	50
Figure 103: Selic Rate vs. Inflation.....	52
Figure 104: Real Interest Rate Ex-Ante (%).....	53
Figure 105: Emerging Market Real Interest Rates (%).....	53
Figure 106: Exchange Rate in Context Since the Real Plan	53
Figure 107: BRL X Selic: Crossing Paths	54
Figure 108: Real Effective Exchange Rate (CPI based) since 1970.....	54
Figure 109: Real Exchange Rate and Terms of Trade.....	55
Figure 110: Exports of Goods and Services as % of GDP (2018).....	55
Figure 111: Total Trade (Exports plus Imports).....	55
Figure 112: Trade Balance.....	56
Figure 113: LatAm – Exports of Goods and Services as a % of GDP (2018).....	56
Figure 114: Brazil’s Export Composition by Category	57
Figure 115: Brazil Exports.....	57
Figure 116: Brazilian Imports	58
Figure 117: Imports by Category	58
Figure 118: Current Account	59
Figure 119: Service Account	59

Figure 120: Annual Brazilian FDI.....	60
Figure 121: Main FDI Destination by Country (2018).....	60
Figure 122: Participation of Key Countries in Brazilian FDI	60
Figure 123: Net Portfolio Inflows	61
Figure 124: Brazil International Reserves	61
Figure 125: International Reserves as a % of GDP (2018).....	61
Figure 126: Gross External Debt as a % of GDP	62
Figure 127: Top 10 EM Countries: External Bond Stock.....	62
Figure 128: CEMBI Broad Brazil Sector Breakdown	62
Figure 129: External Debt Amortization Schedule	63
Figure 130: Federal Government Revenues and Outlays.....	64
Figure 131: Federal Government Expenditures by Category, 2019 % of total expenditures.....	65
Figure 132: Social security spending, % of GDP, Selected Countries.....	66
Figure 133: Central Government Primary Spending	66
Figure 134: Average age of retirement for men at OECD countries and Brazil.....	66
Figure 135: Minimum age for retirement	66
Figure 136: Social Security Reform Impact in 10 years.....	67
Figure 137: Primary Fiscal Balance in Different Social Security Scenarios.....	67
Figure 138: Gross Debt Simulation in Different Social Security Scenarios	67
Figure 139: Primary Surplus.....	68
Figure 140: Nominal Deficit.....	68
Figure 141: EM's Fiscal Balance	68
Figure 142: Interest Payments.....	69
Figure 143: Gross Public Sector Debt	69
Figure 144: General Government Gross Debt.....	69
Figure 145: Total Debt Maturing in Less than 12 Months.....	70
Figure 146: Distribution of Internal Debt by Creditor (% of total)	70
Figure 147: Foreigners Participation in the Internal Debt Stock	70
Figure 148: Country Risk around Investment Grade.....	71
Figure 149: Total Taxation as a % GDP.....	72
Figure 150: Tax Burden/GDP Ratio by Country (2017).....	72
Figure 151: Ranking: Level of Human Development relative to Taxes	72
Figure 152: Statutory Corporate Tax Rate in Selected Countries.....	75
Table 64: Federal Tax Collection per Type of Tax	77
Figure 153: Credit as a % of GDP.....	77
Figure 154: Credit as a % of GDP – Selected Countries (YE2018)	78
Figure 155: Evolution of Market Share.....	78
Figure 156: Loan Growth (%oya)	78
Figure 157: Directed and Non-directed Loans Growth	79
Figure 158: Total Loan Growth (%oya)	79
Figure 159: Total Credit Destination by Debtor (Directed and Non-Directed).....	79
Figure 160: Non Directed Loans to Individuals.....	80
Figure 161: Mortgages as a % of Total Credit	80
Figure 162: Non-Directed Corporate Loans	80
Figure 163: Non-directed Loans Breakdown for Corporates	80

Figure 164: BNDES Share in Earmarked Loans Outstanding	81
Figure 165: Credit with BNDES Resources.....	81
Figure 166: Non-Directed Lending NPL Ratios	81
Figure 167: Lending Spreads.....	81
Figure 168: Interest Rates on Non-Directed Loans	81
Figure 169: Household Debt as a % of Net Income (2018)	82
Figure 170: Household Leverage and Income Committed to Service Debt	82
Figure 171: Household Leverage and Income Committed to Service Debt Ex- Mortgage	82
Figure 172: Breakdown of the Income Commitment to Service Debt.....	82
Figure 173: Mortgages as % of GDP.....	83
Figure 174: Mortgages as a % of GDP - Selected Countries	83
Figure 175: Net Flows for Savings Accounts	84
Figure 176: FGTS Total Housing Disbursements	84
Figure 177: BNDES Participation in Total Credit (%).....	84
Figure 178: BNDES Disbursements (R\$ bil).....	85
Figure 179: BNDES Interest Rate X Selic.....	86
Figure 180: 15 Largest Stock Exchanges in Terms of Market Cap.....	86
Figure 181: B3 Market Cap	87
Figure 182: Number of Listed Companies on Selected Exchanges.....	87
Figure 183: Number of Mergers and Acquisitions in Brazil.....	87
Figure 184: Market Value of All LatAm Deals by Country, 2000-2019	88
Figure 185: IBovespa Index Performance (1992-2019).....	88
Figure 186: Ibov vs. IBX vs. IBX-50	89
Figure 187: Weights in MSCI Emerging Markets.....	90
Figure 188: MSCI Brazil Consensus P/E.....	91
Figure 189: MSCI Brazil, LatAm and EM P/E	91
Figure 190: LatAm markets 10 year average PE (12 mo. fwd.).....	91
Figure 191: MSCI Brazil 12 mo. Fwd P/E by Sector	91
Figure 192: Brazil P/BV versus ROE.....	91
Figure 193: Brazil Dividend Yield.....	92
Figure 194: Foreign Equity Investments in the Bovespa	92
Figure 195: Accumulated foreign flows into B3 (R\$ bn)	92
Figure 196: Investor Participation in Bovespa's Volume	93
Figure 197: Bovespa Average Daily Traded Volume.....	93
Figure 198: Pension Fund Asset Allocation.....	93
Figure 199: Mutual Funds' Total AUM	94
Figure 200: Mutual Funds AUM by Category	94
Figure 201: Fixed Income vs. Equity vs. Multi-Strategy.....	95
Figure 202: Participation of Largest Political Parties in the Lower House (1994 - 2014)	95
Figure 203: Lower House Support for the Executive, First Year of the Administration (% of total bills voted).....	96
Figure 204: Level of support for democracy.....	96
Figure 205: Brazilian Voters – Education Level (% of total).....	96
Figure 206: Brazilian Voters – Age Distribution (% of total).....	96

Figure 207: Pending Measures in Congress – Reform Agenda.....	103
Figure 208: Popularity of Brazilian Presidents	106
Figure 209: Brazil’s Energy Matrix, 2018	107
Figure 210: Brazil E&P Overview – Oil Production (kboed)	107
Figure 211: Simplified Map of Brazilian Basins.....	107
Figure 212: Brazilian Production Profile (kbd).....	108
Figure 213: Brazil Gasoline and Diesel Sales (kboed)	108
Figure 214: Brazil Gasoline and Diesel Imports (kboed)	108
Figure 215: Brazil Pre-Salt Polygon: Santos Basis	109
Figure 216: Brazil: Main Steel-Consuming Sectors, 2018.....	110
Figure 217: Vale Production Recovery Guidance	110
Figure 218: Brazil Iron Ore Exports decreased 15%/y/y and reached 394Mt in 2019	110
Figure 219: Brazil: Ninth Largest Crude Steel Producer in 2018.....	111
Figure 220: Brazil’s Total Steel Exports Increased 11% in 2019.....	111
Figure 221: Brazilian Flat-Steel Imports as a % of Apparent Consumption – YTD Average Currently at 11%	111
Figure 222: China and Europe Port Inventories	112
Figure 223: China Hardwood and Softwood Prices	112
Figure 224: Pulp Market Balance.....	113
Figure 225: Top Five Loan Concentration (2018).....	114
Figure 226: Top Five Deposit Concentration (2018).....	114
Figure 227: Market Share: Public vs. Private (Sept. 2019).....	114
Figure 228: Banking System Return on Equity (ROE).....	115
Figure 229: ROE minus Average Reference Rate.....	115
Figure 230: Loan Market Share (2018)	115
Figure 231: Deposit Market Share (2018)	115
Figure 232: Y-o-Y Loan Growth (Sept. 2019).....	116
Figure 233: Loan-to-Nominal GDP growth Multiplier.....	116
Figure 234: Government Banks: Loan-to-Nominal GDP Growth Multiplier	116
Figure 235: Private Banks: Loan-to-Nominal GDP Growth.....	116
Figure 236: Total System Lending Spreads (Sept. 2019)	117
Figure 237: Non-Directed Lending Spreads (Sept. 2019).....	117
Figure 238: Fees-to-Revenues (2018)	117
Figure 239: Total System NPL Ratio (Sept. 2019).....	117
Figure 240: Loans to GDP	117
Figure 241: Branches per 100,000 Inhabitants (2018).....	118
Figure 242: Bank of Employees per 100,000 Inhabitants (2018).....	118
Figure 243: Credit and Debit Processed Volumes (R\$ billions)	119
Figure 244: Payment Mean - Financials Volume (R\$ Billions).....	119
Figure 245: POS Machines (mn) and Growth Rates	119
Figure 246: Total Processed Volume Market Share (2Q19).....	119
Figure 247: Credit Card - Gross MDR (%).....	120
Figure 248: Credit Card - Net MDR (%).....	120
Figure 249: Debit Card - Gross MDR (%).....	120
Figure 250: Debit Card - Net MDR (%).....	120

Figure 251: Brazilian Card Payment Structure (Estimated Values for R\$100 Transaction).....	120
Figure 252: Insurance Growth vs. GDP (2018).....	121
Figure 253: Insurance Penetration: Premiums as % of GDP (2018)	121
Figure 254: Brazil's Insurance Premium Breakdown (2016)	121
Figure 255: Pension - Contribution Market Share (2018).....	121
Figure 256: Sector P/BV.....	123
Figure 257: Covered Homebuilders Launches' and Presales	124
Figure 258: Inventory not a concern.....	124
Figure 259: SBPE Savings Accounts Inflows (R\$ Billions).....	124
Figure 260: FGTS Financing - Disbursements to MCMV Program LTM.....	124
Figure 261: Timeline of Monthly Mortgage Payments TR vs IPCA.....	125
Figure 262: Shopping Mall Evolution per ABRASCE Data.....	126
Figure 263: Cielo (ICVA) and IBGE Retail Sales Index.....	126
Figure 264: Sector Same-Store Sales YoY	127
Figure 265: P/FFO (12 Months Fwd) vs Real Interest Rates	127
Figure 266: Sector P/FFO (12 Months Forward)	127
Figure 267: Retail Sales Growth – Three-Month Average	128
Figure 268: Improvements to Disposable Income.....	128
Figure 269: Consumer Confidence is increasing.....	128
Figure 270: Food retail formats are facing different trends	128
Figure 271: LREN Has Been Gaining Market Share in Apparel	129
Figure 272: E-commerce sales.....	129
Figure 273: Household penetration per format	129
Figure 274: Healthcare Expenditure as % of GDP (2016).....	130
Figure 275: Private Healthcare Expenditure as % of Total (2016).....	130
Figure 276: Private Healthcare Market in Brazil.....	130
Figure 277: Private Healthcare Plans by Type.....	130
Figure 278: Job Creation back to the positive territory	131
Figure 279: Per Capita Healthcare Expenditure (2016).....	131
Figure 280: Brazilian Population Aging Profile.....	131
Figure 281: Ongoing Accelerated Aging Process	131
Figure 282: Medical Costs Inflation vs. IPCA Inflation Index	132
Figure 283: Brazilian Pharmaceutical Market –sell out.....	132
Figure 284: Global Pharmaceutical Markets expected growth.....	132
Figure 285: Number of Private Higher Education Institutions.....	133
Figure 286: Enrollments Faced a Strong Growth Period After 1996.....	133
Figure 287: Cumulative FIES Contracts Signed (thousands).....	133
Figure 288: Tuition Increased When FIES Was Introduced	134
Figure 289: Expenditure with FIES.....	134
Figure 290: High Bad Debt Levels at FIES	134
Figure 291: Supply of new FIES loans declined significantly	134
Figure 292: Companies Were Able to Replenish Lost FIES Intake	135
Figure 293: % of Population (25y+) with Higher Education (2015).....	135
Figure 294: Gross Enrollment Rate (GER), 2015	135
Figure 295: Salary Premium of Graduates vs. Unskilled Labor.....	135

Figure 296: Distance Learning Enrollments Growing at a Fast Pace	136
Figure 297: Distance Learning Is a Highly Concentrated Market	136
Figure 298: Brazilian Protein Volume Consumption Evolution	137
Figure 299: Per-Capita Protein Consumption in Brazil Is Elevated in Poultry and Beef, Not Yet in Pork.....	137
Figure 300: Export Volumes as % of Total Production in Brazil.....	138
Figure 301: Brazil's Cattle Costs Are Generally Competitive	138
Figure 302: Brazil Has Similar Poultry Production Costs as the U.S.	138
Figure 303: Brazil and the U.S. Have Been Growing Poultry Exports.....	138
Figure 304: Brazil Is Amongst the World's Largest Beer Markets	139
Figure 305: BZ Beer per Capita Consumption Has Overtaken the Regional and Global Average.....	139
Figure 306: Ambev Has Leading Market Share in BZ Beer	139
Figure 307: Power Market Structure	140
Figure 308: Breakdown of Capacity and Generation – 2018	141
Figure 309: Market Share of the Largest Power Generators.....	142
Figure 310: Evolution of the Generation Capacity.....	142
Figure 311: Average Spot Price Evolution	142
Figure 312: Power Supply x Demand Balance	142
Figure 313: Hydro Generation Surpluses/Deficits	143
Figure 314: Participation of the free market in all power consumption.....	143
Figure 315: Migration to the free market.....	143
Figure 316: Prices for New Wholesale Contracts - Forward Looking.....	144
Figure 317: Number of Micro Generations Systems	144
Figure 318: Largest Transmission Operators.....	144
Figure 319: Reg. WACC for Transmission Auctions.....	145
Figure 320: Largest Distribution Groups by Market Share.....	146
Figure 321: Regulatory WACC – Real R\$, post-tax	146
Figure 322: GDP x Electricity Consumption Growth y/y.....	148
Figure 323: Average Residential Consumption per Capital.....	148
Figure 324: Map of São Paulo-based Electricity Distribution Companies.....	149
Figure 325: Map of South and Southeast Electricity DisCos (ex-São Paulo)	149
Figure 326: Map of North, Northeast and Center-West Electricity Distribution Companies	149
Figure 327: Largest Water & Sewage Utilities in Brazil	151
Figure 328: Sabesp – Cantareira Reservoir Levels.....	152
Figure 329: Broadband Subs as % of Lines in Service.....	153
Figure 330: Four Large Competitors in Brazilian Mobile	154
Figure 331: More-for-More Strategy Leading to Higher Prices.....	154
Figure 332: Rebound in Mobile Service Revenue Trends	154
Figure 333: IGP-M Should Negatively Impact Revenues	154
Figure 334: B2B Credit Total Addressable Market.....	155
Figure 335: Road Traffic Growth (y/y) vs. GDP Growth (y/y).....	156
Figure 336: Domestic RPK Growth (Y/Y)	157
Figure 337: Main Brazilian Ports.....	157
Figure 338: Auto Production Evolution (LV + LCV)	160

Figure 339: Outstanding Autos Loan Balance has rebounded	161
Figure 340: LV + HV production growth (%yoy).....	161
Figure 341: Trailers and Semi-Trailers Sales & Truck Production	161
Figure 342: Global PMI – Better trend recently but still suboptimal (Points).....	161
Figure 343: US Total Truck Sales – LTM.....	162
Figure 344: Buses Bodywork Production by Segment.....	162
Figure 345: Main Economic Indicators - Quarterly.....	167

Companies Discussed in This Report (all prices in this report as of market close on 19 February 2020)
Aliansce Sonae Shopping Center (ALSO3.SA/R\$52.27/Overweight), BR Malls (BRML3.SA/R\$17.92/Overweight)

Disclosures

Analyst Certification: The research analyst(s) denoted by an “AC” on the cover of this report certifies (or, where multiple research analysts are primarily responsible for this report, the research analyst denoted by an “AC” on the cover or within the document individually certifies, with respect to each security or issuer that the research analyst covers in this research) that: (1) all of the views expressed in this report accurately reflect the research analyst’s personal views about any and all of the subject securities or issuers; and (2) no part of any of the research analyst’s compensation was, is, or will be directly or indirectly related to the specific recommendations or views expressed by the research analyst(s) in this report. For all Korea-based research analysts listed on the front cover, if applicable, they also certify, as per KOFIA requirements, that their analysis was made in good faith and that the views reflect their own opinion, without undue influence or intervention.

All authors named within this report are research analysts unless otherwise specified. In Europe, Sector Specialists may be shown on this report as contacts but are not authors of the report or part of the Research Department.

Pursuant to Brazilian regulation, the primary research analyst signing this report certifies that (1) all recommendations expressed herein by the research analyst reflect the analyst’s sole and exclusive personal views and have been independently produced, including from the J.P. Morgan entity in which the research analyst is an employee; and (2) the research analyst responsible for or any research analyst involved in the preparation of this report will disclose herein any situation that impacts or that could impact the impartiality of the recommendations contained in this report or that constitutes or may constitute a conflict of interest.

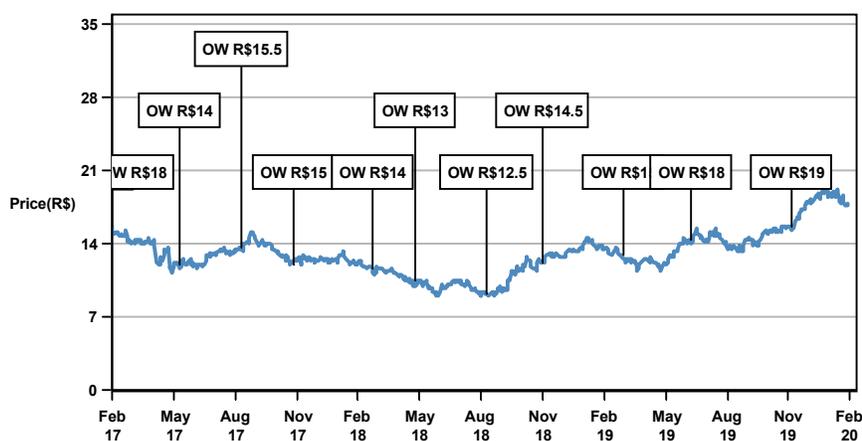
Important Disclosures

- **Market Maker/ Liquidity Provider:** J.P. Morgan is a market maker and/or liquidity provider in the financial instruments of/related to BR Malls, Aliansce Sonae Shopping Center.
- **Manager or Co-manager:** J.P. Morgan acted as manager or co-manager in a public offering of securities or financial instruments (as such term is defined in Directive 2014/65/EU) for Aliansce Sonae Shopping Center within the past 12 months.
- **Client:** J.P. Morgan currently has, or had within the past 12 months, the following entity(ies) as clients: BR Malls, Aliansce Sonae Shopping Center.
- **Client/Investment Banking:** J.P. Morgan currently has, or had within the past 12 months, the following entity(ies) as investment banking clients: Aliansce Sonae Shopping Center.
- **Client/Non-Investment Banking, Securities-Related:** J.P. Morgan currently has, or had within the past 12 months, the following entity(ies) as clients, and the services provided were non-investment-banking, securities-related: BR Malls.
- **Investment Banking (past 12 months):** J.P. Morgan received in the past 12 months compensation for investment banking services from Aliansce Sonae Shopping Center.
- **Investment Banking (next 3 months):** J.P. Morgan expects to receive, or intends to seek, compensation for investment banking services in the next three months from Aliansce Sonae Shopping Center.
- **Non-Investment Banking Compensation:** J.P. Morgan has received compensation in the past 12 months for products or services other than investment banking from BR Malls.
- **Debt Position:** J.P. Morgan may hold a position in the debt securities of BR Malls, Aliansce Sonae Shopping Center, if any.
- **MSCI:** The MSCI sourced information is the exclusive property of MSCI. Without prior written permission of MSCI, this information and any other MSCI intellectual property may not be reproduced, disseminated or used to create any financial products, including any indices. This information is provided on an 'as is' basis. The user assumes the entire risk of any use made of this information. MSCI, its affiliates and any third party involved in, or related to, computing or compiling the information hereby expressly disclaim all warranties of originality, accuracy, completeness, merchantability or fitness for a particular purpose with respect to any of this information. Without limiting any of the foregoing, in no event shall MSCI, any of its affiliates or any third party involved in, or related to, computing or compiling the information have any liability for any damages of any kind. MSCI and the MSCI indexes are services marks of MSCI and its affiliates.
- **Client/Non-Investment Banking, Investment Banking, Securities-Related:** J.P. Morgan currently has, or had within the past 12 months, the following company(ies) as clients, and the services provided are or were non-investment-banking, investment banking, securities-related: Petrobras Distribuidora S.A.

- Client/Non-Investment Banking, Investment Banking, Securities-Related: J.P. Morgan currently has, or had within the past 12 months, the following company(ies) as clients, and the services provided are or were non-investment-banking, investment banking, securities-related: Ourofino Saude Animal Participações S.A.
- J.P. Morgan is currently acting as underwriter in a public offering for Cogna Educação S.A. in accordance with CVM Instruction no. 476, dated as of January 16, 2009, as amended (“CVM Rule 476”).

Company-Specific Disclosures: Important disclosures, including price charts and credit opinion history tables, are available for compendium reports and all J.P. Morgan–covered companies by visiting <https://www.jpmm.com/research/disclosures>, calling 1-800-477-0406, or e-mailing research.disclosure.inquiries@jpmorgan.com with your request. J.P. Morgan’s Strategy, Technical, and Quantitative Research teams may screen companies not covered by J.P. Morgan. For important disclosures for these companies, please call 1-800-477-0406 or e-mail research.disclosure.inquiries@jpmorgan.com.

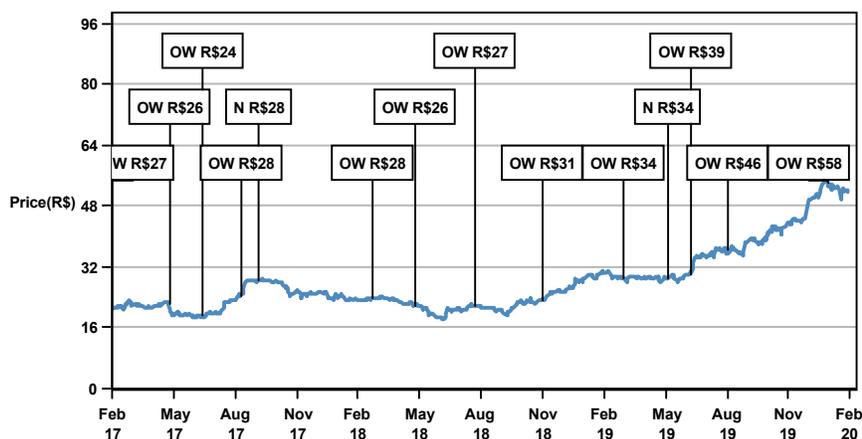
BR Malls (BRML3.SA, BRML3 BZ) Price Chart



Source: Bloomberg and J.P. Morgan; price data adjusted for stock splits and dividends. Initiated coverage Jul 18, 2011. All share prices are as of market close on the previous business day.

Date	Rating	Price (R\$)	Price Target (R\$)
22-Feb-17	OW	15.68	18
01-Jun-17	OW	11.98	14
01-Sep-17	OW	13.60	15.5
16-Nov-17	OW	12.06	15
16-Mar-18	OW	11.55	14
16-May-18	OW	10.47	13
31-Aug-18	OW	9.20	12.5
23-Nov-18	OW	12.22	14.5
21-Mar-19	OW	12.86	15
01-Jul-19	OW	14.33	18
27-Nov-19	OW	15.73	19

Allianse Sonae Shopping Center (ALSO3.SA, ALSO3 BZ) Price Chart



Source: Bloomberg and J.P. Morgan; price data adjusted for stock splits and dividends. Initiated coverage Jun 10, 2011. All share prices are as of market close on the previous business day.

Date	Rating	Price (R\$)	Price Target (R\$)
22-Feb-17	OW	20.82	27
17-May-17	OW	22.50	26
07-Jul-17	OW	19.07	24
01-Sep-17	OW	24.60	28
28-Sep-17	N	28.63	28
16-Mar-18	OW	23.90	28
16-May-18	OW	21.80	26
15-Aug-18	OW	21.87	27
23-Nov-18	OW	23.30	31
21-Mar-19	OW	29.00	34
27-May-19	N	29.10	34
01-Jul-19	OW	29.80	39
23-Aug-19	OW	36.40	46
21-Jan-20	OW	54.45	58

The chart(s) show J.P. Morgan's continuing coverage of the stocks; the current analysts may or may not have covered it over the entire period.

J.P. Morgan ratings or designations: OW = Overweight, N= Neutral, UW = Underweight, NR = Not Rated

Explanation of Equity Research Ratings, Designations and Analyst(s) Coverage Universe:

J.P. Morgan uses the following rating system: Overweight [Over the next six to twelve months, we expect this stock will outperform the

average total return of the stocks in the analyst's (or the analyst's team's) coverage universe.] Neutral [Over the next six to twelve months, we expect this stock will perform in line with the average total return of the stocks in the analyst's (or the analyst's team's) coverage universe.] Underweight [Over the next six to twelve months, we expect this stock will underperform the average total return of the stocks in the analyst's (or the analyst's team's) coverage universe.] Not Rated (NR): J.P. Morgan has removed the rating and, if applicable, the price target, for this stock because of either a lack of a sufficient fundamental basis or for legal, regulatory or policy reasons. The previous rating and, if applicable, the price target, no longer should be relied upon. An NR designation is not a recommendation or a rating. In our Asia (ex-Australia and ex-India) and U.K. small- and mid-cap equity research, each stock's expected total return is compared to the expected total return of a benchmark country market index, not to those analysts' coverage universe. If it does not appear in the Important Disclosures section of this report, the certifying analyst's coverage universe can be found on J.P. Morgan's research website, www.jpmorganmarkets.com.

J.P. Morgan Equity Research Ratings Distribution, as of January 02, 2020

	Overweight (buy)	Neutral (hold)	Underweight (sell)
J.P. Morgan Global Equity Research Coverage	45%	41%	15%
IB clients*	51%	47%	39%
JPMS Equity Research Coverage	43%	42%	14%
IB clients*	75%	64%	56%

*Percentage of subject companies within each of the "buy," "hold" and "sell" categories for which J.P. Morgan has provided investment banking services within the previous 12 months. Please note that the percentages might not add to 100% because of rounding. For purposes only of FINRA ratings distribution rules, our Overweight rating falls into a buy rating category; our Neutral rating falls into a hold rating category; and our Underweight rating falls into a sell rating category. Please note that stocks with an NR designation are not included in the table above. This information is current as of the end of the most recent calendar quarter.

Equity Valuation and Risks: For valuation methodology and risks associated with covered companies or price targets for covered companies, please see the most recent company-specific research report at <http://www.jpmorganmarkets.com>, contact the primary analyst or your J.P. Morgan representative, or email research.disclosure.inquiries@jpmorgan.com. For material information about the proprietary models used, please see the Summary of Financials in company-specific research reports and the Company Tearsheets, which are available to download on the company pages of our client website, <http://www.jpmorganmarkets.com>. This report also sets out within it the material underlying assumptions used.

Explanation of Emerging Markets Sovereign Research Ratings System and Valuation & Methodology:

Ratings System: J.P. Morgan uses the following issuer portfolio weightings for Emerging Markets sovereign credit strategy: Overweight (over the next three months, the recommended risk position is expected to outperform the relevant index, sector, or benchmark credit returns); Marketweight (over the next three months, the recommended risk position is expected to perform in line with the relevant index, sector, or benchmark credit returns); and Underweight (over the next three months, the recommended risk position is expected to underperform the relevant index, sector, or benchmark credit returns). NR is Not Rated. In this case, J.P. Morgan has removed the rating for this security because of either legal, regulatory or policy reasons or because of lack of a sufficient fundamental basis. The previous rating no longer should be relied upon. An NR designation is not a recommendation or a rating. NC is Not Covered. An NC designation is not a rating or a recommendation. Recommendations will be at the issuer level, and an issuer recommendation applies to all of the index-eligible bonds at the same level for the issuer. When we change the issuer-level rating, we are changing the rating for all of the issues covered, unless otherwise specified. Ratings for quasi-sovereign issuers in the EMBIG may differ from the ratings provided in EM corporate coverage.

Valuation & Methodology: For J.P. Morgan's Emerging Markets Sovereign Credit Strategy, we assign a rating to each sovereign issuer (Overweight, Marketweight or Underweight) based on our view of whether the combination of the issuer's fundamentals, market technicals, and the relative value of its securities will cause it to outperform, perform in line with, or underperform the credit returns of the EMBIGD index over the next three months. Our view of an issuer's fundamentals includes our opinion of whether the issuer is becoming more or less able to service its debt obligations when they become due and payable, as well as whether its willingness to service debt obligations is increasing or decreasing.

J.P. Morgan Sovereign Research Ratings Distribution, as of January 2, 2020

	Overweight	Marketweight	Underweight
Global Sovereign Research Universe	16%	65%	18%
IB clients*	56%	50%	70%

*Percentage of subject issuers within each of the "buy," "hold" and "sell" categories for which J.P. Morgan has provided investment banking services within the previous 12 months. Please note that the percentages might not add to 100% because of rounding. The Sovereign Research Rating Distribution is at the issuer level. Issuers with an NR or an NC designation are not included in the table above. This information is current as of the end of the most recent calendar quarter.

Analysts' Compensation: The research analysts responsible for the preparation of this report receive compensation based upon various factors, including the quality and accuracy of research, client feedback, competitive factors, and overall firm revenues.

Registration of non-US Analysts: Unless otherwise noted, the non-US analysts listed on the front of this report are employees of non-US affiliates of J.P. Morgan Securities LLC, may not be registered as research analysts under FINRA rules, may not be associated persons of J.P. Morgan Securities LLC, and may not be subject to FINRA Rule 2241 or 2242 restrictions on communications with covered companies, public appearances, and trading securities held by a research analyst account.

Other Disclosures

J.P. Morgan is a marketing name for investment banking businesses of JPMorgan Chase & Co. and its subsidiaries and affiliates worldwide.

All research reports made available to clients are simultaneously available on our client website, J.P. Morgan Markets. Not all research content is redistributed, e-mailed or made available to third-party aggregators. For all research reports available on a particular stock, please contact your sales representative.

Any data discrepancies in this report could be the result of different calculations and/or adjustments.

Any long form nomenclature for references to China; Hong Kong; Taiwan; and Macau within this research report are Mainland China; Hong Kong SAR, China; Taiwan, China; Macau SAR, China.

Options and Futures related research: If the information contained herein regards options or futures related research, such information is available only to persons who have received the proper options or futures risk disclosure documents. Please contact your J.P. Morgan Representative or visit <https://www.theocc.com/components/docs/riskstoc.pdf> for a copy of the Option Clearing Corporation's Characteristics and Risks of Standardized Options or http://www.finra.org/sites/default/files/Security_Futures_Risk_Disclosure_Statement_2018.pdf for a copy of the Security Futures Risk Disclosure Statement.

Private Bank Clients: Where you are receiving research as a client of the private banking businesses offered by JPMorgan Chase & Co. and its subsidiaries ("J.P. Morgan Private Bank"), research is provided to you by J.P. Morgan Private Bank and not by any other division of J.P. Morgan, including but not limited to the J.P. Morgan corporate and investment bank and its research division.

Legal entity responsible for the production of research: The legal entity identified below the name of the Reg AC research analyst who authored this report is the legal entity responsible for the production of this research. Where multiple Reg AC research analysts authored this report with different legal entities identified below their names, these legal entities are jointly responsible for the production of this research.

Legal Entities Disclosures

U.S.: JPMS is a member of NYSE, FINRA, SIPC and the NFA. JPMorgan Chase Bank, N.A. is a member of FDIC. **Canada:** J.P. Morgan Securities Canada Inc. is a registered investment dealer, regulated by the Investment Industry Regulatory Organization of Canada and the Ontario Securities Commission and is the participating member on Canadian exchanges. **U.K.:** JPMorgan Chase N.A., London Branch, is authorised by the Prudential Regulation Authority and is subject to regulation by the Financial Conduct Authority and to limited regulation by the Prudential Regulation Authority. Details about the extent of our regulation by the Prudential Regulation Authority are available from J.P. Morgan on request. J.P. Morgan Securities plc (JPMS plc) is a member of the London Stock Exchange and is authorised by the Prudential Regulation Authority and regulated by the Financial Conduct Authority and the Prudential Regulation Authority. Registered in England & Wales No. 2711006. Registered Office 25 Bank Street, London, E14 5JP. **Germany:** This material is distributed in Germany by J.P. Morgan Securities plc, Frankfurt Branch which is regulated by the Bundesanstalt für Finanzdienstleistungsaufsicht and also by J.P. Morgan AG (JPM AG) which is a member of the Frankfurt stock exchange and is regulated by the Federal Financial Supervisory Authority (BaFin), JPM AG is a company incorporated in the Federal Republic of Germany with registered office at Taunustor 1, 60310 Frankfurt am Main, the Federal Republic of Germany. **South Africa:** J.P. Morgan Equities South Africa Proprietary Limited is a member of the Johannesburg Securities Exchange and is regulated by the Financial Services Board. **Hong Kong:** J.P. Morgan Securities (Asia Pacific) Limited (CE number AAJ321) is regulated by the Hong Kong Monetary Authority and the Securities and Futures Commission in Hong Kong and/or J.P. Morgan Broking (Hong Kong) Limited (CE number AAB027) is regulated by the Securities and Futures Commission in Hong Kong. JP Morgan Chase Bank, N.A., Hong Kong is organized under the laws of U.S.A. with limited liability. **Korea:** This material is issued and distributed in Korea by or through J.P. Morgan Securities (Far East) Limited, Seoul Branch, which is a member of the Korea Exchange (KRX) and is regulated by the Financial Services Commission (FSC) and the Financial Supervisory Service (FSS). **Australia:** J.P. Morgan Securities Australia Limited (JPMSAL) (ABN 61 003 245 234/AFS Licence No: 238066) is regulated by ASIC and is a Market, Clearing and Settlement Participant of ASX Limited and CHI-X. **Taiwan:** J.P. Morgan Securities (Taiwan) Limited is a participant of the Taiwan Stock Exchange (company-type) and regulated by the Taiwan Securities and Futures Bureau. **India:** J.P. Morgan India Private Limited (Corporate Identity Number - U67120MH1992FTC068724), having its registered office at J.P. Morgan Tower, Off. C.S.T. Road, Kalina, Santacruz - East, Mumbai - 400098, is registered with Securities and Exchange Board of India (SEBI) as a 'Research Analyst' having registration number INH000001873. J.P. Morgan India Private Limited is also registered with SEBI as a member of the National Stock Exchange of India Limited and the Bombay Stock Exchange Limited (SEBI Registration Number - INZ000239730) and as a Merchant Banker (SEBI Registration Number - MB/INM000002970). Telephone: 91-22-6157 3000, Facsimile: 91-22-6157 3990 and Website: www.jpmpil.com. For non local research reports, this material is not distributed in India by J.P. Morgan India Private Limited. **Thailand:** This material is issued and distributed in Thailand by JPMorgan Securities (Thailand) Ltd., which is a member of the Stock Exchange of Thailand and is regulated by the Ministry of Finance and the Securities and Exchange Commission and its registered address is 3rd Floor, 20 North Sathorn Road, Silom, Bangrak, Bangkok 10500. **Indonesia:** PT J.P. Morgan Sekuritas Indonesia is a member of the Indonesia Stock Exchange and is regulated by the OJK a.k.a. BAPEPAM LK. **Philippines:** J.P. Morgan Securities

Philippines Inc. is a Trading Participant of the Philippine Stock Exchange and a member of the Securities Clearing Corporation of the Philippines and the Securities Investor Protection Fund. It is regulated by the Securities and Exchange Commission. **Brazil:** Banco J.P. Morgan S.A. is regulated by the Comissão de Valores Mobiliários (CVM) and by the Central Bank of Brazil. **Mexico:** J.P. Morgan Casa de Bolsa, S.A. de C.V., J.P. Morgan Grupo Financiero is a member of the Mexican Stock Exchange and authorized to act as a broker dealer by the National Banking and Securities Exchange Commission. **Singapore:** This material is issued and distributed in Singapore by or through J.P. Morgan Securities Singapore Private Limited (JPMSS) [MCI (P) 058/04/2019 and Co. Reg. No.: 199405335R], which is a member of the Singapore Exchange Securities Trading Limited and/or JPMorgan Chase Bank, N.A., Singapore branch (JPMCB Singapore) [MCI (P) 070/09/2019], both of which are regulated by the Monetary Authority of Singapore. This material is issued and distributed in Singapore only to accredited investors, expert investors and institutional investors, as defined in Section 4A of the Securities and Futures Act, Cap. 289 (SFA). This material is not intended to be issued or distributed to any retail investors or any other investors that do not fall into the classes of "accredited investors," "expert investors" or "institutional investors," as defined under Section 4A of the SFA. Recipients of this document are to contact JPMSS or JPMCB Singapore in respect of any matters arising from, or in connection with, the document. **Japan:** JPMorgan Securities Japan Co., Ltd. and JPMorgan Chase Bank, N.A., Tokyo Branch are regulated by the Financial Services Agency in Japan. **Malaysia:** This material is issued and distributed in Malaysia by JPMorgan Securities (Malaysia) Sdn Bhd (18146-X) which is a Participating Organization of Bursa Malaysia Berhad and a holder of Capital Markets Services License issued by the Securities Commission in Malaysia. **Pakistan:** J. P. Morgan Pakistan Broking (Pvt.) Ltd is a member of the Karachi Stock Exchange and regulated by the Securities and Exchange Commission of Pakistan. **Dubai:** JPMorgan Chase Bank, N.A., Dubai Branch is regulated by the Dubai Financial Services Authority (DFSA) and its registered address is Dubai International Financial Centre - Building 3, Level 7, PO Box 506551, Dubai, UAE. **Russia:** CB J.P. Morgan Bank International LLC is regulated by the Central Bank of Russia. **Argentina:** JPMorgan Chase Bank Sucursal Buenos Aires is regulated by Banco Central de la República Argentina ("BCRA" - Central Bank of Argentina) and Comisión Nacional de Valores ("CNV" - Argentinian Securities Commission")

Country and Region Specific Disclosures

U.K. and European Economic Area (EEA): Unless specified to the contrary, issued and approved for distribution in the U.K. and the EEA by JPMS plc. Investment research issued by JPMS plc has been prepared in accordance with JPMS plc's policies for managing conflicts of interest arising as a result of publication and distribution of investment research. Many European regulators require a firm to establish, implement and maintain such a policy. Further information about J.P. Morgan's conflict of interest policy and a description of the effective internal organisations and administrative arrangements set up for the prevention and avoidance of conflicts of interest is set out at the following link <https://www.jpmorgan.com/jpmpdf/1320742677360.pdf>. This report has been issued in the U.K. only to persons of a kind described in Article 19 (5), 38, 47 and 49 of the Financial Services and Markets Act 2000 (Financial Promotion) Order 2005 (all such persons being referred to as "relevant persons"). This document must not be acted on or relied on by persons who are not relevant persons. Any investment or investment activity to which this document relates is only available to relevant persons and will be engaged in only with relevant persons. In other EEA countries, the report has been issued to persons regarded as professional investors (or equivalent) in their home jurisdiction. **Australia:** This material is issued and distributed by JPMSAL in Australia to "wholesale clients" only. This material does not take into account the specific investment objectives, financial situation or particular needs of the recipient. The recipient of this material must not distribute it to any third party or outside Australia without the prior written consent of JPMSAL. For the purposes of this paragraph the term "wholesale client" has the meaning given in section 761G of the Corporations Act 2001. J.P. Morgan's research coverage universe spans listed securities across the ASX All Ordinaries index, securities listed on offshore markets, unlisted issuers and investment products which Research management deem to be relevant to the investor base from time to time. J.P. Morgan seeks to cover companies of relevance to the domestic and international investor base across all GIC sectors, as well as across a range of market capitalisation sizes. **Germany:** This material is distributed in Germany by J.P. Morgan Securities plc, Frankfurt Branch which is regulated by the Bundesanstalt für Finanzdienstleistungsaufsicht. **Korea:** This report may have been edited or contributed to from time to time by affiliates of J.P. Morgan Securities (Far East) Limited, Seoul Branch. **Singapore:** As at the date of this report, JPMSS is a designated market maker for certain structured warrants listed on the Singapore Exchange where the underlying securities may be the securities discussed in this report. Arising from its role as designated market maker for such structured warrants, JPMSS may conduct hedging activities in respect of such underlying securities and hold or have an interest in such underlying securities as a result. The updated list of structured warrants for which JPMSS acts as designated market maker may be found on the website of the Singapore Exchange Limited: <http://www.sgx.com>. In addition, JPMSS and/or its affiliates may also have an interest or holding in any of the securities discussed in this report – please see the Important Disclosures section above. For securities where the holding is 1% or greater, the holding may be found in the Important Disclosures section above. For all other securities mentioned in this report, JPMSS and/or its affiliates may have a holding of less than 1% in such securities and may trade them in ways different from those discussed in this report. Employees of JPMSS and/or its affiliates not involved in the preparation of this report may have investments in the securities (or derivatives of such securities) mentioned in this report and may trade them in ways different from those discussed in this report. **Taiwan:** Research relating to equity securities is issued and distributed in Taiwan by J.P. Morgan Securities (Taiwan) Limited, subject to the license scope and the applicable laws and the regulations in Taiwan. According to Paragraph 2, Article 7-1 of Operational Regulations Governing Securities Firms Recommending Trades in Securities to Customers (as amended or supplemented) and/or other applicable laws or regulations, please note that the recipient of this material is not permitted to engage in any activities in connection with the material which may give rise to conflicts of interests, unless otherwise disclosed in the "Important Disclosures" in this material. **India:** For private circulation only, not for sale. **Pakistan:** For private circulation only, not for sale. **New Zealand:** This material is issued and distributed by JPMSAL in New Zealand only to "wholesale clients" (as defined in the Financial Advisers Act 2008). The recipient of this material must not distribute it to any third party or outside New Zealand without the prior written consent of JPMSAL. **Canada:** This report is distributed in Canada by or on behalf of J.P.Morgan Securities Canada Inc. The information contained herein is not, and under no circumstances is to be construed as an offer to sell securities described herein, or solicitation of an offer to buy securities described herein, in Canada or any province or territory thereof. The information contained herein is under no circumstances to be construed as investment advice in any province or territory of Canada and is not tailored to the needs of the recipient. **Dubai:** This report has been distributed to persons regarded as professional clients or market counterparties as defined under the DFSA rules. **Brazil:** Ombudsman J.P. Morgan: 0800-7700847 / ouvidoria.jp.morgan@jpmorgan.com.

General: Additional information is available upon request. Information has been obtained from sources believed to be reliable but JPMorgan Chase & Co. or its affiliates and/or subsidiaries (collectively J.P. Morgan) do not warrant its completeness or accuracy except with respect to any disclosures relative to JPMS and/or its affiliates and the analyst's involvement with the issuer that is the subject of the research. All pricing is indicative as of the close of market for the securities discussed, unless otherwise stated. Opinions and estimates constitute our judgment as of the date of this material and are subject to change without notice. Past performance is not indicative of future results. This material is not intended as an offer or solicitation for the purchase or sale of any financial instrument. The opinions and recommendations herein do not take into account individual client circumstances, objectives, or needs and are not intended as recommendations of particular securities, financial instruments or strategies to particular clients. The recipient of this report must make its own

independent decisions regarding any securities or financial instruments mentioned herein. JPMS distributes in the U.S. research published by non-U.S. affiliates and accepts responsibility for its contents. Periodic updates may be provided on companies/industries based on company specific developments or announcements, market conditions or any other publicly available information. Clients should contact analysts and execute transactions through a J.P. Morgan subsidiary or affiliate in their home jurisdiction unless governing law permits otherwise.

"Other Disclosures" last revised January 01, 2020.

Copyright 2020 JPMorgan Chase & Co. All rights reserved. This report or any portion hereof may not be reprinted, sold or redistributed without the written consent of J.P. Morgan.