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BRAZIL AND THE UNITED STATES: ROUTES FOR IMPROVING A HISTORICAL ECONOMIC PARTNERSHIP

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CONTENTS

1 AN OVERVIEW OF THE TWO ECONOMIES	5
2 BILATERAL TRADE.....	11
3 TRADE POLICY.....	20
4 BILATERAL DIRECT INVESTMENTS.....	34
5 COOPERATION IN SCIENCE AND TECHNOLOGY.....	37
6 SUGGESTED FURTHER STEPS TO FOSTER BILATERAL RELATIONS.....	39
REFERENCES.....	39
APPENDIX A.....	41
APPENDIX B.....	52

Over the past two decades, the bilateral relations between Brazil and the United States (US) have been predominantly marked by political friendship and positive economic association. Ever since the 1990s, when Brazil consolidated its stabilization process,¹ every president elected in the country has gathered summits with his or her American counterparts. In those events, both governments' leaders have emphasized that their partnership is based on a few common general goals. They can be summarized as: i) the desire to build an inclusive and just world order; ii) the commitment to the promotion of democracy; iii) the respect for human rights; iv) the understanding between diverse cultures; and v) the defense of economic and social inclusion around the world. Other recurring principles have been freedom, equality, social justice, respect for sovereignty, the repudiation of racial and ethnic discrimination, and the defense of environmental sustainability.

Besides these shared national objectives, the common characteristics of both countries have also been highlighted on those presidential meetings as an additional basis of their fruitful association. Among other factors, the presidents have been stressing the following elements: i) their countries are the two largest democracies and economies in the Americas; ii) the continental dimension of their territories; iii) the richness and diversity of their cultures; and iv) the multiethnic configuration of their societies (table 1 for selected data). By building the bilateral relationship upon these common bases, they have granted a growingly respectful and equitable treatment with one another. With the strengthening of mutual trust, their differences in international politics could be bilaterally negotiated on a case-by-case basis, each side defending its ideas and posing its demands respectfully with each other (Pecequilo, 2010).

TABLE 1

Selected national indicators and power resources of Brazil and the US

Data	Year	Countries		Unit of measurement
		Brazil	US	
Territory	2020	8,510,345	9,833,517	km ²
Population	2020	212,559,409	329,484,123	Inhabitants
GNP/current US\$	2020	1,444,733	20,936,600	US\$ million
GNP/PPP	2020	3,153,597	20,936,600	US\$ million
GNP/current US\$ per capita	2020	6,797	63,544	US\$ per capita
GNP/PPP per capita	2020	14,836	63,544	US\$ per capita
HDI	2019	0.765	0.926	Composite index
Poverty	2018	9.1	1.2	% of population ¹
Gini index	2020	53.40	14.58	Composite index

Sources: For territory, Brazilian Institute of Geography and Statistics – IBGE (available at: <<https://bit.ly/3JbigBm>>; accessed on: Aug. 26, 2021); for population, GNP/current US\$, GNP/PPP, GNP/current US\$ per capita, GNP/PPP per capita, poverty and Gini index, World Development Indicators – WDI/World Bank (available at: <<https://bit.ly/3ehVSYU>>; accessed on: Aug. 26, 2021); and for HDI, United Nations Development Program – UNDP (available at: <<https://bit.ly/3pi6ihb>>; accessed on: Aug. 26, 2021).

Authors' elaboration.

Note: ¹ Headcount ratio at US\$ 3.20 (PPP/2011) a day.

1. The processes of democratization and inflations control have been the most remarkable.

In fact, even though both countries did not stop being partners in the last twenty years, one must also recognize that in some moments their foreign policy strategies were far from being perfectly compatible. In parallel with the political consequences of their presidential elections not taking place simultaneously,² a sequence of events of broader impact have produced interspersed movements of approximation and detachment between Brasilia and Washington. Of them, it is worth mentioning the terrorist attacks of 2001, the international financial crisis of 2008, the rise (and later the relative fall of some) of the BRICS countries (Brazil, Russia, India, China, and South Africa) and the spying scandal.

In any case, it is certain these political mismatches between Brazil and the US were not the main reason for the ups and downs in their bilateral flows from 2000 to 2020. It is widely known that domestic and international economic variables can deliver better explanations for these kinds of oscillations. In this direction, even though since 2009 the Americans ceased to be Brazil's main trading partner of goods, also in this specific process other factors had a higher weight than the affinity of foreign policy. In this case, stands out among the explanations the supercycle of commodities prices that started in the 2000s and peaked in 2014, besides the initially stronger negative effects of the Great Recession over the Western economies alongside with China's faster recovering.

Leaving aside the bilateral political issues, as regards the national economic performance, over the past twenty years the American growth has been more stable and has shown a more positive trend than Brazil's. However, both in absolute and in per capita terms the economic growth of the South American nation was higher (table 2 and graphs 1 and 2).

Considering each decade separately, data reveal these two countries have followed very different trajectories. For Brazil, while the 2000s were a fast-growing decade, the 2010s ended up as a lost one. In the latter, in which GDP per capita growth rate reached a considerably negative value, the country faced the two worst recessions of its history. The first, between 2015 and 2016, was caused by multiple factors, domestic and international, political and economic, whereas the second, from 2020 on, is being caused by the coronavirus global pandemic.

For the US, on the other hand, despite the negative effects of the subprime mortgage crisis, which has evolved to a global cataclysm in the late 2000s, in the following years the country could react. Throughout the 2010s the economy has been recovered in a roughly sustained manner, until the tendency was reversed by the Covid-19 crisis in 2020. Thereby, ups and downs aside, both decades summed up almost equal GDP growth rates in the US.

TABLE 2

Economic growth of Brazil and the US (2001-2020)

(In %)

Period	GDP		GDP per capita	
	Brazil	US	Brazil	US
2001-2005	15.34	13.57	8.32	8.44
2006-2010	24.46	4.60	18.36	-0.07
2001-2010	43.55	18.79	28.21	8.36
2011-2015	5.82	11.75	1.28	7.78
2016-2020	-2.95	5.70	-6.64	2.90
2011-2020	2.70	18.13	-5.44	10.90
2001-2020	47.43	40.33	21.23	20.17

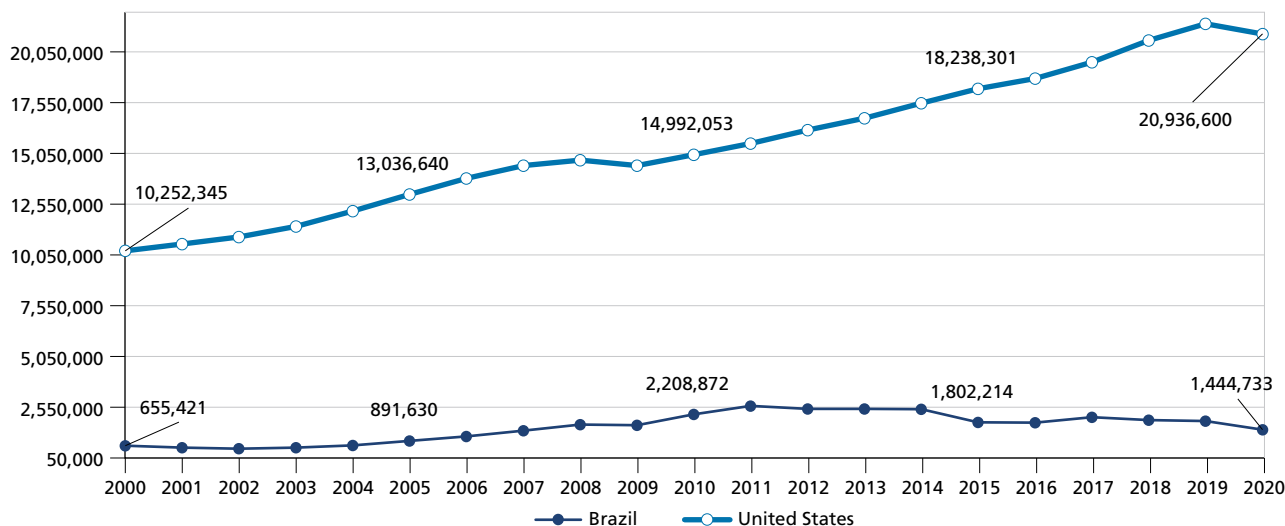
Source: WDI/World Bank. Available at: <<https://bit.ly/3ehVSYU>>. Accessed on: Aug. 26, 2021.
Authors' elaboration.

2. In both countries the presidential terms are four years, but when one of them holds presidential elections, the other one will only hold its own two years later. Thus, it is common that a president of one country must deal with two different mandataries (with probably distinct political visions) of the other along its administration.

GRAPH 1

Gross Domestic Product (GDP) of Brazil and the US (2000-2020)

(In US\$ million)

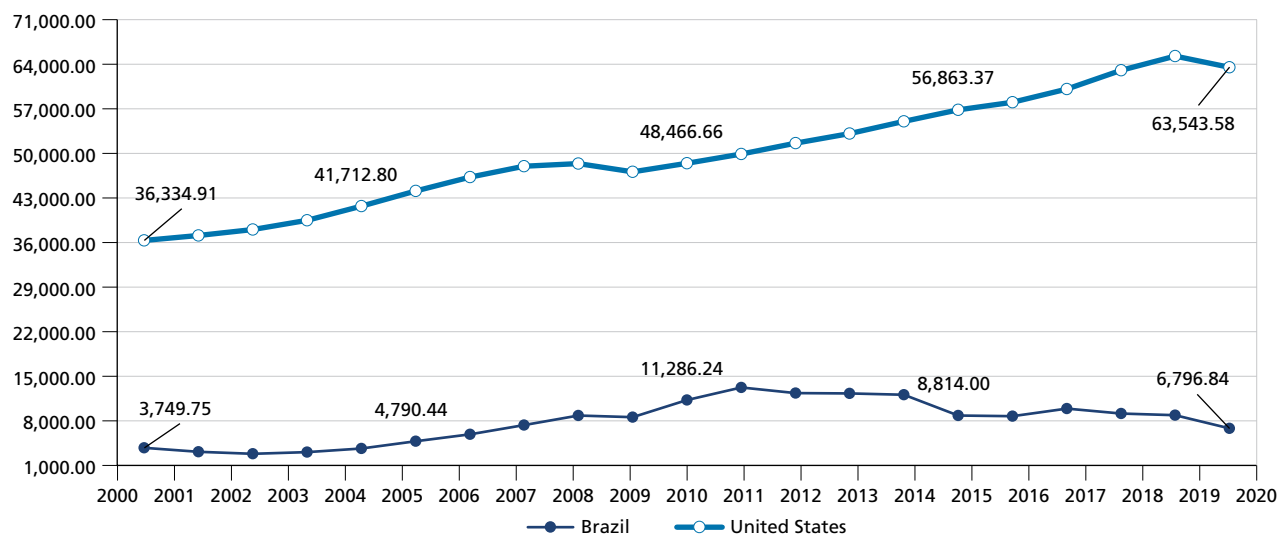


Source: WDI/World Bank. Available at: <<https://bit.ly/3ehVSYU>>. Accessed on: Aug. 26, 2021.
Authors' elaboration.

GRAPH 2

GDP per capita of Brazil and the US (2000-2020)

(In US\$)



Source: WDI/World Bank. Available at: <<https://bit.ly/3ehVSYU>>. Accessed on: Aug. 26, 2021.
Authors' elaboration.

With respect to the productive structure, for different reasons both countries have watched a process of economic deindustrialization in the first two decades of the 21st century. The phenomenon was more acute in Brazil, but the shares of the industrial sector and the manufacturing sub-sector have reached similar ratios in the two nations by the end of 2019 (table 3). Nevertheless, because of their different historical trajectories, in the South American country the primary sector still accounts for a larger proportion of the economy than in the US, where services represent a bigger slice of the national production.

TABLE 3

Productive structure of Brazil and the US

(In % of GNP, value added)

Sector ¹	2003-2005		2010-2012		2017-2019	
	Brazil	US	Brazil	US	Brazil	US
Agriculture, forestry, and fishing	5.49	1.17	4.21	1.14	4.47	0.93
Industry (including construction)	23.85	20.97	22.83	19.31	18.45	18.31
<i>Manufacturing</i> ²	14.76	13.16	11.73	11.91	10.46	11.08
Services	55.78	74.26	57.97	76.07	63.06	77.15

Source: WDI/World Bank. Available at: <<https://bit.ly/3ehVSYU>>. Accessed on: Aug. 26, 2021.

Authors' elaboration.

Notes: ¹ As GNP is calculated in market prices, the value added by the sectors do not add up to 100%. The difference represents the amount of taxes charged over production.² Sub-sector of industry.

Over the past twenty years, regarding to trade openness, fluctuations aside, the ratio between the trade chain of goods and services over the economic size has had similar scores in both countries, around 24-29% (table 4). However, even though in Brazil and the US the domestic market's weight in the economy has been high, in the South American nation the simple average of external tariffs is almost four times the American's. Moreover, although Brasilia has signed a greater quantity of preferential agreements, the ones signed by Washington cover a much higher share of trade.

TABLE 4

Trade openness of Brazil and the US

Data	2003-2005		2010-2012		2017-2019	
	Brazil	US	Brazil	US	Brazil	US
Exports (US\$ billion) ¹	331.42	3,519.03	835.83	6,140.56	803.75	7,418.02
Imports (US\$ billion) ¹	265.85	5,362.43	912.46	7,802.49	785.98	9,193.48
Exports (% of GDP)	12.54	14.61	12.52	16.70	13.42	14.93
Imports (% of GDP)	15.64	9.59	11.47	13.14	13.72	12.04
Trade chain (% of GDP)	28.18	24.19	23.98	29.84	27.14	26.97

Source: WDI/World Bank. Available at: <<https://bit.ly/3ehVSYU>>. Accessed on: Aug. 26, 2021.

Authors' elaboration.

Note: ¹ Goods and services.

As mentioned before, the US has figured as the leading destination of Brazilian merchandise exports until 2009, since then occupying the second position. This has also been the case for the top sources of Brazilian imports, but the turning point has been 2012. Conversely, from the American point of view, Brazil only appeared among the top 10 trading partners of goods since the period 2010-2012. Those years, it has occupied the 8th position of exports destination, falling to 9th in the period between 2018 and 2020 (table 5).

In this sense, it is clear how the US is of much higher importance for Brazil as a trading partner than Brasilia is for Washington. Taking goods and services into account, the US remains as the most important source of Brazilian imports. However, it is the most unfavorable bilateral balance of trade for the South American nation (table 6). Seeing from the positive side, in a preliminarily analysis it means there is much room for enhancing the trade relations between Americas' two largest democracies.

In this direction, this work aims at bringing together a set of indicators and features regarding the bilateral economic relations of Brazil and the US and suggesting areas for potential complementarity. The next section presents the recent evolution and features of bilateral trade in goods and services. Section 3 discusses a set of aspects related to trade policy in both countries, comprising tariffs, non-tariff measures, trade agreements and trade defense. Section 4 explores some features of the bilateral flows and stocks of direct investments, and section 5 discusses potential areas for cooperation in science and technology. Section 6 arranges some proposals to foster bilateral relations.

TABLE 5

Top 10 merchandise trading partners of Brazil and the US

(In US\$ million)

Brazil					
Exports					
2003-2005		2010-2012		2018-2020	
US	60,182	China	116,278	China	195,075
Argentina	21,919	US	72,169	US	80,572
China	16,800	Argentina	59,195	Argentina	33,193
Netherlands	15,191	Netherlands	34,784	Netherlands	22,094
Germany	12,231	Japan	24,567	Chile	15,406
Mexico	10,775	Germany	24,447	Germany	14,062
Japan	8,537	Un. Kingdom	14,380	Japan	13,880
Italy	8,343	Chile	14,275	Spain	13,237
Chile	8,062	Italy	14,250	Mexico	13,233
Un. Kingdom	6,616	Venezuela	13,427	Canada	10,965
Imports					
2003-2005		2010-2012		2018-2020	
US	35,134	China	99,320	China	110,917
Argentina	17,115	US	98,817	US	100,992
Germany	15,802	Argentina	49,429	Germany	32,113
China	11,857	Germany	43,484	Argentina	30,783
Japan	9,072	Rep. of Korea	29,402	Rep. of Korea	15,538
Nigeria	7,764	Japan	23,569	Mexico	14,715
France	6,898	Nigeria	22,622	France	14,558
Italy	6,217	Italy	18,013	Japan	14,251
Algeria	6,011	France	16,768	Italy	14,119
Rep. of Korea	5,342	India	16,060	India	13,081
United States					
Exports					
2003-2005		2010-2012		2018-2020	
Canada	5,716,942	Canada	8,230,536	Canada	8,471,045
Mexico	3,283,899	Mexico	5,778,283	Mexico	7,344,776
Japan	1,602,516	China	3,065,489	China	3,514,230
Un. Kingdom	1,082,881	Japan	1,962,328	Japan	2,139,675
China	1,039,861	Un. Kingdom	1,591,907	Un. Kingdom	1,943,701
Germany	944,181	Germany	1,453,061	Germany	1,742,928
Rep. of Korea	778,309	Rep. of Korea	1,245,646	Rep. of Korea	1,646,109
Netherlands	713,021	Brazil	1,222,073	Netherlands	1,454,232
France	609,572	Netherlands	1,217,122	Brazil	1,176,899
Other Asia	606,475	Hong Kong	1,003,793	France	1,046,753

(Continues)

Brazil					
Imports					
2003-2005		2010-2012		2018-2020	
Canada	7,795,789	China	12,446,911	China	14,928,322
China	6,336,500	Canada	9,258,503	Mexico	10,393,780
Mexico	4,699,572	Mexico	7,773,227	Canada	9,285,077
Japan	3,966,518	Japan	4,067,686	Japan	4,153,605
Germany	2,356,977	Germany	2,961,039	Germany	3,755,958
Un. Kingdom	1,437,410	Rep. of Korea	1,702,113	Rep. of Korea	2,344,408
Rep. of Korea	1,319,610	Un. Kingdom	1,588,294	Vietnam	2,038,746
Other Asia	1,056,103	Saudi Arabia	1,387,306	Ireland	1,854,477
France	970,692	France	1,223,204	Un. Kingdom	1,767,218
Malaysia	898,952	Other Asia	1,201,044	India	1,699,281

Source: WDI/World Bank. Available at: <<https://bit.ly/3ehVSYU>>. Accessed on: Aug. 26, 2021.
Authors' elaboration.

TABLE 6

Brazil's top 5 trading partners (2014 and 2019)

(In US\$ million)

Exports					
2014			2019		
Rank	Country	Amount	Rank	Country	Amount
1	China	40,913.93	1	China	64,021.27
2	US	33,132.55	2	US	37,395.05
3	Argentina	14,654.06	3	Netherlands	15,761.80
4	Netherlands	12,706.09	4	Argentina	10,178.19
5	Germany	7,856.59	5	Germany	6,071.00
Imports					
2014			2019		
Rank	Country	Amount	Rank	Country	Amount
1	US	48,212.82	1	US	47,950.35
2	China	38,069.82	2	China	36,890.89
3	Germany	16,332.98	3	Germany	12,929.24
4	Netherlands	15,243.83	4	Netherlands	12,809.91
5	Argentina	14,866.11	5	Argentina	10,929.81
Trade chain					
2014			2019		
Rank	Country	Amount	Rank	Country	Amount
1	US	81,345.37	1	China	100,912.16
2	China	78,983.75	2	US	85,345.39
3	Argentina	29,520.17	3	Netherlands	28,571.71
4	Netherlands	27,949.93	4	Argentina	21,107.99
5	Germany	24,189.58	5	Germany	19,000.24

(Continues)

Balance of trade					
2014			2019		
Rank	Country	Amount	Rank	Country	Amount
(Surplus)			(Surplus)		
1	Venezuela	3,632.71	1	China	27,130.38
2	China	2,844.11	2	Netherlands	2,951.89
3	UAE	2,471.88	3	Colombia	2,240.87
4	Hong Kong	2,361.32	4	Chile	2,090.37
5	Egypt	2,176.17	5	Iran	2,077.36
(Deficit)			(Deficit)		
1	US	-15,080.26	1	US	-10,555.30
2	Nigeria	-8,540.03	2	Germany	-6,858.23
3	Germany	-8,476.39	3	France	-2,627.53
4	Rep. of Korea	-5,593.52	4	Switzerland	-2,253.49
5	France	-3,632.81	5	Russia	-2,226.44

Source: Ministry of Economy (Brazil). Available at: <<https://bit.ly/3yYkjnK>>. Accessed on: Aug. 26, 2021.
Authors' elaboration.

2 BILATERAL TRADE

2.1 Trade in goods

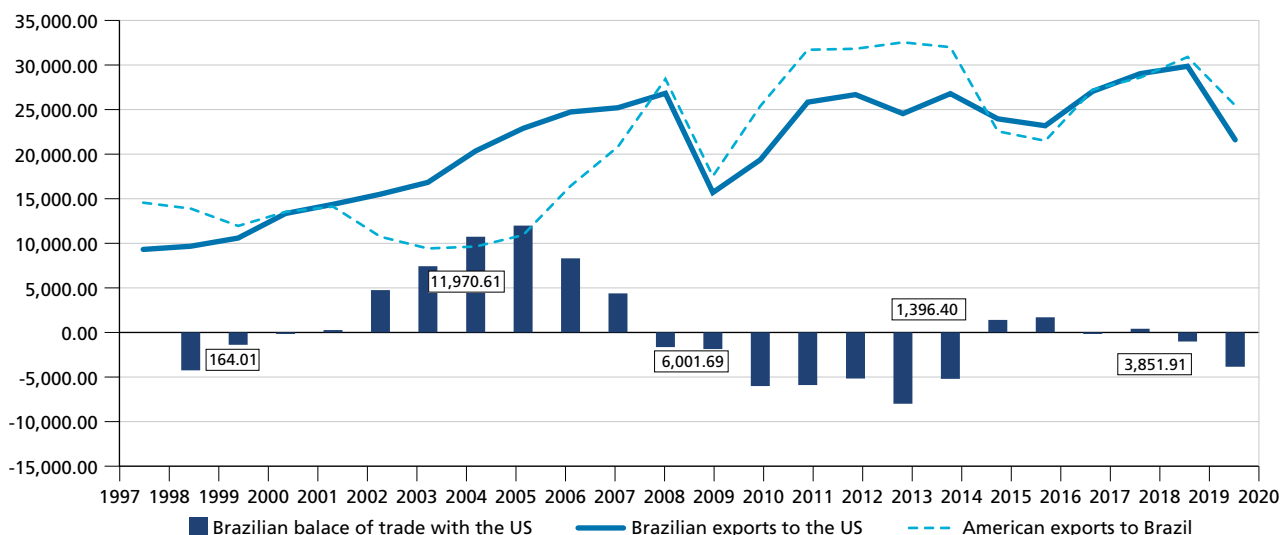
As discussed in the previous section, the two largest economies of the American continent have a long-standing partnership, and trade is no exception. Of course, given the relative sizes of the two economies, the United States has a much larger importance to Brazil than the converse; in fact, the US has traditionally been the main source of Brazilian imports and destination of its exports, only recently being surpassed by the rising China.

The balance of trade between the two countries have oscillated considerably in the last two decades, as pictured in graph 3. Brazilian exports to the United States have increased steadily in the first decade of this century, while US exports to Brazil only started to pace by 2005; in consequence, Brazil have experienced bilateral surpluses for most of the decade. This picture was sharply reversed with the tumble in global trade following the financial crisis in 2008, and since US exports recovered more readily the balance of trade reversed, with large surpluses for the United States until 2014. In the five years before the beginning of the Covid-19 pandemic the bilateral flows were more balanced, with both countries experiencing much smaller deficits, and without a clear pattern as in the previous years.

GRAPH 3

Bilateral trade of Brazil and the US (1997-2020)

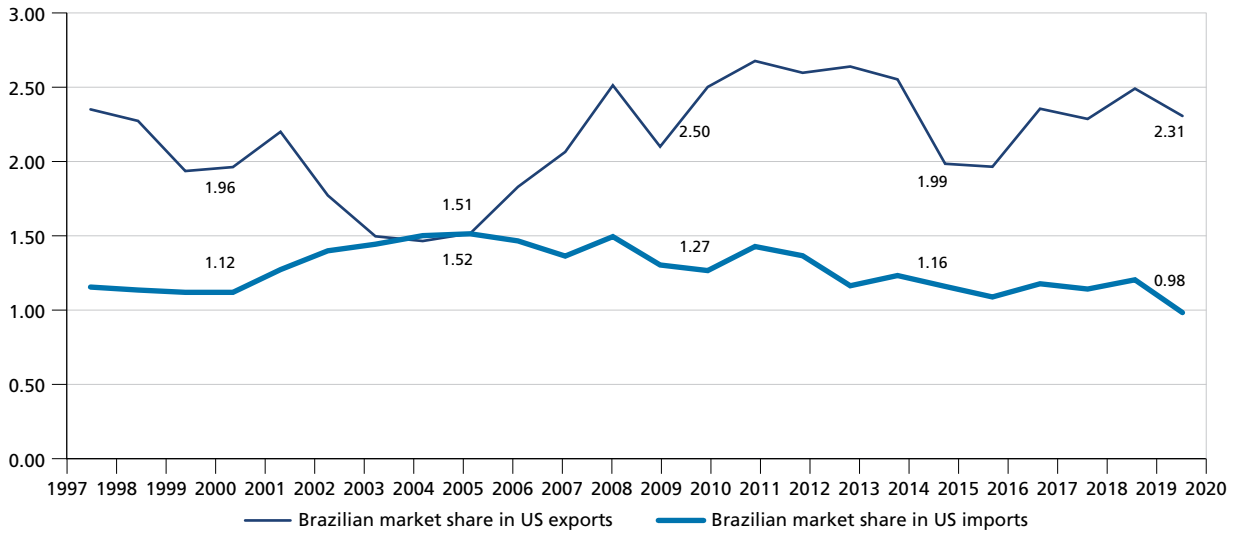
(In US\$ million)



Source: Comtrade/UN. Available at: <<https://bit.ly/3EoGoga>>. Accessed on: Aug. 26, 2021.
Authors' elaboration.

As for each country’s share in the partner’s export and import markets, it is noticeable that the United States have a much larger weight on Brazilian trade flows than the latter has in the US, as one would expect given the difference in size of the two economies. This picture is changing, however. After peaking around 2005, the market share of Brazilian products in US imports (graph 4) have declined almost continuously by roughly one third in 15 years, reaching a record-low 1% in 2020. At least part of this movement was driven by Brazilian exports being redirected towards other markets, as reflected by the decline in the American share in Brazil exports roughly in the same period (graph 5).

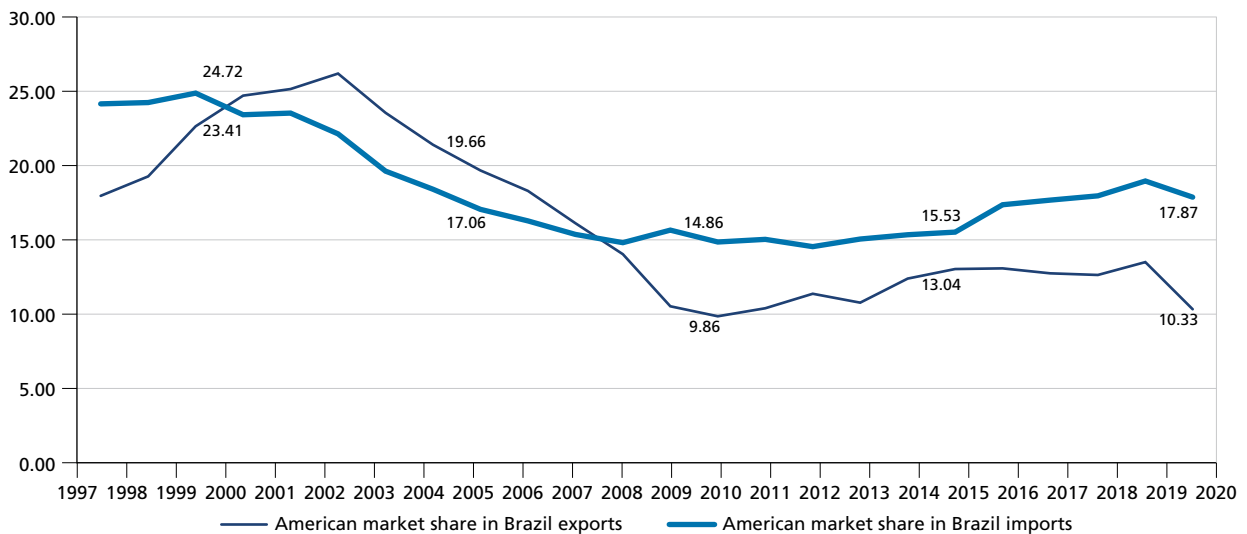
GRAPH 4
Brazilian market share in US trade (1997-2020)
(In %)



Source: Comtrade/UN. Available at: <<https://bit.ly/3EoGoga>>. Accessed on: Aug. 26, 2021.
Authors’ elaboration.

A similar geographic reconfiguration has taken place in Brazilian imports, with a reduction in the United States’ market share in the beginning of this century – starting even earlier and reversing slightly in the more recent years. From the United States’ point of view, however, Brazil the trend is less clear, with Brazilian exports oscillating around 2% of the total in the last two decades.

GRAPH 5
American market share in Brazil trade (1997-2020)
(In %)



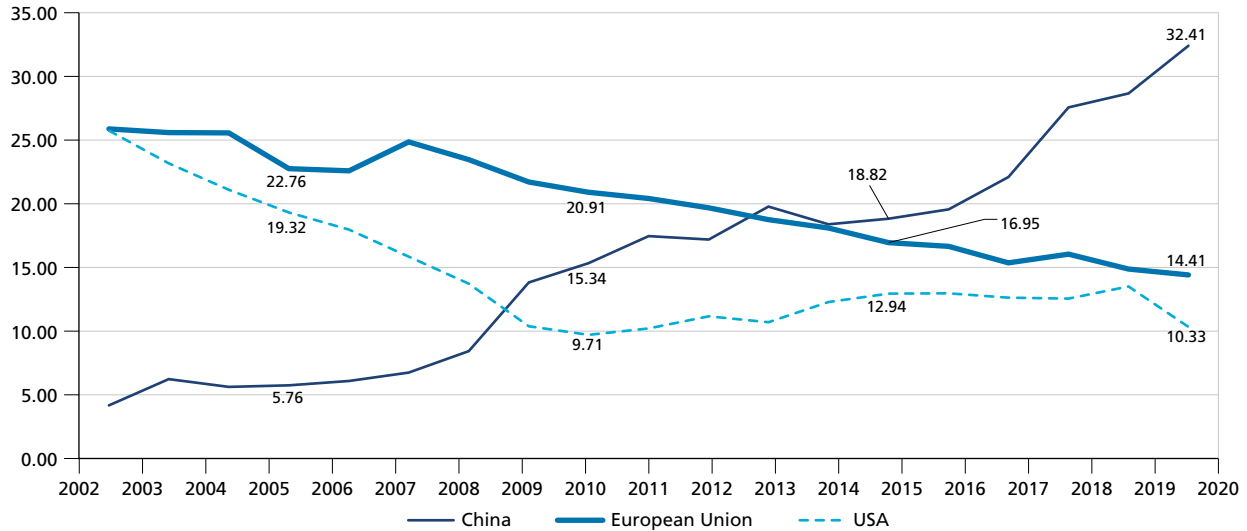
Source: Comtrade/UN. Available at: <<https://bit.ly/3EoGoga>>. Accessed on: Aug. 26, 2021.
Authors’ elaboration.

This loss of United States' market share in Brazilian imports and exports have one obvious suspect: China. As graphs 6 and 7 show, the rise of Chinese shares in Brazilian exports and imports in the last two decades was impressive, and larger in magnitude than the relative decline experienced by bilateral flows with the two other largest partners, the US and the European Union. Even in the case of Brazilian imports, where the US and EU shares stopped declining after 2008, the Chinese increase continued, suggesting that the Asian giant probably displaced other smaller partners too.

GRAPH 6

Market share of selected partners in Brazil exports (2002-2020)

(In %)

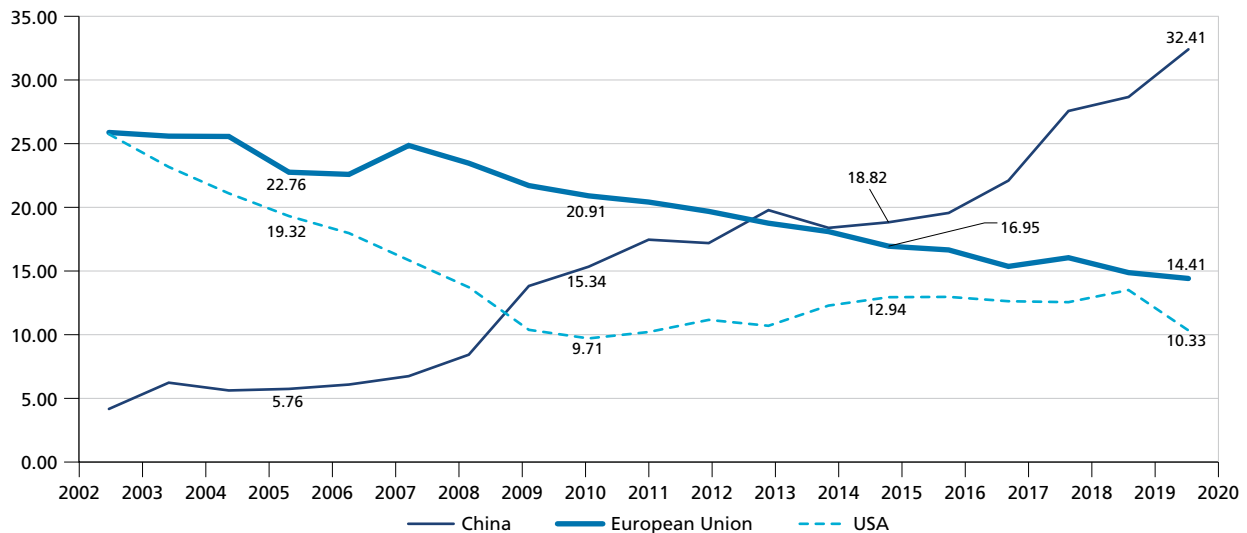


Source: Comtrade/UN. Available at: <<https://bit.ly/3EoGoga>>. Accessed on: Aug. 26, 2021.
Authors' elaboration.

GRAPH 7

Market share of selected partners in Brazil imports (2002-2020)

(In %)



Source: Comtrade/UN. Available at: <<https://bit.ly/3EoGoga>>. Accessed on: Aug. 26, 2021.
Authors' elaboration.

2.1.1 Main products

Regarding the product composition of Brazilian exports to the United States, one immediately noticeable fact is that the lower weight of agricultural, mining and food products,³ when compared to aggregate Brazilian exports. As table 7 shows, although the share of these products in Brazilian exports to the United States increased four-fold in the first decade of this century it never came near to the share in total Brazilian exports. Moreover, in the last decade this share declined in sales to the US but continued to rise (albeit only slightly) in aggregate exports.

3. Goods classified in chapters 1 to 16 of ISIC revision 3.

TABLE 7

Share of agricultural, mining and food products in Brazilian exports

(In %)

Data	Period		
	2001-2002	2010-2011	2019-2020
Exports to the US	9.80	39.20	24.10
Total exports	33.30	58.00	61.90

Source: Comtrade/UN. Available at: <<https://bit.ly/3EoGoga>>. Accessed on: Aug. 26, 2021.
Authors' elaboration.

Table 8 presents the main Brazilian exports to the US in recent years and shows that this smaller concentration in basic commodities and food industries is due to a number of manufacturing sectors that contributed to this bilateral relationship in the last decade – especially basic iron and steel products, aircraft, refined petrochemicals, construction machinery and electric motors and generators. Moreover, in most of these sectors, Brazil has gained market share in US imports.

TABLE 8

Main products of Brazilian exports to the US

Product	Amount (US\$ million)			Contribution to growth (%)		Market share in US imports (%)		
	2001-2002 (A)	2010-2011 (B)	2019-2020 (C)	(B)/(A)	(C)/(B)	(A)	(B)	(C)
Basic iron and steel products	2,426.17	5,025.72	6,787.49	14.86	28.14	7.63	7.38	10.30
Aircraft and spacecraft	4,584.04	1,734.52	5,691.81	-16.28	63.20	5.91	2.54	4.30
Crude petroleum and natural gas	59.97	9,629.81	4,578.57	54.69	-80.68	0.09	2.65	2.35
Refined petroleum products	1,485.64	336.82	2,494.44	-6.57	34.46	3.03	1.09	2.50
Pulp, paper and paper products	840.60	2,137.59	2,373.90	7.41	3.77	3.35	8.80	11.22
Fruit, nuts, beverage and spice crops	705.88	3,399.07	2,154.90	15.39	-19.87	5.85	10.14	4.73
Machinery for mining, quarrying, construction	248.95	984.54	1,908.99	4.20	14.76	2.33	4.37	6.76
Basic chemicals	831.94	2,205.00	1,425.70	7.85	-12.45	1.39	2.09	1.66
Basic precious and non-ferrous metals	1,244.62	1,356.98	1,421.03	0.64	1.02	2.65	1.28	1.18
Electric motors, generators and transformers	335.46	825.21	1,294.31	2.80	7.49	1.04	1.64	1.51
Parts and accessories for motor vehicles	1,276.81	1,831.40	1,245.56	3.17	-9.36	2.02	1.72	0.88
Stone products	216.02	1,006.54	1,244.41	4.52	3.80	8.21	24.79	24.31
Wood products	485.79	743.76	1,212.94	1.47	7.49	4.12	8.53	7.97
Spirits; ethyl alcohol production	10.50	793.94	1,074.58	4.48	4.48	0.21	6.38	6.52
Meat and meat products	184.51	243.43	841.13	0.34	9.55	2.26	2.06	4.02
Other	12,777.54	12,958.82	15,724.58	1.04	44.17	-	-	-
Total	27,714.43	45,213.14	51,474.34	100.00	100.00	1.19	1.35	1.10

Source: Comtrade/UN. Available at: <<https://bit.ly/3EoGoga>>. Accessed on: Aug. 26, 2021.
Authors' elaboration.

As table 8 also shows, the oil sector has been a significant driver of export growth – and of the change in the product profile of Brazilian exports to the US – in the last two decades. The nature of the goods exported, however, changed considerably: crude petroleum led the expansion in the first decade of this century but was replaced by refined petroleum products in the last decade.

A final conclusion that can be inferred from table 8 is the diversification in exports to the US in the last decade. While the top 15 products in the table were responsible by almost all of the growth in bilateral exports between 2001-2002 and 2010-2011, in the following period nearly half of the expansion was led by other goods. Furthermore, only one of these top 15 (basic iron and steel products) contributed significantly to export growth in the two periods.

As for the United States' exports to Brazil, the shift in the product profile in the last decade was even more drastic, as table 9 shows. The top 15 ISIC sectors of the export bill in 2019-2020, which accounted for almost three-quarters of the bilateral flow, represented only about a third in 2001-2002. Table 9 also shows a considerable concentration of bilateral exports, driven by the expansion of the oil sector – which accounted for roughly one third of the total in 2019-2020.

TABLE 9
Main products of American exports to Brazil

Product	Amount (US\$ million)			Contribution to growth (%)		Market share in Brazil imports (%)		
	2001-2002 (A)	2010-2011 (B)	2019-2020 (C)	(B)/(A)	(C)/(B)	(A)	(B)	(C)
Refined petroleum products	326.05	7,303.95	16,286.70	23.63	1,853.01	4.32	24.14	68.20
Basic chemicals	2,046.34	5,391.88	4,894.10	11.33	-102.69	34.97	27.67	23.47
Primary plastics, synthetic rubber	1,095.69	3,610.85	3,321.25	8.52	-59.74	38.16	32.09	30.31
Crude petroleum and natural gas	0.03	133.50	2,622.33	0.45	513.41	0.65	1.94	21.23
Pharmaceuticals, medic. chemicals, botanical	737.96	2,562.04	2,368.43	6.18	-39.94	21.50	18.35	15.88
Pesticides and other agrochemical products	368.16	654.20	1,786.07	0.97	233.49	36.30	23.84	25.30
Hard coal	338.68	2,945.53	1,757.80	8.83	-245.01	34.29	41.11	39.89
Chemical products n.e.c.	845.08	1,635.69	1,581.67	2.68	-11.14	40.55	34.11	30.46
Fertilizers and nitrogen compounds	0.17	1,333.62	1,316.67	4.52	-3.50	11.65	8.22	6.92
Pumps, compressors, taps and valves	350.36	1,691.81	1,248.56	4.54	-91.44	38.99	25.36	19.90
Medical and surgical equipment	676.00	1,635.34	1,206.13	3.25	-88.54	42.25	35.71	26.40
Parts and accessories for motor vehicles	764.43	1,378.28	1,133.44	2.08	-50.51	16.03	8.93	8.22
Machinery for mining, quarrying, construction	768.03	2,299.80	1,077.99	5.19	-252.04	39.42	28.40	60.38
Spirits; ethyl alcohol production	15.51	1,179.08	904.99	3.94	-56.54	2.52	72.70	72.97
Electronic valves, tubes and components	1,422.65	731.99	890.87	-2.34	32.77	36.65	5.33	1.72
Other	17,882.01	22,673.25	14,279.02	16.23	1,731.61	-	-	-
Total	27,637.15	57,160.80	56,676.03	100.00	-100.00	23.51	14.95	18.50

Source: Comtrade/UN. Available at: <<https://bit.ly/3EoGoga>>. Accessed on: Aug. 26, 2021.
Authors' elaboration.

It is important to stress, however, that part of this shift happened between 2001-2002 and 2010-2011. While 7 of the 15 main products of 2019-2020 did not coincide with the main products of 2001-2002, only four in the list differed between 2010-2011 and 2019-2020. Interestingly, therefore, there seems to be a gradual (and far from complete) shift in US exports to Brazil towards energy, mining and chemical sectors, and away from electronics and electric machinery and appliances – which could also be due to the emergence of other, particularly Asian, relevant players in the latter industries.

Finally, when one compares the main products that comprise the two export bills in tables 8 and 9, it is possible to notice some overlap: six products in each bill coincide, suggesting the occurrence of some degree of intra-industry trade – particularly in the energy sector, but also in auto parts and machinery for mining and construction.

2.1.2 Trade opportunities

As discussed above, although the partnership between Brazil and United States is a long-standing one, recent years have witnessed a relative decrease in the relevance of each country in each other's exports. Yet one could notice that there are unexplored opportunities for further deepening of the two countries' bilateral trade relationship. One set of obvious candidates for such a role would be goods in which one of the partners exhibit a good competitive position in the world markets while the other is a significant importer, and yet there is not a relevant bilateral relationship between the two. In this section, we highlight the two sets of goods that fulfil these three criteria, and therefore could be pointed as opportunities for increased Brazilian exports into the United States and vice-versa.

The first two criteria were assessed by calculating the employed widely indexes of revealed comparative advantage (RCA) and revealed comparative disadvantage (RCD), initially proposed by Balassa (1965) to evaluate the international trade specialization of countries. In broad terms, the first (RCA) measures whether a country is relatively specialized in supplying a given good to foreign markets. The index will be higher than one if the country's presence in that good's exports is higher than its presence in global exports as a whole; it therefore reveals (hence the indexes' names) that the country has a comparative advantage in the production of that good. Similarly, the second index (RCD) measures whether the country is relatively specialized in importing a given good, revealing a comparative disadvantage when the index surpasses the unity.

The third criterium – the absence of relevant trade flows, which would mean that the opportunity had already been fulfilled – was assessed by comparing the exporter's share in the importer country's market for the candidate good with the exporter's aggregate share in the importer's market. If the latter is lower, we assume that there is potential for further increase in bilateral flows.

The three criteria were assessed for each product at the 4-digit level of the Harmonized System (HS) classification of international trade, which encompasses 1,223 items. The complete list of trade opportunities identified in this exercise – totaling 43 goods in which Brazil could expand its presence in the US market and 169 in which the US could increase exports to Brazil – is presented in tables A.1 and A.2 (appendix A). Tables 10 and 11 present an overview of the results, highlighting those with the largest import markets.

In the case of Brazilian exports to the United States (table 10), one could notice a number of opportunities in sectors which Brazil is notoriously competitive in the global markets, such as agricultural products (from meat and live animals to fruits and oil seeds), food and beverages. In fact, in some cases the opportunities are shown to exist in industries where Brazil is already a relevant exporter to the US, which suggests that there is scope to intra-industry diversification.

TABLE 10

Opportunities for increasing Brazil exports to the US, by product group

Products		Trade data			
Group	Number	US total imports (US\$ million)	Brazil total exports (US\$ million)	Brazil exports to the US (US\$ million)	Brazilian market share in US imports (%)
Vehicles; parts and accessories thereof	3	30,977.85	2,030.01	65.46	0.21
Furniture; prefabricated buildings	1	26,138.02	566.64	200.45	0.77
Edible fruit and nuts	3	6,896.08	1,011.56	66.74	0.97
Meat and edible meat offal	5	6,070.40	9,860.05	13.64	0.22
Footwear	1	6,007.62	419.45	36.74	0.61
Beverages, spirits and vinegar	1	5,585.46	84.16	0.86	0.02
Miscellaneous edible preparations	1	4,533.59	687.35	23.81	0.53
Pharmaceutical products	1	3,798.18	136.56	10.03	0.26
Tools, implements, cutlery of base metal	4	2,455.70	122.65	14.48	0.59
Machinery and mechanical appliances	1	2,332.42	310.42	17.18	0.74
Zinc and articles thereof	1	2,013.46	210.35	10.23	0.51
Wood and articles of wood; charcoal	1	1,739.47	138.67	15.30	0.88
Live animals	1	1,701.00	392.80	0.00	0.00
Lac; gums, resins	2	1,583.13	128.82	12.62	0.80
Oil seeds and oleaginous fruits	1	352.53	29,428.92	0.22	0.06
Total	43	103,792.46	51,336.98	493.75	0.48

Source: Comtrade/UN. Available at: <<https://bit.ly/3EoGoga>>. Accessed on: Aug. 26, 2021. Authors' elaboration.

There are also, however, a host of opportunities for expansion in industrial goods such as vehicles and its parts, machinery, tools, footwear and pharmaceutical products. The fulfilment of these opportunities will probably be a greater challenge, since Brazilian competitiveness for these goods in more developed markets is usually lacking, especially when compared to other developing-country (particularly Asian) competitors.

TABLE 11

Opportunities for increasing US exports to Brazil, by product group

Products		Trade data			
Group	Number	Brazil total imports (US\$ million)	US total exports (US\$ million)	US exports to Brazil (US\$ million)	American market share in Brazil imports (%)
Vehicles; parts and accessories thereof	4	10,193.75	40,259.09	612.25	6.01
Organic chemicals	24	7,485.75	16,383.14	599.51	8.01
Fertilizers	4	6,166.75	898.80	71.04	1.15
Machinery and mechanical appliances	17	5,615.27	30,934.16	711.22	12.67
Electrical machinery and equipment	8	3,886.24	12,115.11	265.74	6.84
Ships, boats and floating structures	2	2,575.01	764.86	3.28	0.13
Cereals	4	2,015.24	12,642.12	93.10	4.62
Paints, varnishes dyes, pigments, etc.	6	872.41	2,696.56	90.66	10.39
Rubber and articles thereof	5	860.71	3,240.62	136.63	15.87
Man-made filaments	2	843.64	780.01	39.32	4.66
Inorganic chemicals	14	652.18	1,274.35	36.95	5.67
Products of the milling industry	4	638.30	211.15	3.46	0.54
Mineral fuels, mineral oils and their distillates	2	567.65	495.13	6.28	1.11
Fish and aquatic invertebrates	2	544.68	3,617.56	7.09	1.30
Plastics and articles thereof	2	506.75	2,798.77	56.36	11.12
Total	169	49,290.09	168,909.07	3,104.97	6.30

Source: Comtrade/UN. Available at: <<https://bit.ly/3EoGoga>>. Accessed on: Aug. 26, 2021. Authors' elaboration.

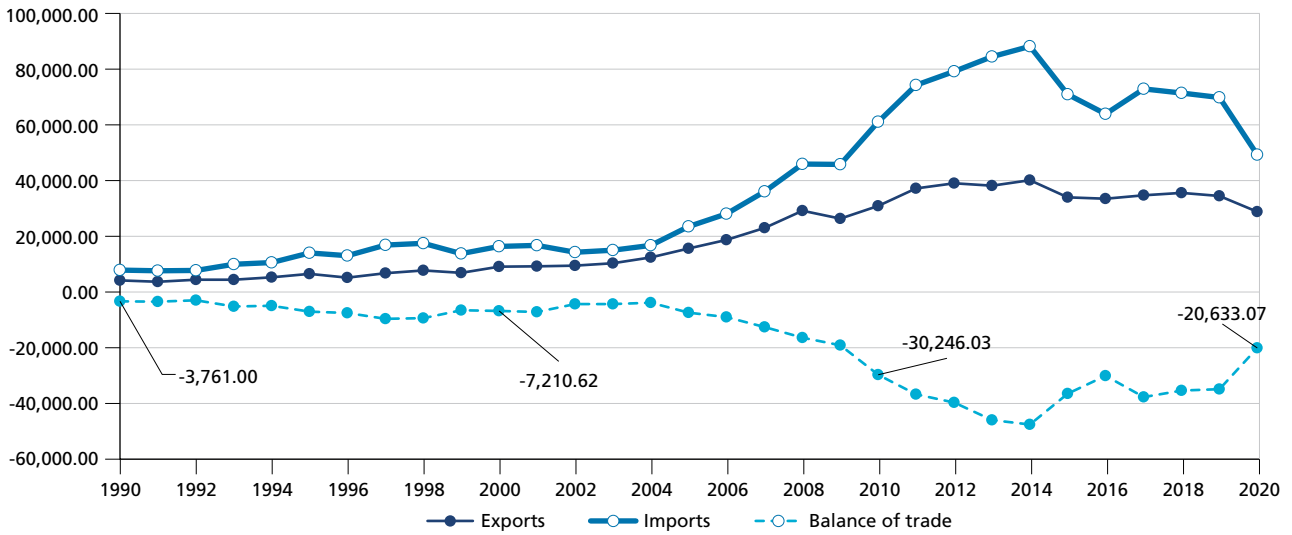
As for the opportunities for enhancing United States' exports to Brazil (table 11), the results suggest that there is also broad scope for diversification in industries in which there is already significant trade. There are, for example, more than 50 opportunities among chemicals and fertilizers, and others in the auto sector, rubber and plastics – all of which were identified in the previous subsection as relevant export industries from the US to Brazil.

2.2 Trade in services

As mentioned before, Brazil and the US have been going through a process of deindustrialization over the past two decades or more. Currently, in both countries the industrial sector accounts for around 18.5% of the economic structure. As per the services sector, even though in the two cases it has filled the gap left by manufacturing, their trajectories have departed from different basis. While in the US the primary sector has responded for roughly 1% of the productive structure along the whole period, in Brazil it has never lowered the 4% level. As a result, the tertiary sector has a larger share in the American economy, as well as a higher general level of development.

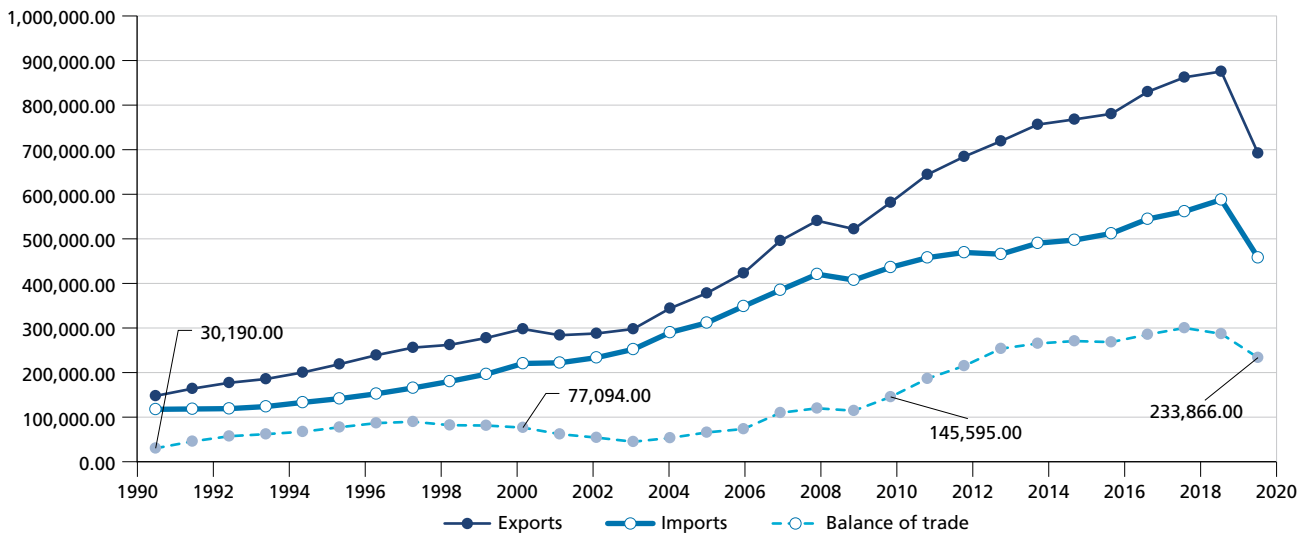
Those data are worth recalling in order to understand how trade in services in Brazil, in the US and between them two is characterized. In every part of the planet, services provide mostly for the domestic market, as not all of them are internationally tradable. However, given the different historical and cultural roots of these societies, the types of services offered in the US are more tradable, due to their business-related nature. Alternatively, in Brazil the sector is predominantly composed by personal services. It partially explains why Brasilia has run persistent deficits with the Americans and the world during the last thirty years. Conversely, the superpower has been a net exporter of services along those decades (graphs 8 to 10).

GRAPH 8
Brazil trade in services (1990-2020)
 (In US\$ million)



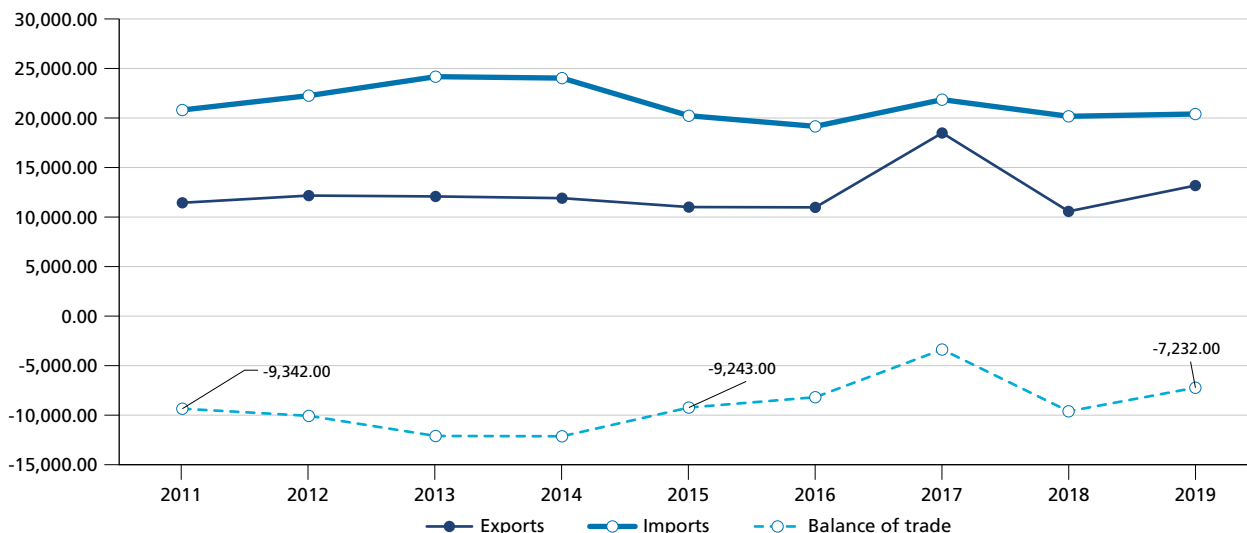
Source: WDI/World Bank. Available at: <<https://bit.ly/3ehVSYU>>. Accessed on: Aug. 26, 2021.
 Authors' elaboration.

GRAPH 9
US trade in services (1990-2020)
 (In US\$ million)



Source: WDI/World Bank. Available at: <<https://bit.ly/3ehVSYU>>. Accessed on: Aug. 26, 2021.
 Authors' elaboration.

GRAPH 10
Brazil trade in services with the US (2011-2019)
 (In US\$ million)

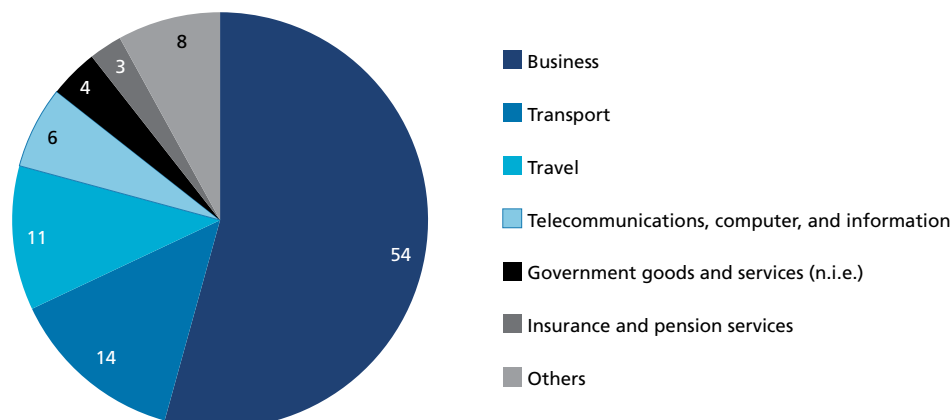


Source: WDI/World Bank. Available at: <<https://bit.ly/3ehVSYU>>. Accessed on: Aug. 26, 2021.
 Authors' elaboration.

Although it seems a paradox, the international competitiveness gap between the two economies tertiary sector is not mirrored by the sub-sectoral composition of their bilateral trade in services. In fact, as shown by graphs 11 and 12, more than 75% of services Brazil and the US have acquired from each other from 2015 to 2019 belong to the same three categories: business, transport and travel. While the expenses of tourists and businessmen in the course of their international visits are covered by the travel sub-sector, the two other groups are largely composed by trade-related operations.⁴

Thus, data suggest Brazilian deficits in services with the US can be explained by two complimentary points. First, the bilateral balance of merchandise trade itself, which has also been favorable to the superpower almost the whole period of 2011-2019. Second, the disparities in international attractiveness of the services provided by the two nations in those categories themselves. Brazil hires those kinds of consultancies from the US not only in support of the goods transacted between them two, but also in assistance to its imports and exports traded elsewhere. In contrast, American agents rely on these types of services offered by Brazilian enterprises almost exclusively to assist their business specifically with the South American country. Language and national regulations specificities of Brazil may be the reasons why those services are competitive in those contexts.

GRAPH 11
Sectoral composition of Brazilian service exports to the US (2015-2019)
 (In %)



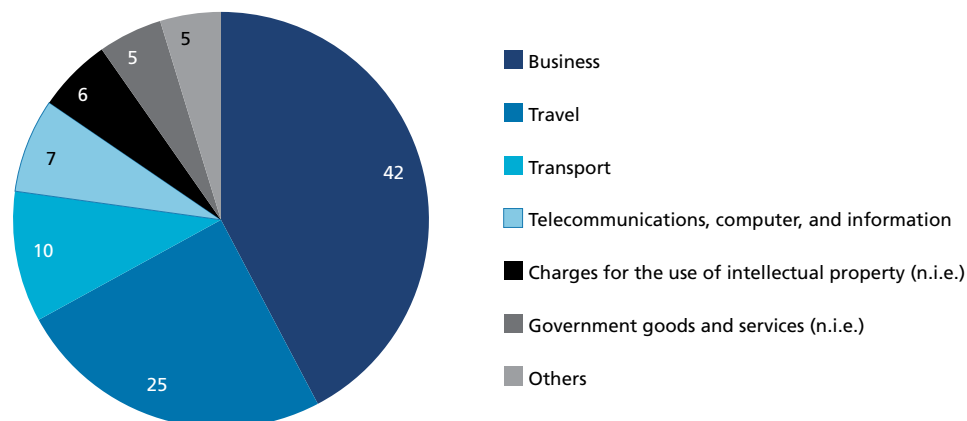
Source: International Monetary Fund (IMF).
 Authors' elaboration.

4. In transports are included the international movement of people as well as the carriage of goods from one country to another. Among other activities, the business category comprises technical, trade-related, professional and management consulting services (IMF, 2009).

GRAPH 12

Sectoral composition of Brazilian service imports from the US (2015-2019)

(In %)



Source: IMF.
Authors' elaboration.

From the Brazilian point of view, the bilateral trade with the US represented almost one third of all imports and exports of services commercialized by the country in the world from 2015 to 2019. Conversely, for the Americans the transactions with Brazil constituted a share of only 1.41% of its global trade in services in the same period. Even though this panorama consists of one among many other expressions of the great and structural asymmetry between both economies, it can also be viewed as a window of opportunities. If the two nations manage to advance a trade agreement that contributes to reduce Brazilian deficits in merchandise trade, it will gradually have positive impacts also on the services side. In addition, as soon as the coronavirus pandemic gets definitively controlled, the promotion of Brazil as a touristic destination in the US may be another form of making the relationship to become more balanced as far as services are concerned. It is worth stressing that despite of the income level gap, in the 2015-2019 period the amount of Brazilian imports of travel services from the US was more than five times the expenditures of American voyagers in the South American country.

3 TRADE POLICY

3.1 Historical background

Most of the history of United States' trade policy at least after the World War II can be characterized as a series of efforts, not without periodic resistance, to liberalize international trade and dismantle the global protectionist apparatus that emerged from the inter-war period and the Great depression, epitomized by the Smoot-Hawley Tariff Act of 1930. An instrumental step in this shift was the 1934 Reciprocal Tariff Act, which fundamentally altered the political economy of US trade policy by delegating from the Congress to the President part of the authority on trade policy formulation – namely, the capacity to negotiate and sign bilateral reciprocal trade deals, and therefore to reduce tariff protection not only in the US but also in the partner countries. This watershed legislation led to a period characterized by a surge of bilateral initiatives that lasted until the war, and after which was replaced by a multilateral approach that culminated in the establishment of the General Agreement on Tariffs and Trade (GATT) in 1947, which became the vehicle for multilateral negotiations for the following 50 century, until its incorporation by the WTO (USITC, 2009).

This pattern set the tone for the evolution of United States' trade policy: its advances are usually preceded by legislation from the Congress granting or expanding presidential authority on trade negotiation issues, so that the Executive is able to overcome legislative inertia and alter trade policy mechanisms. Given the importance of the United States in the global arena, this presidential mandate usually sets the agenda also for the evolution of the multilateral trading system.

An example of this dynamic is the path towards the inclusion of non-tariff-related issues into the multilateral trade system rules. Although these were part of the agenda for the GATT's Kennedy Round (1962-1967), the US Presidential mandate in force – under the aegis of the 1962 Trade Expansion Act – included only tariffs; therefore, although highly successful in reducing tariffs among member countries, had only partial success in addressing non-tariff measures – the few agreements reached on these subjects were never approved by the US Congress. In the Tokyo Round,

on the contrary, the trade negotiation authority mandate – now given by the 1974 Trade Act – was extended to include the reduction of non-tariff measures, and the GATT system saw the inclusion of the first set of binding – although not fully multilateral – agreements on these issues, the so-called “Tokyo Round Codes” (USITC, 2009).

The 1974 Trade Act also included a set of provisions aimed to address the concerns with “unfair” trading practices – including its Section 301, which came into prominence with recent high-profile cases, as will be discussed further. These measures – also included into the GATT System by the Tokyo Codes – were a response to the resurgence protectionist interests in the late 1960s, spurred by increasing competition especially from Japan and Europe. Before the establishment of these legal procedures, some of the protectionist interests were appeased by a series of ad-hoc measures, most on a bilateral basis, where the US negotiated quotas and voluntary export agreements on a range of products, such as in steel, automobiles and cotton – the latter also included in one of the most relevant multilateral arrangements of this nature, the GATT Multifiber Arrangement, signed in 1974, whose effects were in force as late as 2005.

Other significant change brought into force with the 1974 Trade Act was the creation of the Trade Promotion Authority (TPA), also known as “fast track” Presidential authority, which states that the Congress cannot amend trade agreements signed by the president under the stipulated mandate, only approve its provisions or reject it – increasing, therefore, the predictability of the outcome of trade negotiations.

A final, but not less important, innovation of the 1974 Act was the creation of the US Generalized System of Preferences (GSP), which granted preferential treatment for some goods made in developing countries; the system expired on December 31, 2020, despite legislative efforts to renew the program, and is still pending renewal by the US Congress (Jones and Wong, 2021).

The deepening globalization of production, with the increase in offshore outsourcing and the rise of global value chains beginning in the late 1980s spurred a renewed liberalizing wave in the 1990s. In this context, the GATT system received a major push with the Uruguay round, which concluded with the creation of the World Trade Organization and significantly expanded the range of topics subject to multilateral rules, incorporating the themes that were until then applied only to a subset of countries, as well as other major issues such as property rights and trade in services.

The broad scope of the Uruguay round is another example of the aforementioned dynamic by which the US presidential agenda pushes the advances in the multilateral framework. What was left outside of it, however, is another, such as the incomplete treatment of agriculture-related issues of market access and domestic support. Without the US offensive interests as an underpinning, the multilateral agenda stalled for more than two decades, despite the renewal of US presidential authority in 2002, and the Doha round of WTO negotiations was unsuccessful in dealing with the major issues on the table.

The United States also embarked on the 1990s rising tide of regional agreements, of which the most relevant is the North American Free Trade Agreement (NAFTA) with Canada and Mexico, which replaced the US-Canada FTA in 1994. In the same year, negotiations started for a major regional agreement reaching most of the American continent; resistance by many countries of the region, however, precluded what would be called the Free Trade Area of the Americas (FTAA) of ever seeing the light of day, and talks were abandoned in 2005. As an alternative strategy, the US pursued a number of bilateral and small-scale agreements under the 2002-2007 issue of the Trade Promotion Authority, in an aggressive effort that came to be termed “competitive liberalization” (Evenett and Meier, 2007).

The Brazilian experience is in stark contrast with that of the United States, in that instead of pushing for reciprocal opening, for the most part of its history Brazilian trade policy was geared towards resisting this thrust. Despite of Brazil being an original signatory of the GATT, its trade policy has been an instrument for active sectoral industrialization policies throughout most of the twentieth century, and a coordinated strategy of import substitution was explicitly implemented from the 1950’s to the late 1970’s, effectively ending only with the debt crisis in the early 1980’s.

Although the merits and success of this strategy has been subject of extensive debates, it is undeniable that part of its heritage was the existence of a large and reasonably well diversified manufacturing sector, mostly characterized by low productivity and external competitiveness, but with strong political participation and close ties with policymakers. Another legacy was an almost autarkic economy, which in the late 1980s was protected by not only an average tariff of almost 60% but by an extremely bureaucratic system of multiple import regimes and prohibition lists (Baumann, 1992).

Fatigue in the import substitution strategy led to crisis and stagnation in the 1980s and helped spur the impetus for reform and opening of the economy. The trade liberalization process began to be discussed in 1987, but resistance

by affected interest groups succeeded in limiting its extent: although by 1989 the average tariffs were cut to 32%, the reduction was not enough even to eliminate redundant tariff protection; special customs regimes were simplified but not eliminated; and non-tariff barriers were barely touched (Kume, Piani and Souza, 2003).

A second wave of reforms in 1991-1993 achieved better results, with a deep reformulation of the foreign trade structure, elimination of special regimes and of a large set of non-tariff barriers (notably of the prohibition lists), and a series of reductions in tariffs which slashed the average to 13% (Abreu, 2004). Except for another brief tariff reduction in the onset of the "Plano Real" stabilization program (1994-1995), which took average tariffs down to near 11%, that was the last concerted effort of trade liberalization that took place in Brazil.

In fact, beginning in the mid-2000s, this liberalizing trend was partly reversed, in contrast to the experience of many developing countries; it was in this context that the project of creating the FTAA was abandoned. Average tariffs were slightly increased, back to around 13%, and trade policy became again more permeable to sectoral (usually protectionist) interests, which led to an increase in non-tariff measures, especially after the 2008 crisis – and particularly through trade defense instruments, as will be detailed ahead.

3.2 Recent trends and bilateral issues

The trajectory of the United States' trade policy in the last decade – as with the global trading system as a whole – has been heavily influenced by the consequences of the rise of Asian emerging countries, and China in particular. This rapid shift in the center of gravity of global trade had resounding consequences in many arenas, and trade policy is no exception.

Another main issue that is intimately related to the course of United States' trade policymaking in recent years is the loss of impetus for reforms in multilateral trade rules. These two factors – the need to respond to the rise of China and East Asia, and the slow pace of the Doha round – help explain why the United States continued to push for bilateral and regional negotiations, and are also at the origin of the expansion in the thematic scope of these proposed arrangements, which set the tone for the 2015 renewal in the TPA (Rashish, 2021). In accordance with the values-based approach to the global economy" proposed by then-President Barack Obama, the negotiations in the early 2010s emphasized themes such as labor and environmental standards and protection of intellectual property, so as to create a "level playing field" in the face of these new global competitors (Froman, 2017).

The major initiative that exemplifies these trends is the Trans-Pacific Partnership, concluded in October 2015, including the United States and other eleven Asian and American Pacific countries – China not being among them. Marketed as a "21st Century Agreement", the TPP included a host of these new, non-traditionally trade related issues. These extended trade agenda was also the foundation for another high-profile initiative that would connect the US to the European Union: the Trans-Atlantic Trade and Investment Partnership (TTIP), the negotiations for which ended without conclusion in 2016.

The result of 2016 election, however, induced a major shift in the US trade policy strategy and its priorities. In accordance with Donald Trump's discourse as presidential candidate, his government adopted a quasi-mercantilist approach to the trade agenda that viewed trade deficits as essentially harmful, so that increasing exports and reducing imports should be the main goal of trade policy. The new president's position introduced at least three main ruptures vis-à-vis his predecessors in his view of bilateral and regional agreements, his stance towards the multilateral system and the WTO, and his relationship with trading partners, especially China.

One of the main priorities of the Trump administration's trade agenda was to abandon or renegotiate regional and bilateral trade agreements which were viewed as unfair or uncondusive to advancing United States' national interests (USTR, 2018). Soon after the new administration took office, the United States withdrew from the TPP; before the 2018 midterm elections, the NAFTA was already replaced by a new US-Mexico-Canada Agreement (USMCA) with a number of new provisions aimed explicitly at benefiting the United States, as well as a "sunset clause" establishing a fixed (but renewable) 16-year duration for the deal (Ciuriak, 2019).

Another major rupture by the Trump administration regards the United States' relationship with the multi-lateral trading system, which, as discussed, had the US leadership as one of its main thrusts. The president repeatedly criticized the WTO for, among other things, being too lenient with China's violations of trade rules,⁵ and refused to appoint new members to the institution's Appellate Body, effectively paralyzing its functioning from December 2019 due to insufficient quorum (Bown and Keynes, 2020).

5. See, for example, Trump... (2020).

But perhaps the most turbulent side of the new trade agenda was the radicalization in the relationship towards trading partners – especially China, with which it was repeatedly said, even by the president himself, that the US was waging a “trade war”.⁶ The administration took a series of unilateral protectionist measures, many of which framed as defensive measures in response to exporters’ unfair practices, and some leading to retaliation by major partners.⁷ Among the most relevant were the introduction of additional tariffs on steel and aluminum imports from various countries, and the retaliatory tariffs imposed on China under section 301 of the 1974 Trade Act for alleged harms against intellectual property rights and similar violations, as well as Section 301 investigations opened against the EU, France and Vietnam (Schwarzenberg, 2021).

The escalation of trade-related attrition with China, which lasted most of Trump’s administration, led to the announcement, in October 2019, of a preliminary bilateral deal to address some of the United States’ worries and appease the growing tension between the worlds’ two largest economies. The so-called “Phase One” deal was signed in January 2020, and covered issues such as intellectual property, technology transfers, financial services, macroeconomic policies, and commitments for Chinese purchases of US agricultural products; it did not, however, include any provisions regarding the retaliatory US tariffs imposed in the previous years.⁸

With the new administration that took office in 2021, there has been an expectation that Trump’s protectionist stance would be reversed. However, even though the aggressive rhetoric has been replaced to one more amenable to multilateralism, the direction of trade policy hasn’t yet been modified: the criticism towards WTO’s Appellate Body remains (and no new members have been appointed); the US remains outside of the TPP; the retaliatory tariffs remain largely in place; protectionism in government procurement has increased, with the announcement of more stringent “buy American” provisions; and the relationship with China does not show any sign of improving (Krueger, 2021; Pal and Ray, 2021).

In Brazil, the shift in policy orientation after the government change in 2016, which was reinforced by the election of a government allegedly committed to a liberal agenda in 2018, still has not effectively resulted in actual change – which speaks to the power of entrenched interests in shaping trade policy. Although some advances were reached – the most significant being the signature of a free trade agreement between Mercosur and the European Union, even though doubts remain about when (or if) it will be ratified by EU members –, a deeper removal of trade barriers is not in sight, and trade liberalization has been pushed out of the economic policy agenda by more pressing issues, especially the chronic fiscal problem and the response to the Covid-19 pandemic.

As active players in the multilateral arena, Brazil and United States had a number of clashes and quarrels, both in the negotiation table and in the Dispute Settlement Mechanism (DSM). Both had leading roles in the Doha round talks, usually in opposite sides – the US forwarding its offensive interests in market access for manufactured goods and in a host of issues, from competition policy to government procurement, while Brazil tried to push the focus towards agricultural market access and subsidies (Bhandari and Klaphake, 2011).

In the DSM, the pair was involved in fifteen consultations – four with the US as claimant and Brazil as respondent, and eleven with the reversed roles. The two were involved on the first panel ever established by the DSM, following a complaint initially requested by Venezuela just days after the creation of the WTO and joined by Brazil less than four months later, which accused the US of illegal discrimination in gasoline imports. Some of the complaints initiated by Brazil became relevant disputes, such as those involving orange juice, which ended by mutual accord in 2013, and cotton, which lasted from 2002 to 2014 – one of the longest in the DSM history – and resulted in a Memorandum of Understanding after Brazil announced its intention to carry on with punitive measures.

Although Brazil hadn’t been on direct crossfire in Trump’s trade wars – the country was among the exemptions from the retaliatory steel and aluminum tariffs, for example –, there is a chance that Brazilian exports to China may be harmed by the US-China phase one deal, especially in soybeans and other agricultural goods (Ribeiro et al., 2020) – although the actual purchases of these US goods by China is yet below the committed levels (Bown, 2021).

The rise to power of likeminded presidents on both countries in the late 2010s created conditions for a further reapproaching. In practice, however, only a Protocol on Transparency and Trade Rules has been signed, in October 2020, covering issues such as customs rules, trade facilitation, good regulatory practices and anti-corruption measures.⁹ The United States remains reluctant in granting effective support to Brazil’s entry into the Organization for Economic

6. See, for example, Donald... (2020).

7. For a detailed timeline of these measures see, for example, Bown and Kolb (2021).

8. The full text of the agreement is available at: <<https://bit.ly/3kj820j>>.

9. The full text of the protocol can be found at: <<https://bit.ly/30uQNcu>>.

Cooperation and Development (OECD), and an actual FTA including the two largest economies of the American continent remains an elusive long-term goal, despite the potential benefits to both parties (Neto et al., 2020).

3.3 Trade agreements

As discussed in subsection 3.1, pursuing bilateral and regional agreements has been one of the main tools in the United States' offensive trade policy strategy. Brazil, in the opposite, has embarked much less timidly in the 1990s wave of RTAs, mostly containing itself to the Mercosur and regional neighbors. It is unsurprising, therefore that the US has more bilateral agreements, while most of Brazil's agreements were attained via Mercosur.

The largest agreement signed by the US is with neighboring countries Canada and Mexico (box 2). Originally called NAFTA, the Agreement gained a new configuration in 2020, when the Trump administration renegotiated the North American Free Trade Agreement, replacing it with an updated and rebalanced version, the United States-Mexico-Canada Agreement (USMCA).

The NAFTA eliminated most tariffs on goods traded between the three countries, with a major focus on liberalizing trade in agriculture, textiles, and automobile manufacturing and created the world's largest free trade area, linking 494 million people producing roughly US\$ 22.2 trillion worth of goods and services.¹⁰ The deal also sought to protect intellectual property, establish dispute resolution mechanisms, and, through side agreements, implement labor and environmental safeguards. Regional trade tripled under the agreement, and cross-border investment among the three countries also grew significantly.

NAFTA fundamentally reshaped North American economic relations, driving unprecedented integration between Canada, Mexico and US. It is expected that many of NAFTA's obligations will survive identically under USMCA, maintaining existing free trade access of goods and most services in the region.

Before changing the NAFTA proposal, the US withdrew from the Trans-Pacific Partnership (TPP) in 2017. Negotiations with the European Union on the proposed Trans-Atlantic Trade and Investment Partnership (T-TIP) agreement were halted at the end of 2016. Currently, the United States has four main unilateral preference programs: the African Growth and Opportunity Act (AGOA), the GSP, the Caribbean Basin Initiative (CBI)/Caribbean Basin Trade Partnership Act (CBTPA), and the Nepal Trade Preference Program (NTPP).

The US has 14 FTAs in force with 20 countries from all continents (box 2). Most of them were concluded between 2004 and 2006, under the so-called "competitive liberalization" strategy, including the agreement with Chile, Singapore, Australia, Central American countries (Central American Free Trade Agreement or CAFTA-DR, Costa Rica, Dominican Republic, El Salvador, Guatemala, Honduras and Nicaragua), Bahrain and Morocco.

The US-Chile FTA opens markets and eliminates tariffs through reduces barriers to trade in services, provides protection for intellectual property, guarantees non-discrimination in the trade of digital products and ensures regulatory transparency. The bilateral goods trade totaled US\$ 27.8 billion in 2016. The US-Singapore FTA is the US first in Asia. Since 2003, the year before the FTA entered into force, two-way goods trade has increased 55%. Singapore is the 18th largest goods trading partner of the United States and reached US\$ 49.2 billion in total goods trade and US\$ 25.9 billion in total services trade in 2017 (latest data available). The Asian country is the second-largest source of foreign investment from the Asia Pacific in the US, while the Singapore is the top destination for outbound US foreign direct investment in Asia. The US consults regularly with Singapore to monitor implementation of the FTA, address bilateral issues, and further build and expand the bilateral relationship. The US-Australia FTA entered into force on 1 January 2005. US two-way goods trade with Australia totaled US\$ 34.6 billion in 2017, up 61% since 2004, the year before the FTA entered into force. The two countries work closely to further promote trade and investment through WTO, APEC, and other regional initiatives.

The CAFTA-DR is the first free trade agreement between the US and a group of smaller developing economies. This agreement created new economic opportunities by eliminating tariffs, reducing barriers to services, promoting transparency and opening markets. It helped facilitate trade and investment among the seven countries, furthering regional integration. Currently, CAFTA-DR countries represent the third largest US export market in Latin America, behind Mexico and Brazil.

The US-Bahrain FTA follows the US policy of increasing job-supporting trade and investment between the United States and Middle East. The United States-Bahrain Bilateral Investment Treaty (BIT) took effect in May 2001. Since the agreement took effect, 100% of the two-way trade in industrial and consumer products began to flow without

10. All quantitative information in this section comes from the report *Trade Policy Review, Report by United States*. Available at: <<https://bit.ly/2YSwNQ1>>.

tariffs. In 2016, two-way trade in goods was US\$ 1.9 billion. US exports of goods were US\$ 898 million, and US The US-Morocco FTA increased bilateral trade in goods from US\$ 927 million in 2005 (the year prior to entry into force) to US\$ 3.5 billion in 2016. The Agreement was renegotiated in 2017, when the parties reviewed improvements to Morocco's legislative regime for the protection of intellectual property rights and decided to further discuss the concerns of some US pharmaceutical companies. Also was reviewed discussions about Agriculture and SPS Subcommittees.

The United States' oldest FTA occurred with Israel in 1985 and continues to serve the foundation for expanding trade and investment among the countries, by reducing barriers and promoting regulatory transparency. In 2017, US goods exports to Israel were US\$ 15.1 billion. In 2016, the Israel and US engaged efforts to increase bilateral trade and investment and began a discussion of a work plan to address barriers to bilateral trade, including agriculture and customs, among other areas. Progress was also made on a number of market access issues related to standards, customs classification, and technical regulations. In 2017, the countries agreed to adopt new procedures making it easier for exporters to gain approvals when claiming duty-free status under the FTA for individual products. The next agreement in the region, the US-Jordan FTA of 2001 eliminated all trade tariffs. U.S. goods exports were an estimated US\$ 2.0 billion in 2017, up 34.5% from 2016. At 2016 the countries established under the FTA agreed to implement an action plan outlining concrete steps to boost trade and investment bilaterally and between Jordan and other countries in the Middle East region.

Between 2009 and 2012 other agreements were signed by the U.S: Oman, Peru, Republic of Korea and Panama. The first one, celebrated with Oman promoted economic reform and openness in the region. In 2017, two-way trade in goods was US\$ 3.1 billion. The US-Peru Trade Promotion Agreement (PTPA) eliminates tariffs and removes barriers to US services, provides a secure, predictable legal framework for investors, and strengthens protection for intellectual property, workers, and the environment. The US bilateral trade with Peru was an estimated US\$ 18.5 billion in 2016, with US goods exports to Peru totaling US\$ 8.7 billion. The US-Korea FTA increase the bilateral goods and services trade from US\$ 126.5 billion in 2011 to US\$ 154.8 billion in 2017. In 2017 was discussed additional steps to address the significant bilateral trade imbalance, because the US goods deficit with Korea quickly. Among the measures, possible amendments and modifications to improve the agreement were launched in 2018. The U.S-Colombia TPA had the two-way goods trade totaled US\$ 26.9 billion in 2017, with US goods exports to Colombia totaling US\$ 13.3 billion. The US maintains its engagement with the Government of Colombia to ensure progress on workers' rights, including through cooperative efforts and dialogue regarding the collection of fines for labor law violations, and to increase the number of resolved cases of violence and threats against unionists. Finally, the US-Panama Trade Promotion Agreement (Panama TPA) increased trade between Panama and US in US\$ 6.7 billion in 2017, with US goods exports to Panama totaling US\$ 6.3 billion.

Brazil is a founding member of Mercosur, a customs union created in 1991 with its south cone neighbors Argentina, Paraguay and Uruguay. As shown in table 12, almost all of Brazil's trade agreements were signed in the scope of Mercosur and the Latin American Integration Association (ALADI). Actually, Brazil (and Mercosur) has free trade agreements with all other countries of South America, except Suriname and Guiana (with which there's only partial scope agreements). The bloc has also an FTA with Panama and partial scope agreements with Cuba and Mexico, this last one including mainly the automotive sectors. In recent years, Mercosur and Mexico have been negotiating to create a more comprehensive free trade agreement, which should include satisfactory rules of origin for the industry and chapters on technical barriers, government procurement, trade facilitation, sanitary and phytosanitary measures, and services trade.

In June 2021, the Chamber of Deputies in Brazil ratified a free trade agreement between Brazil and Chile within the scope of Mercosur. This initiative represents an opportunity for the country to reduce bilateral customs tariffs and establish commitments such as trade facilitation, technical barriers to trade, cross-border trade in services, investments, e-commerce and government procurement.

Out of the continent, Brazil (via MERCOSUR) has free trade agreements with Israel, Egypt and Palestine (this one not enforced yet) and partial scope agreements with India and the South African Customs Union, encompassing South Africa, Botswana, Lesotho, Namibia and Eswatini.

Neither Brazil nor Mercosur has agreements with any of the largest world economies. In an effort to change this landscape, in recent years, Brazil has launched or accelerated evolution with large economies, such as the European Union, EFTA, Canada, South Korea and has a special interest in discussing possible agreements with the US and Japan (agreements with the European Union and EFTA has already been signed, but ratifications are pending).

BOX 1
US preferential trade agreements

Agreement	Coverage	Type	Notif. year	Signatories	Remarks
US-Israel	Goods	FTA	1985	Israel; US	-
US-Jordan	Goods and serv.	FTA, EIA	2001	Jordan; US	-
US-Chile	Goods and serv.	FTA, EIA	2004	Chile; US	-
US-Singapore	Goods and serv.	FTA, EIA	2004	Singapore; US	-
US-Australia	Goods and serv.	FTA, EIA	2005	Australia; US	-
US-Dominican Republic-Central America Free Trade Agreement (CAFTA-DR)	Goods and serv.	FTA, EIA	2006	Costa Rica; Dominican Republic; El Salvador; Guatemala; Honduras; Nicaragua; US	Dates of entry into force: Costa Rica, 2009; Dominican Republic, 2007; El Salvador, Guatemala, Honduras, Nicaragua and United States, 2006.
US-Bahrain	Goods and serv.	FTA, EIA	2006	Bahrain, Kingdom of; US	-
US-Morocco	Goods and serv.	FTA, EIA	2006	Morocco; US	-
US-Oman	Goods and serv.	FTA, EIA	2009	Oman; US	-
US-Peru	Goods and serv.	FTA, EIA	2009	Peru; US	-
US-Korea, Republic of	Goods and serv.	FTA, EIA	2012	Korea, Republic of; US	-
US-Colombia	Goods and serv.	FTA, EIA	2012	Colombia; US	Signed on 22 November 2006; amended on 28 June 2007.
US-Panama	Goods and serv.	FTA, EIA	2012	Panama; US	-
US-Mexico-Canada Agreement (USMCA/CUSMA/T-MEC)	Goods and serv.	FTA, EIA	1994/2020	Canada; Mexico; US	Parties have notified that NAFTA has been superseded by the USMCA/CUSMA/T-MEC. As a result, the provisions of the NAFTA are no longer in force, except as expressly provided by the USMCA/CUSMA/T-MEC.

Sources: RTA-Data (available at: <<https://bit.ly/2YUHiCy>>; accessed on: Feb. 15, 2021); WTO (available at: <<https://bit.ly/3oBQkwW>>; accessed on: Apr. 19, 2021).
Authors' elaboration.

BOX 2

Brazil preferential trade agreements

Agreement	Coverage	Type	Notif. year	Signatories	Remarks
Southern Common Market (MERCOSUR)	Goods and serv.	CU, EIA	1991	Argentina; Brazil; Paraguay; Uruguay	-
Latin American Integration Association (LAIA)	Goods	PSA	1981	Argentina; Bolivia; Brazil; Chile; Colombia; Cuba; Ecuador; Mexico; Paraguay; Peru; Uruguay; Venezuela	-
MERCOSUR-Bolivia	Goods	FTA	1996	Brazil; Argentina; Paraguay; Uruguay; Bolivia	-
MERCOSUR-Chile	Goods	FTA	1996	Brazil; Argentina; Paraguay; Uruguay; Chile	-
MERCOSUR-Colombia	Goods	FTA	2017	Brazil; Argentina; Paraguay; Uruguay; Colombia	Overlapped the FTA between Mercosur and Andean Community, signed in 2005.
MERCOSUR-Andean Community	Goods	FTA	2005	Brazil; Argentina; Paraguay; Uruguay; Ecuador; Colombia; Venezuela	-
MERCOSUR-Peru	Goods	FTA	2005	Brazil; Argentina; Paraguay; Uruguay; Peru	-
MERCOSUR-Venezuela	Goods	FTA	2012	Brazil; Argentina; Paraguay; Uruguay; Venezuela	Overlapped the FTA between Mercosur and Andean Community, signed in 2005. Venezuela became a Mercosur member but is currently suspended from the bloc. The trade agreement continues to apply.
Brazil-Mexico	Goods	PSA	2003	Brazil; Mexico	-
Brazil-Panama	Goods	FTA	2012	Brazil; Panama	-
MERCOSUR-Cuba	Goods	PSA	2006	Brazil; Argentina; Paraguay; Uruguay; Cuba	-
Brazil-Surinam	Goods	PSA	2005	Brazil; Suriname	-
Brazil-Guiana-San Cristobal and Nevis	Goods	PSA	2001	Brazil; Guiana; San Cristobal and Nevis	-
MERCOSUR-Egypt	Goods	FTA	2017	Egypt; Argentina; Brazil; Paraguay; Uruguay	-
MERCOSUR-India	Goods	PSA	2009	India; Argentina; Brazil; Paraguay; Uruguay	-
MERCOSUR-Israel	Goods	FTA	2009	Israel; Argentina; Brazil; Paraguay; Uruguay	Dates of entry into force: 2009 for Uruguay and Israel; 2010 for Brazil, Paraguay and Israel; 2011 for Argentina.
MERCOSUR-Palestine	Goods	FTA	2011	Palestine; Argentina; Brazil; Paraguay; Uruguay	Not yet enforced.
MERCOSUR-SACU (South African Customs Union)	Goods	PSA	2016	Argentina; Brazil; Paraguay; Uruguay; Botswana; Lesotho; Namibia; South Africa; Eswatini	-

Sources: RTA-Data (available at: <<https://bit.ly/2YUHCy->>; accessed on: Feb. 15, 2021); WTO (available at: <<https://bit.ly/3oBQkwW->>; accessed on: Apr. 19, 2021). Authors' elaboration.

3.4 Tariff profile

Table 12 displays tariff averages for total trade and selected product groups for both countries. For each country, it presents the MFN tariff applied to all partners, as well as the tariff applied bilaterally to each other.

At first glance, one can notice that Brazil has significantly larger tariff protection than the United States: the former's average tariff is more than four times that of the latter. This difference is much starker in industrial goods, since Brazil protects more intensely this sector, while in the United States it is the least protected.

The difference is visible in the four use categories, as the third panel of table 13 shows. Moreover, both countries seem to follow the principle of tariff escalation, with the highest tariffs for consumer goods, and higher protection for intermediates than for raw materials. For capital goods, however, while the US imposes almost negligible tariffs, in Brazil the protection is even higher than that of intermediates – although in this case the average tariff may be misleading, since the Brazilian “*ex-tarifario*” regime allows duty free imports on capital goods that are not produced domestically, resulting in much lower effectively applied tariffs.

The bottom panel of table 12 presents the average tariffs by two-digit ISIC rev. 3 industry. Brazil has larger MFN tariffs in three-quarters of the sectors – or more than 80% if we exclude the coal and oil sectors, and 90% among the manufacturing sectors. More specifically, the only manufacturing sectors in which the United States' MFN tariffs are larger are food and beverages and oil refinery; Brazilian tariffs are at least double that of the US in 11 of the 22 manufacturing industries, and on average Brazilian manufacturing tariffs are five times that of the US.

TABLE 12
Sectoral import tariffs in Brazil and the US (2019)
(In %)

Product/sector	Tariff rate			
	Brazil (MFN)	Brazil with the US	US (MFN)	US with Brazil
Total trade	13.83	13.54	3.59	3.48
WTO HS Agricultural	10.09	11.47	7.03	6.45
WTO HS Industrial	14.16	13.81	3.24	3.24
WTO HS Petroleum	0.36	0.00	6.60	-
Capital goods	12.97	12.82	1.45	1.17
Consumer goods	19.45	19.12	4.91	5.01
Intermediate goods	11.82	10.73	3.92	3.76
Raw materials	6.77	5.72	2.00	2.68
Agriculture and hunting	7.36	-	5.44	4.38
Forestry	5.42	-	6.90	7.75
Fishing	8.77	-	7.22	-
Coal mining and peat extraction	0.00	0.00	4.64	-
Petroleum and gas extraction	0.00	-	2.86	-
Mining of uranium and thorium ores	4.00	-	5.00	-
Mining of metal ores	2.19	-	1.67	2.50
Other mining and quarrying	4.00	2.67	4.95	5.38
Food and beverages	12.50	15.18	12.74	13.94
Tobacco	18.00	20.00	15.92	-
Textiles	24.20	33.17	7.99	9.27
Wearing apparel	33.76	35.00	11.31	10.58
Leather and shoes	20.63	27.14	6.92	7.44
Wood products	9.38	14.00	7.90	8.07
Paper products	11.87	11.19	7.44	6.36
Publishing and printing	10.11	5.60	4.51	6.83

(Continues)

Product/sector	Tariff rate			
	Brazil (MFN)	Brazil with the US	US (MFN)	US with Brazil
Oil and coke refinery	1.92	3.33	4.79	-
Chemical products	7.99	7.48	4.65	4.67
Rubber and plastics	15.02	14.37	6.24	5.55
Other non-metallic mineral products	10.77	9.95	10.51	10.58
Basic metals	9.81	8.80	6.43	5.94
Fabricated metal products	16.04	15.45	8.43	7.96
Machinery and equipment	13.39	13.17	3.33	2.82
Office, accounting and computing equipment	11.90	9.78	0.16	0.00
Electrical machinery and apparatus	14.58	14.03	5.63	6.07
Radio, television and communication	12.75	5.20	3.38	0.47
Medical, precision and optical equipment	13.72	11.17	5.01	3.58
Motor vehicles	25.24	16.63	7.99	5.75
Other transport equipment	11.35	3.50	7.31	8.54
Furniture and other manufactures	17.44	19.64	9.87	9.68

Source: Comtrade/UN. Available at: <<https://bit.ly/3EoGoga>>. Accessed on: Aug. 26, 2021. Authors' elaboration.

3.5 Non-tariff measures

There is growing evidence that the reduction in traditional tariff protection in recent decades was at least partly offset by an increase in other measures that affect trade, so that, instead of a broad decline in overall protection, there has been a substitution of tariffs for non-tariff measures (NTMs) (Niu et al., 2020; Ghodsi et al., 2017). Even though these NTMs can be adopted to address legitimate interests of consumers by imposing that certain characteristic – such as the quality of products and the traceability of production chains – are met, there is evidence of their widespread use as trade policy instruments to replace tariffs and protect the domestic market against the external competition.

The adoption of NTM has grown progressively and peaked after the 2008-2009 crisis, when NTMs and other “disguised” forms of protectionism were used to mitigate the negative effects of the global recession, given the countries’ commitment to the multilateral rules of the WTO that prevented tariff increases. Niu et al. (2018) show that, for a sample of 90 countries, the average ad valorem equivalent (AVE) rose from 27% in 2003 to 57% in 2015. In Brazil, the AVE rose from 30% to 76% in the same period, and in the United States the figures are 12% and 74%.

This agenda has become a major point of discussion between countries and trade agreements exhaustively discuss the reduction of NTMs between the parties. The most observed clauses on the subject are related to the reduction or elimination of quantitative restrictions and local content requirements, simplification of customs procedures, harmonization of rules, sanitary and phytosanitary measures, technical requirements, etc.

This section explores the incidence of Non-Tariff Measures (NTM’s) in Brazil and US, using data from the UNCTAD TRAINS and COMTRADE databases. We adopt an inventory approach and describe the data via three distinct indices. The frequency index (FI), that represent the percentage of products in the nomenclature exposed to any NTM; the prevalence score (PV), given by the average number of unique NTM codes applied to a set of commodities; and the Cover Ratio (CR) is the percentage of imports exposed to any NTM. The effort to understand NTM’s is linked to the development of the International Classification of Non-Tariff Measures, a nomenclature that classifies each measure using up to a four-digit code. Box B.2 (appendix B) displays a description of the NTM chapters (UNCTAD, 2019). Measures can also be classified according to the country they are applied to: General Measures are those applied to all countries in the economy; Specific Measures are measures applied to an arbitrary set of partners.

Table 13 describes the incidence of NTM’s on Brazil, US and the average of a sample of countries. Considering All Measures, the United States apply NTM’s to almost 80% of all commodities in the nomenclature (FI) and covers more than 83% of imports (CR) while Brazil applies NTMs to almost 76% of all commodities (FI) and covers more than 86% of imports (CR). Regarding the intensity (PV), the average number of unique NTM codes applied by product is almost 7 for both countries. About Specific Measures, US cover more commodity codes (FI = 13.6) and import value

(CR = 20.9) with NTMs than Brazil and the average of reporters, but Brazil is more intense, on average, each product has 9 NTM codes applied to it in Latin-American country (PV). In the US this value is almost 6 NTM and on the world average it is 4.

Most of NTM's applied by Brazil are included in Chapter B (Technical Barriers to Trade – TBT) and E (Non-automatic import licensing, quotas, prohibitions, quantity control measures, and other restrictions not including sanitary and phytosanitary measures or measures relating to technical barriers to trade). These are also the classifications that receive the most NMTs on average for the worldwide reporters. Both chapters cover more than 80% of imports in Brazil and Chapter B is also the one most intensively used in the country (PV). In the US Chapter B also covers more than 80% of imports but Chapter E just 27.8%.

Other important chapters are A (Sanitary and Phytosanitary Measures - SPS), which are equally important in both countries, but with greater relevance in Brazil, present in more than 57% of commodities and covering close to 70% of imports.; F (Price-control measures, including additional taxes and charges), mainly in US (cover 24% of commodities and 13% of imports) and are less common in Brazil; and C (Pre-shipment inspection and other formalities) and P (Export-related measures).

The incidence of specific measures is a distinguishing of All Measures, being the Chapter A (SPS measures) broader in Brazil and US than average of reporters. Brazil applies specific measures to only to 8% of trade while US, in the other hand, applies specific measures to almost 21%, which are concentrated in chapters B and C.

TABLE 13

Incidence of non-tariff measures (NTMs) in Brazil and the US: frequency index (FI), cover ratio (CR) and prevalence score (PV), by type of measure and chapter^{1,2}

Measure and chapter	US ³			Brazil ⁴			Sample of reporters ^{4,5}		
	FI (%)	CR (%)	PV	FI (%)	CR (%)	PV	FI (%)	CR (%)	PV
All measures	80.29	83.23	6.67	75.95	86.24	6.72	70.36	71.96	5.14
A	20.71	11.37	2.31	57.18	69.84	2.20	24.99	18.07	1.66
B	74.66	80.86	2.59	73.61	81.85	2.98	60.72	63.88	2.19
C	9.74	8.24	0.14	26.68	42.47	0.27	8.55	6.81	0.09
E	26.09	27.81	0.27	58.57	80.88	1.02	40.63	46.81	0.58
F	23.57	13.47	0.29	0.92	6.30	0.01	6.43	7.55	0.10
G	0	0	0	0.00	0.00	0.00	1.37	2.07	0.01
H	0	0	0	0.61	9.55	0.01	1.25	1.82	0.01
I	0	0	0	0.00	0.00	0.00	0.12	0.13	0.00
P	30.89	34.36	1.07	23.97	45.63	0.25	19.35	16.77	0.47
General measures	80.22	82.91	6.26	75.91	86.24	6.70	68.07	70.19	4.81
A	20.00	11.33	2.14	57.18	69.84	2.18	24.31	17.56	1.61
B	74.66	80.86	2.51	73.61	81.85	2.98	60.02	63.07	2.15
C	4.86	1.40	0.09	26.68	42.47	0.27	5.35	5.14	0.06
E	25.76	27.24	0.26	58.53	80.88	1.02	37.10	44.81	0.52
F	23.57	13.47	0.29	0.92	6.30	0.01	6.27	7.16	0.09
G	0	0	0	0.00	0.00	0.00	1.37	2.07	0.01
H	0	0	0	0.61	9.55	0.01	1.19	1.76	0.01
I	0	0	0	0.00	0.00	0.00	0.10	0.07	0.00
P	26.74	21.58	0.97	23.68	45.59	0.25	14.38	12.83	0.35

(Continues)

(Continued)

Measure and chapter	US ³			Brazil ⁴			Sample of reporters ^{4,5}		
	FI (%)	CR (%)	PV	FI (%)	CR (%)	PV	FI (%)	CR (%)	PV
Specific measures	13.62	20.87	0.58	4.44	8.40	0.09	11.79	10.80	0.42
A	7.26	2.04	0.31	3.61	4.00	0.07	3.41	2.33	0.09
B	3.44	6.54	0.09	0.52	4.37	0.01	4.61	3.33	0.06
C	5.32	7.40	0.05	0.00	0.00	0.00	3.49	1.89	0.04
E	0.83	1.07	0.01	0.54	4.37	0.01	4.51	3.51	0.07
F	0.67	0.12	0.01	0.00	0.00	0.00	0.15	0.39	0.00
G	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00
H	0	0	0	0.00	0.00	0.00	0.05	0.06	0.00
I	0	0	0	0.00	0.00	0.00	0.02	0.06	0.00
P	5.95	18.36	0.10	0.29	0.04	0.00	7.32	7.11	0.15

Sources: UNCTAD Trains (available at: <<https://bit.ly/3JdurxF>>; accessed on: Aug. 26,2021) and Comtrade/UN (available at: <<https://bit.ly/3EoGoga>>; accessed on: Aug 26, 2021).

Authors' elaboration.

Notes: ¹ The table displays inventory indexes of the incidence of Non-Tariff Measures applied by U.S. and Brazil. The results are presented by the type of NTM, All Measure, General or Specific, and chapter of the NTM nomenclature (version of 2012). Not all codes in the nomenclature are covered by the data collection process. FI and PV are based on the number of 6-digit codes of the Harmonized System (2012 version), and CR uses total imports (value), for all chapters.

² Methodological notes are in box B.1 (appendix B).

³ Data collected in 2017.

⁴ Data collected in 2016.

⁵ List of reporters: Argentina; Australia; Austria; Belgium-Luxembourg; Bulgaria; Plurinational State of Bolivia; Brazil; Chile; China; Colombia; Costa Rica; Cyprus; Czechia; Germany; Denmark; Algeria; Ecuador; Spain; Estonia; Finland; France, Monaco; United Kingdom; Greece; Guatemala; China, Hong Kong Special Administrative Region; Honduras; Croatia; Hungary; Ireland; Israel; Italy; Jordan; Japan; Republic of Korea; Lebanon; Sri Lanka; Lithuania; Luxembourg; Latvia; Morocco; Mexico; Malta; Nicaragua; Netherlands; New Zealand; Pakistan; Panama; Peru; Papua New Guinea; Poland; Portugal; Paraguay; Qatar; Romania; Russian Federation; Saudi Arabia; El Salvador; Slovakia; Slovenia; Sweden; Tunisia; Turkey; Uruguay.

Tables 14 and B.1 (appendix B) list and describe the 4-digit level commodity codes that have specific measures applied to Brazil and US by each other. Specific NTM's applied by the US to Brazilian imports cover more commodities codes, especially 203 products groups by HS4, while Brazil applies measures that cover just 21 commodities codes to US.

Brazil applies NTM's to US to many agricultural commodities in the nomenclature (FI). Some the commodities listed are not actually imported by Brazil from US, that's why they don't cover large volumes of imports. Differently, a variety of products is affected by NTMs applied by the US to Brazilian products, included manufactures and agricultural commodities. Table B.2 (appendix B), describes the incidence of NTM's by the 2-digit level of the Harmonized System, considering All Measures.

TABLE 14

NTMs applied by Brazil specifically to US products: frequency index (FI), cover ratio (CR) and prevalence score (PV), by HS4 code

HS4 code	Description	FI (%)	CV (%)	PV
0101	Horses, asses, mules and hinnies; live	100.00	100.00	4.00
0601	Bulbs, tubers, tuberous roots, corms, crowns and rhizomes; dormant, in growth or in flower; chicory plants and roots other than roots of heading no. 1212	100.00	0.00	2.00
0808	Plants, live; n.e.c. in heading no. 0601, (including their roots) cuttings and slips; mushroom spawn	100.00	100.00	2.00
0809	Potatoes; fresh or chilled	100.00	100.00	2.00
1001	Leguminous vegetables; shelled or unshelled, fresh or chilled	100.00	100.00	1.50
0701	Vegetables; n.e.c. in chapter 07, fresh or chilled	50.00	100.00	1.00
0806	Nuts (excluding coconuts, Brazil and cashew nuts); fresh or dried, whether or not shelled or peeled	100.00	100.00	1.00
0812	Grapes; fresh or dried	50.00	0.00	1.00
1005	Apples, pears and quinces; fresh	100.00	100.00	1.00
1007	Apricots, cherries, peaches (including nectarines), plums and sloes, fresh	100.00	0.00	1.00
1002	Fruit, fresh; n.e.c. in chapter 08	50.00	0.00	0.50
1003	Fruit and nuts provisionally preserved; e.g., by Sulphur dioxide gas, brine, in Sulphur water or in other preservative solutions, but unsuitable in that state for immediate consumption	50.00	0.00	0.50
1004	Coffee, whether or not roasted or decaffeinated; husks and skins; coffee substitutes containing coffee in any proportion	50.00	0.00	0.50
1209	Wheat and meslin	40.00	5.48	0.50
1214	Rye	50.00	0.00	0.50
0602	Barley	20.00	0.14	0.40
0708	Oats	33.33	0.00	0.33
0802	Maize (corn)	13.33	1.91	0.27
0901	Grain sorghum	20.00	100.00	0.20
0810	Seeds, fruit and spores; of a kind used for sowing	12.50	2.66	0.13
0709	Swedes, mangolds, fodder roots, hay, lucerne (alfalfa), clover, sainfoin, forage kale, lupines, vetches and similar forage products, whether or not in the form of pellets	9.09	0.00	0.09

Sources: UNCTAD Trains and Comtrade/UN.

Authors' elaboration.

Obs.: Indexes are based on the number and imported values of unique 6-digit level codes included in the HS4 heading of the Harmonized System.

3.6 Anti-dumping measures affecting partner

The United States and Brazil are active users of measures to safeguard the interests of their national industries and to ensure that trading partners abide by their WTO obligations. Both countries are among the most intense users of anti-dumping measures in the world. According to the last report of the WTO Committee on Anti-dumping Practices, US ranked first in the number of anti-dumping measures in force in June 2020, with 398 measures. Brazil ranks 4th, with 156 measures, behind India (243 measures) and Turkey (181 measures).

Box 3 lists the products that are subject to AD measures imposed since 2010 to 2020 by Brazil and that affects U.S, and those by the US that affect Brazil. Brazil imposed 16 measures, most of them related to chemicals, glass and rubber products. Four of them have also been terminated, so there are also 12 still in force. Three of them affect only US: N-Butanol, imposed in 2010; and Monoethylene glycol butyl ether – EBMEG and Polypropylene resin (PP), both of 2016 and still in force.

These products are generally the ones that receive the most AD measure from Brazil. Intermediate goods, such as iron and steel, plastics, rubber, and chemicals, the building blocks of more sophisticated, higher value-added products characterize the main targets of trade defense instruments in the country.

US imposed only nine anti-dumping measures affecting Brazil, all still in force, except the measure of 2017, about silicon metals, that was terminated in 2018. The affected products are paper, aluminum, rubber, wood moldings and millwork products and steel products. All measures that affect Brazil also applies to other trading partners.

BOX 3

Anti-dumping measures applied by Brazil and the US on each other's imports (2009-2020)

Country	Year of implement.	Terminated	Chapters affected	Products affected	Description	Trading partners affected
Brazil	2010	2012	40	400259	Nitrile rubber "NBR" not hydrogenated	Argentina, France, India, Korea, Republic of, Poland, USA
	2010	-	48	481022	Lightweight coated paper	Belgium, Canada, Finland, Germany, Sweden, Switzerland, USA
	2010	-	29	290513	N-Butanol	US
	2010	2012	29	292910	Toluene diisocyanate (TDI-80/20)	Argentina, US
	2011	2016	39	390931	Polymeric MDI	Belgium, China, US
	2012	-	29; 38	2922; 2922; 3824	Ethanolamines, grades MEA (monoethanolamide) and TEA (triethanolamine)	Germany, US
	2013	-	70	700529	Float flat glass	China, Egypt, Mexico, Saudi Arabia, Kingdom of, United Arab Emirates, US
	2013	-	29	291712	Adipic acid	China, France, Germany, Italy, US
	2013	2015	39	392051	Acrylic sheets	China, Hong Kong, China, Malaysia, US
	2013	-	28	283539	Sodium acid pyrophosphate "SAPP"	Canada, China, US
	2013	-	38; 39; 90	382200; 392690; 901839	Vacuum plastic tubes for blood collection	China, Germany, United Kingdom, US
	2015	-	39	390931	Polymeric MDI	China, US
	2016	-	29	291531; 291539	Acetic esters	Mexico, US
	2016	-	29	290943	Monoethylene glycol butyl ether - EBMEG	US
	2016	-	39	390210; 390230	Polypropylene resin (PP)	US
2020	-	29	2907	Phenol f	European Union, US	
US	2015	-	48	-	Certain uncoated paper	Australia, Brazil, China, Indonesia, Portugal
	2015	-	72	-	Certain cold-rolled steel flat products	Brazil, China, India, Japan, Korea, Republic of, Netherlands, Russian Federation, United Kingdom
	2015	-	72	-	Certain hot-rolled steel flat products	Australia, Brazil, Japan, Korea, Republic of, Netherlands, Turkey, United Kingdom
	2016	-	40	400219	Emulsion styrene-butadiene rubber	Brazil, Korea, Republic of, Mexico, Poland
	2016	-	72	-	Certain carbon and alloy steel cut-to-length plate	Austria, Belgium, Brazil, China, France, Germany, Italy, Japan, Korea, Republic of, South Africa, Chinese Taipei, Turkey
	2017	2018	28	280461; 280469; 280469	Silicon metals	Australia, Brazil, Norway
	2020	-	76	7607; 7607	Certain aluminum foil	Armenia, Brazil, Oman, Russian Federation, Turkey
	2020	-	44	-	Wood moldings and millwork products	Brazil, China
	2020	-	76	-	Common alloy aluminum sheet	Bahrain, Kingdom of, Brazil, Croatia, Egypt, Germany, Greece, India, Indonesia, Italy, Korea, Republic of, Oman, Romania, Serbia, Slovenia, South Africa, Spain, Chinese Taipei, Turkey

Source: WTO (available at: <<https://bit.ly/3oy0y1w>>; accessed on: Apr. 20, 2021); Brazil Ministry of Economy (available at: <<https://bit.ly/3Dq4Myu>>; accessed on: Apr. 20, 2021).

Authors' elaboration.

4 BILATERAL DIRECT INVESTMENTS

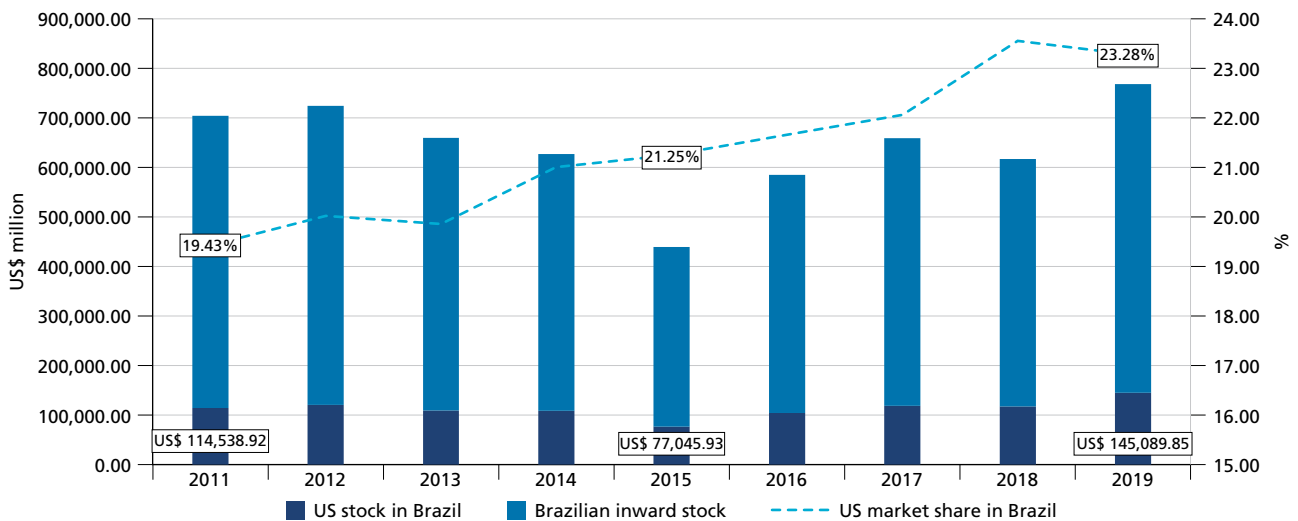
American companies have been presenting a strong presence in Brazilian economy since the 1930s. Nevertheless, it was only from the 1950s that those investments started to be concentrating on the manufacturing sector. Recovered from the Second World War, some American industries searched for opportunities in the South American nation to internationalize their capital, that is, by making Foreign Direct Investments (FDI). By then, Brazil was implementing the protectionist policy of industrialization through imports substitution, through which additional stimulus (both of positive and negative natures) were given for those firms to put up greenfield investments in the country. Despite of growing in sectoral diversity throughout the passing of the last seven decades, the automotive currently remains the one in which the foreign (and American) presence is most remarkable in Brazil (Pereira, 1998; Baer, 2002).

In the opposite direction, the internationalization of Brazilian companies is a much more recent phenomenon, both globally and towards the US. It is true since the 1960s the country started having some outward flows of FDI, which were captured by the Brazilian state oil company (Petrobras) and some construction and financial institutions. However, it was only throughout the 2000s when the amount has grown considerably, and also sectors and destinations have diversified (Hiratuka and Sarti, 2011).

Along the last whole decade, the US not only remained as the main source of the FDI stock in Brazilian economy but has also increased its market share. In turn, even though the emergent power's FDI stock in the US has grown almost interruptedly in the same years, its market share never went above 1%, which is the reason why Brazil does not even figure among the top ten sources of that stock in the American economy. From the Brazilian point of view, as of 2019 the US ranked sixth of the outward FDI stock destinations (graphs 13 and 14).

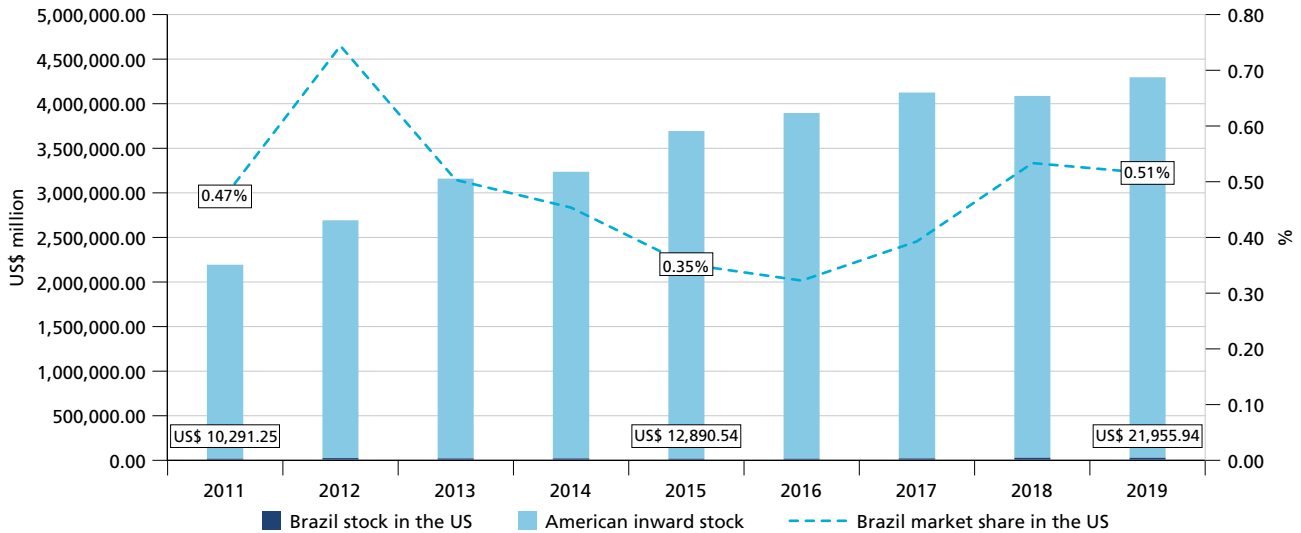
GRAPH 13

US stock of FDI in Brazil (2011-2019)



Source: Central Bank of Brazil.
Authors' elaboration.

GRAPH 14
Brazil stock of FDI in the US (2011-2019)

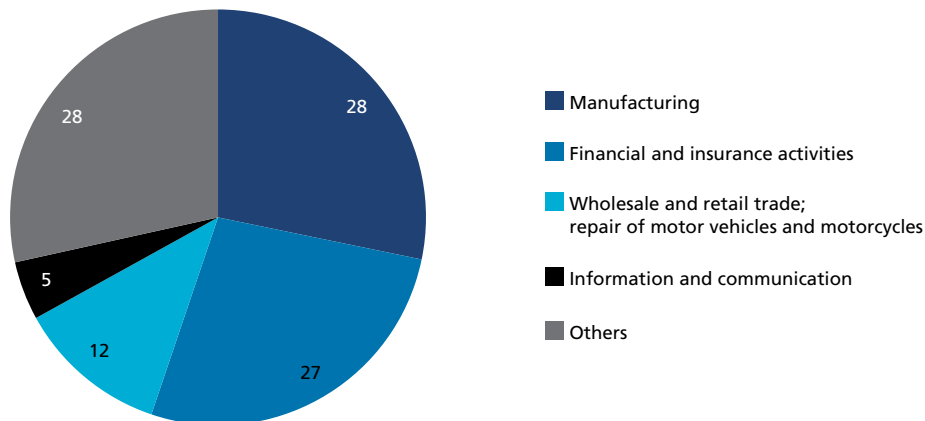


Source: Coordinated Direct Investment Survey (CDIS/IMF).
Authors' elaboration.

With respect to the composition of those FDI stocks they hold in each other economy, as of 2019 manufacturing and financial activities have figured among the top four sectors both for Brazil and the US. In the case of American investments in Brazil, services related to the automotive industry are also one of the four main sectors, indicating its longer presence allowed the segment to develop a capillarity in the country's economy. Regarding to the stock of Brazilian FDI in the US, one feature is remarkable as far as their composition is concerned: the occupation of the second place by real estate activities (graphs 15 and 16).

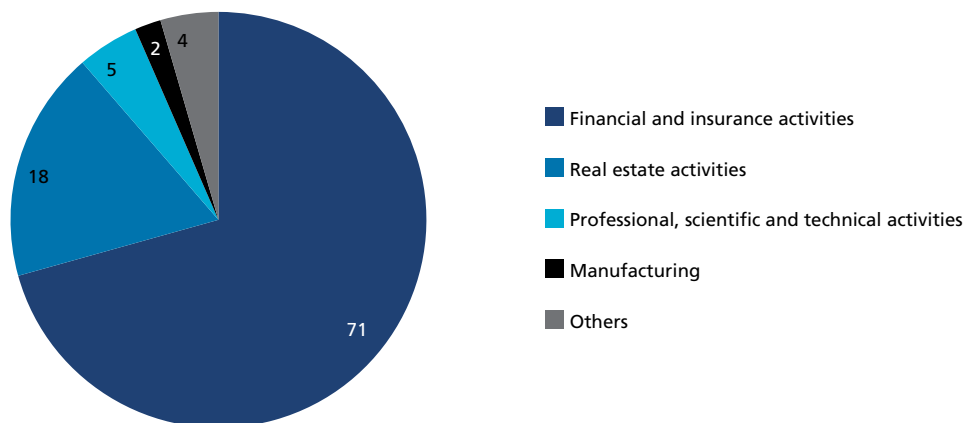
Given the asymmetries between the two countries, one should not expect this segment to have such an importance, at least not in the direction from the least to the more developed partner. But the explanations are found by performing a slightly more comprehensive analysis. In the last two decades, Brazilians have growingly chosen the acquisition of properties in the US as an investment option, not only because of the currency hedge it encompasses, but also due to the good returns offered in destining them to short season rentals, especially in Florida. That is why Brazilian companies that offer intermediating services in that segment have gradually opened branches in the US: to follow their compatriot investors.

GRAPH 15
Sectoral composition of US stock of FDI in Brazil (2019)
(In %)



Source: Central Bank of Brazil.
Authors' elaboration.

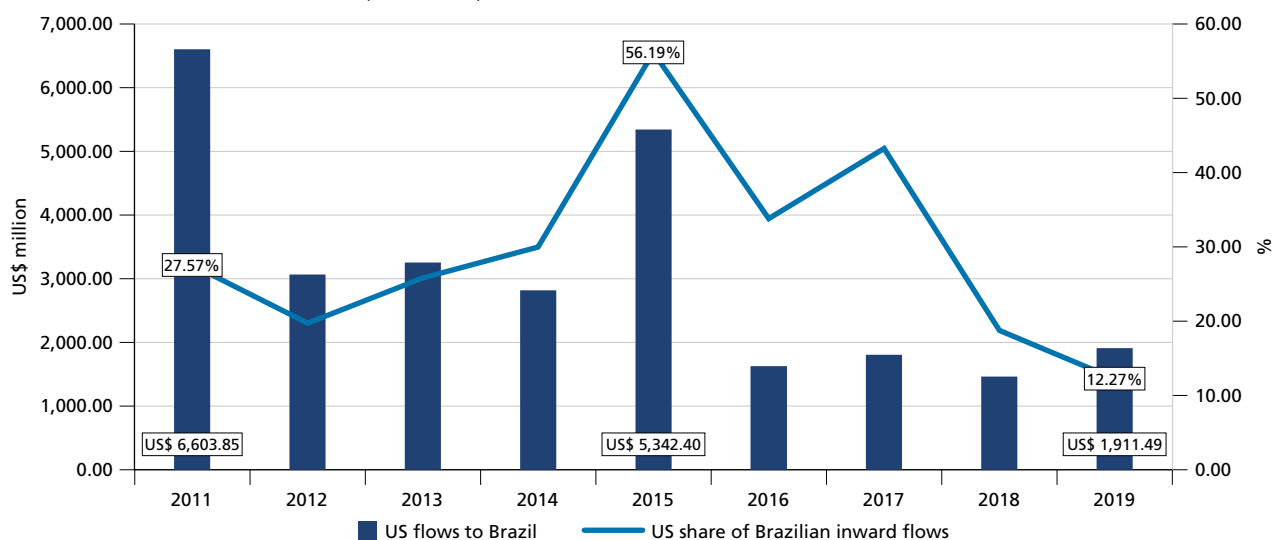
GRAPH 16
Sectoral composition of Brazil stock of FDI in the US (2019)
(In %)



Source: Central Bank of Brazil.
Authors' elaboration.

As regards the bilateral annual flows in the past ten years, beginning with those from the US towards Brazil, it is remarkable how after peaking in the middle of the decade (both in absolute and relative terms), American flows dropped drastically the following years and reached a very low level in 2019. It must be stressed that the investments made by one single company of the coal, gas and oil sector, TransGas Development Systems, accounted for around 70% of 2015 flows, suggesting the larger amount that year may have been episodic. Yet, it is undeniable how the attractiveness of Brazil to American investing companies has declined since then (graph 17). Considering the whole period, the top two investing sectors have been communications and financial services, reinforcing the stock composition. The third place has been occupied by a segment in ascension, renewable energy, which has topped the rank in 2019 due to investments made by the AES Corporation. In face of the central importance of eco-friendly investments in the recovery strategy announced by the Biden Administration, this must be a sector in which public and private agents of the two countries may have the most fruitful cooperation the next years.

GRAPH 17
US flows of FDI to Brazil (2011-2019)



Source: fDi Markets.
Authors' elaboration.

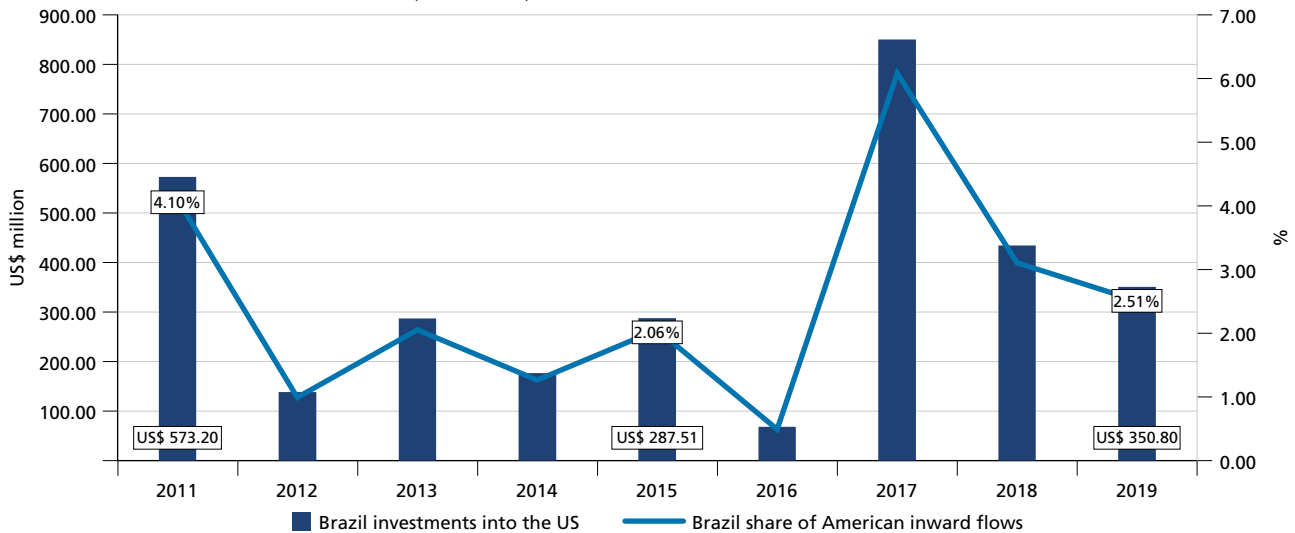
As per the Brazilian flows to the US, at a first glance it may seem the tendency has been the opposite (graph 18). Still, despite of the apparent increase of flows after 2016, data suggest the peak in 2017 has been occasional, as investments made by a sole company of the plastics sector (Braskem) responded to 80% of that year's flows. Thus, excluding in the two sides the atypical years, it results that from 2011 to 2019 the amount of flows presented a downward

trend in both directions, albeit more acute and unstable in the US-Brazil case. Despite of it, the emergent nation kept on being by large a net receiver of those flows along all those years.

Finally, as to the flows composition, during the decade the three top investing sectors were software and IT, financial services and consumer products. Leaving aside the financial services segment, as the Brazilian companies of that sector have a longer experience of internationalization, it is worth noticing some differences between the other two. While the FDI flows sent from the sector ranked in third place has come almost exclusively from a few industries dedicated to body care products, in the top sector investments have departed from a larger number of companies which are devoted to a wider variety of activities. In addition, due to social distancing policies, internet services have experienced a substantial growth since the beginning of the Covid-19 pandemic. Putting it all together, it is fair to expect this segment to remain on top of Brazilian flows of FDI into the American economy.

GRAPH 18

Brazil flows of FDI to the US (2011-2019)



Source: fDi Markets.
Authors' elaboration.

5 COOPERATION IN SCIENCE AND TECHNOLOGY

The most important effect innovation brings to the economy are productivity gains, which are experienced not only in those activities for which it has been developed, but have a great chance of spilling over to other segments. The improvements they encompass can be associated to pioneering changes in different phases of the processes by which goods are produced and services are offered. Within the much diverse scope of possibilities, the ones who have the higher potential of resulting in extraordinary enhancements in a sector are those based on the creation of new technologies. And there is only one way to reach them: scientific research. However, this is not only an expensive enterprise, but also one in which the revenues are highly uncertain, both in terms of the rates of return and the payback period. Risky as it may be, international experience provides robust evidence in favor of making these bets.

One of the cases that strongly support that conclusion refers to the planet's largest economy itself. Technological innovations have been one of the fundamental factors that allowed for the US to maintain the hegemonic position of its economy for more than a century. In fact, most recent data available reveal the superpower keeps on relying on these investments to sustain its global economic leadership. In absolute terms, from 2013 to 2019 the American expenditures in Research and Development (R&D) activities have been the world largest. Another example is China. As the Asian Giant has been growing in a fast pace during the last three decades, its disbursements with scientific innovations have also increased, pushing them to the second position concerning the same indicator and period (table 15).

TABLE 15
Top 10 national expenditures in R&D (2013-2018)¹

Country	Rank	Expenditures		Financing	
		GERD (US\$ million) ^{2,3}	GERD (% of GDP)	Government (% of GERD)	Business companies (% of GERD)
Brazil	9	32,954.06	1.22	54.32	43.19
Canada	10	24,749.71	1.66	32.40	43.41
China	2	356,046.49	2.07	20.45	75.65
France	6	47,684.79	2.23	33.86	55.13
Germany	4	91,115.56	2.96	28.39	65.68
India	7	46,157.03	0.68	63.23	36.77
Japan	3	140,577.67	3.27	15.55	77.69
Rep. of Korea	5	73,359.37	4.14	22.38	75.64
United Kingdom	8	37,357.38	1.66	27.48	49.74
United States	1	422,755.80	2.76	24.73	62.28

Source: UNESCO Institute for Statistics (UIS).

Authors' elaboration.

Notes: ¹ All data refer to the annual average in the period.

² GERD – Gross Domestic Expenditure in Research and Development.

³ 2005 constant prices; PPP.

As regards the Brazilian recent trajectory, in the past two decades those activities have also observed an important increase, both in absolute terms and as a share of GDP. In the period of 2013-2019, the South American power ranked ninth of R&D global investments. Still, in Brazil the public sector has been financing more than a half of the annual amounts, while in the cases of China and the US private business companies are the ones accounting for more than a 60% share. Two negative consequences for Brazil result from that. First, the dependency to the government, which creates a situation in which the national performance in innovating is largely determined by political decisions and the availability of fiscal resources. Second, the tendency of investments not being directed to projects with market-oriented utility, reducing the prospects of economic revenues and spillover effects.

In face of the challenges those attributes have historically imposed to Brazil, the International Cooperation in Science and Technology (CS&T) has figured as an alternative to escape from those limitations. In a general way, both government and private sector consider those relations may constitute promising means of catching up with developed economies – especially if technology transfers become part of the deal. Actually, as Brazil has risen as an emergent power in the last two decades, its scientific advances in a small set of sectors have been recognized by the international community. Because of that, the country has been able to bargain for the access to projects with more tangible results.

As per the bilateral CS&T of Brazil and the US, that favorable context has brought about positive effects in the same direction. In 1986, the parties had signed a bilateral agreement on the subject. Among its provisions, the treaty formalized the creation of a Joint Commission on Science and Technology (JCS&T), giving it the responsibility of planning and coordinating joint activities of scientific nature. Nonetheless, the first meeting of the bilateral mechanism has only occurred twenty years later. Leaving aside the possible explanations for such a delay, for the objectives of this work it is more important to observe how the activities began to involve a larger number of institutions and to cover a wider spectrum of areas since then.

During the past twenty years, three areas have been the most recalled by Brazilian diplomats as cases where interests in both sides matched: aviation, exchange of graduate students, and biofuels (Leite, Mascarello and Gayard, 2020). Besides of those research fields, it has been remarkable how private associations started to get more involved in those initiatives. As an example, in 2015 the American Chamber of Commerce (AmCham) in association with the Brazil-US Business Council promoted the event called Brazil-US Innovation Forum.

The last meeting of the JCS&T occurred in 2020, one day before President Bolsonaro arrived in American soil for its second official visit to President Trump. In that occasion, the commission signed a declaration in which it was anticipated the fellow politicians have agreed on signing the Agreement on Technology Safeguards Associated with US Participation in Launches from the Alcantara Space Center. A few days later, they have announced the endorsement

of the much comprehensive RDT&E (Research, Development, Test and Evaluation) Projects Agreement, in the military area (but not only). The interesting point in all of these initiatives is the form how, even though in both countries the governments have been replaced more than once by political adversaries through very polarized campaigns, somehow agreements increasingly robust kept on being signed between the leaders. After all, this whole picture shows how the Brazil-US partnership has reached an advanced level of maturity.

6 SUGGESTED FURTHER STEPS TO FOSTER BILATERAL RELATIONS

This paper has compiled a set of data and information related to the economic relationship between Brazil and the US in the first two decades of the 21st century. This descriptive effort was accompanied by an analytical one, having the main objective of identifying the areas in which the bilateral relations could be improved. In this concluding section, a set of actions the governments of both countries could take to achieve those enhancements are recalled and systematized briefly.

As regards trade, given the large number of opportunities for increasing it on both directions, there are several shorter-term measures that could be taken to enhance trade relations while a more long-term goal such as an FTA remains distant. The first and more obvious one is to assure the effective implementation of the 2020 Protocol, so that the trade facilitation measures can increase bilateral trade in the extensive margin.

In the regulatory field, the countries should not restrict their actions to the good practices guidelines that were covered in the 2020 Protocol. They should also aim to increase regulatory cooperation and harmonization and take measures to induce the private sector in each country to take the same path regarding technical standards. These measures are especially relevant in resource-intensive and technology-intensive sectors, in which there is an ample scope to increasing bilateral ties.

One specific sector in which there is much room to increase cooperation is that of energy. Both countries are relevant players in the oil sector in the region, and therefore will have to deal with the risks and opportunities posed by the ever-increasing urge for a transition in the global energetic matrix. Fortunately, both of them have also great potential in renewable energy sources; cooperation in these fields, including in regulatory and technological aspects, can benefit both parties in this emerging challenge.

Evidently, the ultimate goal in the trade agenda should be to negotiate a comprehensive and balanced trade agreement, which could be the bedrock for increasing productive integration in the continent. Negotiations aiming at signing a bilateral investment treaty would also be welcome. Yet, the challenges in this front are probably going to be substantial.

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TRADE OPPORTUNITIES

TABLE A.1

Full list of opportunities for increasing Brazil exports to the US, by HS4 code
(In US\$ million)

Product		Trade data				
HS4	Description	US imports	Brazil exports	RCA Brazil	RCD US	Brazilian market share in US imports (%)
102	Bovine animals; live	1,701.00	392.80	3.57	1.34	0.00
201	Meat of bovine animals; fresh or chilled	3,099.43	762.70	2.73	0.96	0.01
202	Meat of bovine animals; frozen	2,200.42	3,661.09	14.07	0.73	0.60
206	Edible offal of bovine animals, swine, sheep, goats, horses, asses, mules or hinnies; fresh, chilled or frozen	317.40	723.27	7.96	0.30	0.03
207	Meat and edible offal of poultry; of the poultry of heading no. 0105, (i.e., fowls of the species Gallus domesticus), fresh, chilled or frozen	250.19	4,410.64	17.70	0.09	0.00
210	Meat and edible meat offal; salted, in brine, dried or smoked; edible flours and meals of meat or meat offal	202.96	302.36	5.90	0.34	0.00
510	Ambergris, castoreum, civet and musk; cantharides; bile, dried or not glands, other animal products used in preparation of pharmaceutical products, fresh chilled, frozen or otherwise provisionally preserved	13.37	73.33	17.99	0.28	0.61
804	Dates, figs, pineapples, avocados, guavas, mangoes and mangosteens; fresh or dried	4,177.28	448.02	2.49	2.02	1.15
806	Grapes; fresh or dried	1,811.32	139.70	1.03	1.16	0.80
807	Melons (including watermelons) and papaws (papayas); fresh	907.49	423.84	8.66	1.61	0.48
1102	Cereal flours; other than of wheat or meslin	140.78	20.14	1.89	1.15	0.26
1201	Soya beans, whether or not broken	352.53	29,428.92	39.59	0.04	0.06
1301	Lac; natural gums, resins, gum-resins and oleoresins (for example, balsams)	65.18	31.96	2.96	0.52	0.40
1302	Vegetable saps and extracts; pectic substances, pectinates and pectates; agar-agar and other mucilage and thickeners, whether or not modified, derived from vegetable products	1,517.95	96.86	1.19	1.63	0.81
1404	Vegetable products not elsewhere specified or included	97.23	19.60	1.61	0.69	1.20
1508	Ground nut oil and its fractions; whether or not refined, but not chemically modified	28.62	65.29	12.36	0.47	0.65
2106	Food preparations not elsewhere specified or included	4,533.59	687.35	1.35	0.77	0.53
2203	Beer made from malt	5,585.46	84.16	0.43	2.48	0.02
2304	Oilcake and other solid residues; whether or not ground or in the form of pellets, resulting from the extraction of soya-bean oil	237.58	5,385.48	18.92	0.07	0.02
2308	Vegetable materials and vegetable waste, vegetable residues and biproducts; whether or not in the form of pellets, of a kind used in animal feeding, not elsewhere specified or included	66.11	60.67	4.62	0.44	0.34
2611	Tungsten ores and concentrates	92.90	1.00	0.44	3.52	0.19

(Continues)

Product		Trade data				
HS4	Description	US imports	Brazil exports	RCA Brazil	RCD US	Brazilian market share in US imports (%)
2612	Uranium or thorium ores and concentrates	109.23	5.57	1.22	2.07	0.00
2829	Chlorates and perchlorates; bromates and perbromates; iodates and periodates	271.74	13.20	1.64	2.94	0.19
2847	Hydrogen peroxide; whether or not solidified with urea	47.97	55.09	5.52	0.42	0.00
3006	Pharmaceutical goods	3,798.18	136.56	0.67	1.62	0.26
3603	Safety fuses; detonating fuses; percussion or detonating caps; igniters; electric detonators	293.30	17.33	0.97	1.43	1.09
3605	Matches; other than pyrotechnic articles of heading no. 3604	14.00	7.52	4.76	0.77	0.01
4410	Particle board, oriented strand board (OSB) and similar board (e.g., waferboard) of wood or other ligneous materials, whether or not agglomerated with resins or other organic binding substances	1,739.47	138.67	1.28	1.40	0.88
4704	Chemical wood pulp, sulphite, other than dissolving grades	113.21	44.70	6.72	1.48	0.00
5305	Coconut, abaca (Manila hemp or <i>Musa textilis</i> Nee), ramie and other vegetable textile fibers n.e.c., raw or processed but not spun; tow, noils and waste of these fibers (including yarn waste and garneted stock)	50.25	35.52	5.57	0.68	0.01
5308	Yarn of other vegetable textile fibers; paper yarn	3.95	3.58	3.56	0.34	0.00
5406	Man-made filament yarn (other than sewing thread), put up for retail sale	27.34	0.56	0.53	2.25	0.06
6402	Footwear; with outer soles and uppers of rubber or plastics (excluding waterproof footwear)	6,007.62	419.45	1.20	1.50	0.61
7901	Zinc; unwrought	2,013.46	210.35	1.10	0.92	0.51
8201	Tools, hand; spades, shovels, mattocks, picks, hoes, forks, rakes; axes, bill hooks etc.; secateurs and pruners of any kind; scythes, sickles, hay knives, hedge shears, timber wedges and other tools used in agriculture, horticulture, forestry	329.73	14.18	0.73	1.48	0.45
8202	Tools, hand; saws and blades for saws of all kinds (including slitting, slotting or toothless blades)	802.12	45.91	0.93	1.41	0.76
8211	Knives; with cutting blades, serrated or not (including pruning knives), other than knives of heading no. 8208, and blades therefore	792.74	35.42	1.11	2.16	0.57
8215	Cutlery; spoons, forks, ladles, skimmers, cake-servers, fish-knives, butter knives, sugar tongs and similar kitchen or tableware	531.11	27.14	1.09	1.85	0.44
8433	Harvesting and threshing machinery, straw and fodder balers, grass or hay mowers; machines for cleaning, sorting or grading eggs, fruit or other agricultural produce, other than machinery of heading no 8437	2,332.42	310.42	1.25	0.82	0.74
8702	Vehicles; public transport passenger type	1,220.67	673.82	3.53	0.55	0.02
8704	Vehicles; for the transport of goods	29,482.23	1,275.86	0.77	1.54	0.22
8710	Tanks and other armored fighting vehicles; motorized, whether or not fitted with weapons, and parts of such vehicles	274.95	80.33	2.30	0.68	0.00
9403	Furniture and parts thereof, n.e.c. in chapter 94	26,138.02	566.64	0.56	2.23	0.77

Source: Comtrade/UN.
Authors' elaboration.

TABLE A.2

Full list of opportunities for increasing US exports to Brazil, by HS4 code

(In US\$ million)

Product		Trade data				
HS4	Description	Brazil imports	US exports	RCA US	RCD Brazil	American market share in Brazil imports (%)
303	Fish; frozen, excluding fish fillets and other fish meat of heading 0304	220.78	2,091.43	1.30	0.95	2.45
304	Fish fillets and other fish meat (whether or not minced); fresh, chilled or frozen	323.89	1,526.13	0.83	1.22	0.52
402	Milk and cream; concentrated or containing added sugar or other sweetening matter	286.76	642.93	0.61	1.88	1.64
404	Whey and products consisting of natural milk constituents; whether or not containing added sugar or other sweetening matter, not elsewhere specified or included	37.99	484.33	1.60	0.87	4.31
504	Guts, bladders and stomachs of animals (other than fish); whole and pieces thereof, fresh, chilled, frozen, salted, in brine, dried or smoked	153.07	298.37	1.04	3.67	4.83
703	Onions, shallots, garlic, leeks and other alliaceous vegetables; fresh or chilled	283.41	144.56	0.36	4.93	0.02
711	Vegetables provisionally preserved; (e.g., by sulfur dioxide gas, in brine, in sulfur water or in other preservative solutions), but unsuitable in that state for immediate consumption	32.22	10.60	0.24	4.94	0.01
712	Vegetables, dried; whole, cut, sliced, broken or in powder, but not further prepared	50.28	160.74	0.73	1.57	4.16
713	Vegetables, leguminous; shelled, whether or not skinned or split, dried	122.19	645.96	1.00	1.30	2.01
802	Nuts (excluding coconuts, Brazil and cashew nuts); fresh or dried, whether or not shelled or peeled	98.02	7,630.12	6.40	0.57	16.72
808	Apples, pears and quinces; fresh	236.77	746.95	1.15	2.52	1.31
809	Apricots, cherries, peaches (including nectarines), plums and sloes, fresh	78.96	790.60	1.55	1.07	5.00
813	Fruit, dried, other than that of heading no. 0801 to 0806; mixtures of nuts or dried fruits of this chapter	38.30	186.67	1.20	1.69	1.80
1001	Wheat and meslin	1,512.37	3,948.39	1.74	4.58	5.62
1005	Maize (corn)	202.91	7,577.41	3.73	0.69	3.51
1006	Rice	277.02	1,040.43	0.92	1.70	0.19
1008	Buckwheat, millet and canary seeds; other cereals	22.93	75.88	1.19	2.48	2.18
1101	Wheat or meslin flour	130.70	41.17	0.22	4.83	0.19
1103	Cereal groats; meal and pellets	10.75	56.72	0.93	1.22	0.00
1105	Flour, meal, powder, flakes, granules and pellets of potatoes	10.40	84.87	1.77	1.49	0.44
1107	Malt; whether or not roasted	486.45	28.39	0.12	14.76	0.65
1209	Seeds, fruit and spores; of a kind used for sowing	94.94	725.97	1.44	1.29	14.00
1502	Fats of bovine animals, sheep or goats, other than those of heading 1503	32.45	86.60	1.44	3.73	0.07
1504	Fats and oils and their fractions of fish or marine mammals; whether or not refined, but not chemically modified	17.09	187.95	1.32	0.83	0.08

(Continues)

Product		Trade data				
HS4	Description	Brazil imports	US exports	RCA US	RCD Brazil	American market share in Brazil imports (%)
1517	Margarine; edible mixtures or preparations of animal or vegetable fats or oils or of fractions of different fats or oils of this chapter, other than edible fats or oils of heading no. 1516	91.74	335.14	1.00	1.88	8.84
2002	Tomatoes; prepared or preserved otherwise than by vinegar or acetic acid	40.84	322.99	1.28	1.12	10.70
2004	Vegetables preparations n.e.c.; prepared or preserved otherwise than by vinegar or acetic acid, frozen, other than products of heading no. 2006	354.23	1,096.60	1.81	4.02	1.92
2102	Yeasts (active or inactive); other single-cell micro-organisms, dead (but not including vaccines of heading no. 3002); prepared baking powders	61.86	103.26	0.65	2.69	0.99
2309	Preparations of a kind used in animal feeding	272.77	2,860.34	1.41	0.93	14.84
2512	Siliceous fossil meals (e.g., kieselguhr, tripolite and diatomite) and similar siliceous earths; whether or not calcined, of an apparent specific gravity of 1 or less	15.37	55.72	4.02	7.64	17.54
2522	Quicklime, slaked lime and hydraulic lime; other than calcium oxide and hydroxide of heading no. 2825	18.80	50.28	0.71	1.84	0.54
2608	Zinc ores and concentrates	261.28	1,364.37	1.64	2.17	2.17
2613	Molybdenum ores and concentrates	87.77	753.63	2.66	2.14	0.92
2704	Coke and semi-coke; of coal, lignite or peat, whether or not agglomerated; retort carbon	530.46	219.12	0.39	6.48	0.00
2712	Petroleum jelly; paraffin wax, micro-crystalline petroleum wax, slack wax, ozokerite, lignite wax, peat wax, other mineral waxes, similar products obtained by synthesis, other processes; colored or not	37.19	276.01	1.19	1.11	16.84
2801	Fluorine, chlorine, bromine and iodine	30.10	43.64	0.47	2.23	3.82
2802	Sulphur; sublimed or precipitated, colloidal sulfur	0.45	20.15	3.27	0.50	0.45
2807	Sulphuric acid; oleum	49.69	30.25	0.32	3.62	0.16
2810	Oxides of boron; boric acids	26.90	144.34	3.87	4.96	5.93
2811	Inorganic acids and other inorganic oxygen compounds of non-metals; n.e.c. in heading no. 2806 to 2810	97.01	263.07	0.72	1.84	10.78
2813	Sulphides of non-metals; commercial phosphorus trisulphide	11.49	14.57	1.09	5.94	16.05
2823	Titanium oxides	28.21	21.32	0.33	3.04	0.48
2826	Fluorides; fluorosilicates, fluoroaluminates and other complex fluorine salts	32.04	153.53	1.47	2.11	0.32
2828	Hypochlorites; commercial calcium hypochlorite; chlorites; hypobromites	22.54	52.19	1.29	3.85	10.92
2830	Sulphides; polysulphides whether or not chemically defined	16.92	79.33	2.43	3.56	7.20
2832	Sulphites; thiosulphates	18.20	23.06	0.78	4.27	1.56
2833	Sulphates; alums; peroxosulphates (persulphates)	188.33	130.78	0.47	4.69	1.52
2835	Phosphinates (hypophosphites), phosphonates (phosphites), and phosphates; and polyphosphates, whether or not chemically defined	121.38	186.37	0.81	3.62	11.71
2837	Cyanides, cyanide oxides and complex cyanides	8.94	111.76	1.95	1.07	6.14

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Product		Trade data				
HS4	Description	Brazil imports	US exports	RCA US	RCD Brazil	American market share in Brazil imports (%)
2904	Sulphonated, nitrated or nitrosated derivatives of hydrocarbons; whether or not halogenated	34.91	124.75	1.49	2.87	10.10
2905	Acyclic alcohols and their halogenated, sulphona- ted, nitrated or nitrosated derivatives	780.97	2,114.34	0.78	1.98	13.02
2906	Alcohols; cyclic, and their halogenated, sulphona- ted, nitrated or nitrosated derivatives	49.18	101.99	0.70	2.34	6.16
2911	Acetals and hemiacetals; whether or not with other oxygen function, and their halogenated, sulphonated, nitrated or nitrosated derivatives	3.61	6.78	1.18	4.33	2.09
2914	Ketones and quinones; whether or not with other oxygen function, and their halogenated, sulphona- ted, nitrated or nitrosated derivatives	128.91	301.70	0.65	1.92	8.01
2916	Acids; unsaturated acyclic monocarboxylic, cyclic monocarboxylic, their anhydrides, halides, peroxi- des and peroxyacids; their halogenated, sulphona- ted, nitrated or nitrosated derivatives	283.50	676.54	0.93	2.69	16.09
2918	Acids; carboxylic acid with additional oxygen function and their anhydrides, halides, peroxides, peroxyacids; their halogenated, sulphonated, ni- trated or nitrosated derivatives	260.29	362.47	0.63	3.12	9.51
2919	Esters; phosphoric, and their salts, including lactophosphates, their halogenated, sulphonated, nitrated or nitrosated derivatives	21.82	44.03	0.70	2.40	6.64
2924	Carboxamide-function compounds; amide-func- tion compounds of carbonic acid	244.87	453.08	0.83	3.07	3.41
2925	Carboxyimide-function compounds (including saccharin and its salts) and imine-function com- pounds	95.13	60.30	0.55	5.96	0.84
2926	Nitrile-function compounds	223.16	1,101.25	2.81	3.93	6.90
2927	Diazo-, azo- or azoxy-compounds	15.31	16.62	0.40	2.55	1.71
2928	Organic derivatives of hydrazine or of hydroxy-la- mine	268.39	38.51	0.38	18.06	0.58
2930	Organo-sulfur compounds	598.53	631.53	1.24	8.10	10.36
2932	Heterocyclic compounds with oxygen hetero- -atom(s) only	440.93	537.45	0.91	5.12	6.56
2933	Heterocyclic compounds with nitrogen hetero- -atom(s) only	2,364.86	2,851.76	0.50	2.84	9.55
2934	Nucleic acids and their salts, whether or not che- mically defined; other heterocyclic compounds	578.40	1,380.70	1.00	2.88	3.58
2935	Sulphonamides	180.61	564.59	0.69	1.52	0.44
2936	Provitamins, vitamins; natural or reproduced by synthesis (including natural concentrates) deriva- tives thereof used as vitamins, and intermixtures of the foregoing, whether or not in any solvent	264.89	379.16	0.64	3.09	2.92
2937	Hormones, prostaglandins, thromboxanes and leukotrienes, natural or reproduced by synthesis; derivatives and structural analogues thereof, in- cluding chain modified polypeptides, used prima- rily as hormones.	235.65	3,433.88	2.73	1.29	1.57
2938	Glycosides, natural or reproduced by synthesis, and their salts, ethers, esters and other derivatives	35.85	38.13	0.43	2.76	3.90
2939	Alkaloids; natural or reproduced by synthesis, and their salts, ethers, esters and other derivatives	73.19	72.22	0.53	3.73	1.99

(Continues)

Product		Trade data				
HS4	Description	Brazil imports	US exports	RCA US	RCD Brazil	American market share in Brazil imports (%)
2940	Sugars, chemically pure, other than sucrose, lactose, maltose, glucose and fructose; sugar ethers, sugar acetals and sugar esters, and their salts, other than the products of heading 29.37, 29.38, or 29.39	18.94	108.61	1.54	1.85	9.76
2941	Antibiotics	283.88	982.74	1.18	2.35	9.97
3001	Glands and other organs (extracts, secretions thereof) for organo-therapeutic uses, dried, powdered or not; heparin and its salts; other human or animal substances for therapeutic or prophylactic uses n.e.c.	46.28	541.42	2.09	1.23	2.91
3003	Medicaments; (not goods of heading no. 3002, 3005 or 3006) of two or more constituents mixed together for therapeutic or prophylactic use not in measured doses or in forms or packings for retail sale	147.77	1,352.17	1.35	1.01	5.15
3101	Fertilizers; animal or vegetable, whether or not mixed together or chemically treated; fertilizers produced by the mixing or chemical treatment of animal or vegetable products	19.04	38.34	0.65	2.21	11.57
3102	Fertilizers; mineral or chemical, nitrogenous	2,444.79	654.75	0.41	10.65	2.44
3103	Fertilizers; mineral or chemical, phosphatic	460.54	10.02	0.08	24.56	0.02
3104	Fertilizers; mineral or chemical, potassic	3,242.37	195.68	0.17	19.43	0.28
3202	Tanning substances; synthetic organic or inorganic tanning substances; tanning preparations, whether or not containing natural tanning substances, enzymatic preparations for pre-tanning	36.48	13.24	0.28	5.25	0.10
3204	Synthetic organic coloring matter and preparations based thereon; synthetic organic products used as fluorescent brightening agents or as luminophores; whether or not chemically defined	335.44	773.19	0.81	2.44	6.39
3205	Color lakes; preparations based on color lakes as specified in note 3 to this chapter	10.21	32.93	1.97	4.21	14.87
3206	Colouring matter and preparations thereof n.e.c. in heading no. 3203, 3204, 3205; inorganic products, kind used as luminophores whether or not chemically defined	393.57	1,410.44	1.44	2.76	14.15
3207	Pigments, prepared; opacifiers, colors, vitrifiable enamels, glazes, engobes (slips), liquid lustres etc as used in the ceramic enameling or glass industry; glass frit and powder, granules or flakes	56.84	261.52	1.09	1.63	10.77
3212	Pigments (metallic powders and flakes) dispersed in non-aqueous media in liquid or paste form, as used in manufacture of paints (including enamels); stamping foils, dyes etc in forms, packing for retail sale	39.87	205.25	1.29	1.73	14.71
3301	Oils; essential (concretes, absolutes); concentrates thereof in fats, fixed oils, waxes or the like (obtained by enfleurage or maceration); aqueous distillates, solutions and terpenic by-products thereof; resinoids; extracted oleoresins	75.41	677.36	1.69	1.30	17.54
3307	Perfumery, cosmetic or toilet preparations; pre-shave, shaving, after-shave, bath preparations; personal deodorants and depilatories; room deodorizers, perfumed or not with disinfectant properties or not	108.68	1,111.57	1.35	0.91	9.26

(Continues)

(Continued)

Product		Trade data				
HS4	Description	Brazil imports	US exports	RCA US	RCD Brazil	American market share in Brazil imports (%)
3603	Safety fuses; detonating fuses; percussion or detonating caps; igniters; electric detonators	15.16	190.18	1.84	1.01	6.30
3801	Artificial graphite; colloidal or semi-colloidal graphite; preparations based on graphite or other carbon in the form of pastes, blocks, plates or other semi-manufactures	121.59	218.46	1.15	4.39	6.16
3804	Residual lyes from the manufacture of wood pulp, whether or not concentrated, desugared or chemically treated, including lignin sulphonates, but excluding tall oil of heading no. 3803	12.21	46.67	1.67	3.01	11.96
3904	Polymers of vinyl chloride or of other halogenated olefins, in primary forms	489.51	2,658.37	2.06	2.62	10.94
3914	Ion-exchangers; based on polymers of heading no. 3901 to 3913, in primary forms	17.24	140.40	1.17	0.99	16.35
4006	Unvulcanized rubber in other forms (e.g., rods, tubes and profile shapes) and articles (e.g., discs and rings)	7.71	54.89	1.98	1.91	10.92
4009	Tubes, pipes and hoses, of vulcanized rubber (other than hard rubber), with or without their fittings (e.g., joints, elbows, flanges)	225.24	779.06	1.04	2.07	17.97
4013	Inner tubes, of rubber	59.39	9.26	0.16	7.29	0.38
4014	Hygienic or pharmaceutical articles (including teats), of vulcanized rubber other than hard rubber, with or without fittings of hard rubber	37.82	36.95	0.43	3.07	1.15
4016	Articles of vulcanized rubber other than hard rubber, n.e.c. in chapter 40	530.55	2,360.45	1.18	1.83	17.84
5006	Silk yarn and yarn spun from silk waste, put up for retail sale; silk-worm gut	0.99	0.23	0.31	8.95	1.17
5402	Synthetic filament yarn (other than sewing thread), not put up for retail sale, including synthetic monofilament of less than 67 decitex	822.95	660.69	0.55	4.75	4.37
5404	Synthetic monofilament of 67 decitex or more, of which no cross-sectional dimension exceeds 1mm; strip and the like (e.g., artificial straw) of synthetic textile materials of an apparent width not exceeding 5mm	20.69	119.32	1.26	1.50	16.35
5503	Synthetic staple fibers, not carded, combed or otherwise processed for spinning	201.88	235.69	0.44	2.61	4.10
5507	Artificial staple fibers, carded, combed or otherwise processed for spinning	0.21	2.35	1.30	0.79	0.00
5509	Yarn (other than sewing thread) of synthetic staple fibers, not put up for retail sale	227.50	122.78	0.43	5.44	0.04
5603	Nonwovens; whether or not impregnated, coated, covered or laminated	187.11	1,083.30	1.08	1.29	12.70
5605	Yarn; metallized, whether or not gimped, of textile yarn, or strip or the like of heading no. 5404 or 5405, combined with metal in the form of thread, strip or powder or covered with metal	2.52	19.82	1.29	1.13	1.00
5906	Textile fabrics, rubberized; other than those of heading no. 5902	22.52	129.97	1.30	1.56	8.76
5909	Textile hose piping and similar textile tubing; with or without lining, armor or accessories of other materials	5.11	28.48	1.29	1.60	17.64

(Continues)

Product		Trade data				
HS4	Description	Brazil imports	US exports	RCA US	RCD Brazil	American market share in Brazil imports (%)
5910	Textiles; transmission or conveyor belts or belting, of textile material, whether or not impregnated, coated, covered or laminated with plastics, or reinforced with metal or other material	10.57	28.93	0.73	1.83	6.01
6804	Millstones, grindstones, grinding wheels, etc without frameworks, for grinding, sharpening, polishing, etc and parts thereof, natural stone, agglomerated natural or artificial abrasives or of ceramics	183.32	224.02	0.67	3.79	3.50
6805	Abrasive powder or grain; natural or artificial, on a base of textile material, of paper, paperboard or of other material, whether or not cut to shape or sewn or otherwise made up	62.80	427.61	1.45	1.47	10.65
6902	Refractory bricks, blocks, tiles and similar refractory ceramic constructional goods; other than those of siliceous fossil meals or similar siliceous earths	46.45	225.70	0.86	1.22	16.87
6903	Ceramic goods; (e.g., retorts, crucibles, muffles, nozzles, plugs, supports cupels, tubes, pipes, sheaths, rods) excluding those of siliceous fossil meals or of similar siliceous earths	37.33	177.60	1.22	1.77	11.51
7009	Glass mirrors; whether or not framed, including rear-view mirrors	67.03	1,761.95	3.59	0.94	16.51
7105	Dust and powder of natural or synthetic precious or semi-precious stone	3.46	54.41	1.76	0.77	14.43
7302	Railway or tramway track constructions of iron or steel; rails, check and track rails, switch blades, crossing frogs, point rods, sleepers, fishplates, chair wedges, sole plates, bedplates, ties and the like	108.26	182.39	0.77	3.16	7.30
7313	Barbed wire of iron or steel; twisted hoop or single flat wire, barbed or not and loosely twisted double wire, of a kind used for fencing, of iron or steel	5.91	6.02	0.52	3.54	0.44
7315	Chain and parts thereof, of iron or steel	109.26	244.09	0.74	2.29	8.25
7320	Springs and leaves for springs, of iron or steel	79.56	447.08	0.95	1.17	16.25
7405	Copper; master alloys	2.10	15.33	1.11	1.05	16.15
7602	Aluminum; waste and scrap	208.45	2,111.12	1.99	1.35	10.92
7608	Aluminum; tubes and pipes	35.55	119.07	0.83	1.71	4.66
7614	Aluminum; stranded wire, cables, plaited bands and the like, (not electrically insulated)	53.28	13.12	0.21	5.80	0.82
8104	Magnesium; articles thereof, including waste and scrap	32.72	67.39	0.56	1.86	16.46
8113	Cermets; articles thereof, including waste and scrap	13.70	85.96	1.14	1.25	1.66
8203	Tools, hand; files, rasps, pliers (including cutting pliers), pincers, tweezers, metal cutting shears, pipe cutters, bolt croppers, perforating punches and similar	25.68	145.01	0.92	1.13	3.75
8205	Tools, hand; (including glaziers' diamonds) n.e.c.; blow lamps; vices, clamps etc, other than accessories for and parts of, machine-tools or waterjet cutting machines; anvils; portable forges; hand or pedal operated grinding wheels with frameworks	62.95	655.45	1.31	0.86	9.87

(Continued)

Product		Trade data				
HS4	Description	Brazil imports	US exports	RCA US	RCD Brazil	American market share in Brazil imports (%)
8207	Tools, interchangeable; for hand tools, whether or not power-operated, or for machine tools (pressing, stamping, punching, drilling etc), including dies for drawing or extruding metal, and rock drilling or earth boring tools	277.07	1,433.38	0.94	1.26	7.70
8307	Tubing; flexible, with or without fittings, of base metal	234.02	267.55	1.77	10.69	3.77
8311	Wires, rods, tubes, plates, electrodes of base metal or metal carbides; of a kind used for soldering, brazing, welding; wires and rods for metal spraying	28.47	245.73	1.31	1.05	15.96
8402	Boilers; steam or other vapor generating (other than central heating hot water boilers, capable also of producing low pressure steam), super-heated water boilers	77.54	209.39	0.67	1.72	0.99
8404	Auxiliary plant for use with boilers of heading no. 8402 or 8403; e.g., economizers, super-heaters, soot removers, gas recoverers), condensers for steam or other vapor power units	46.43	69.22	0.64	2.96	1.70
8405	Generators for producer or water gas with or without their purifiers acetylene gas generators and similar water process gas generators, with or without their purifiers	6.69	85.08	1.40	0.76	9.63
8407	Reciprocating or rotary internal combustion piston engines	586.47	6,730.85	2.06	1.24	14.66
8409	Parts suitable for use solely or principally with the engines of heading no. 8407 or 8408	1,306.85	4,409.66	0.98	2.00	12.43
8414	Air or vacuum pumps, air or other gas compressors and fans; ventilating or recycling hoods incorporating a fan whether or not fitted with filters	926.29	5,047.53	1.01	1.27	12.44
8417	Furnaces and ovens; industrial or laboratory, including incinerators, non-electric	87.32	227.23	0.78	2.06	5.58
8419	Machinery, plant (not domestic), or laboratory equipment; electrically heated or not, (excluding items in 85.14) for the treatment of materials by a process involving change of temperature; including instantaneous or non-electric storage water heaters	386.08	3,546.43	1.20	0.90	16.18
8425	Pulley tackle and hoists other than skip hoists; winches and capstans; jacks	73.95	507.19	1.12	1.12	12.29
8436	Agricultural, horticultural, forestry, poultry-keeping, bee-keeping machinery; including germination plant fitted with mechanical or thermal equipment; poultry incubators and brooders	103.12	584.25	1.13	1.37	17.34
8438	Machinery n.e.c. in this chapter, for the industrial preparation or manufacture of food or drink; other than machinery for extraction or preparation of animal or fixed vegetable fats or oils	191.12	711.03	0.82	1.51	7.69
8439	Machinery; for making pulp of fibrous cellulosic material, or for making or finishing paper or paperboard	104.23	178.80	0.54	2.18	5.97
8455	Metal-rolling mills and rolls therefor	93.92	173.62	0.61	2.26	9.55
8468	Machinery and apparatus for soldering, brazing, welding, whether or not capable of cutting, other than those of heading no. 8515; gas-operated surface tempering machines and appliances	10.77	70.58	1.04	1.09	5.56

(Continues)

Product		Trade data				
HS4	Description	Brazil imports	US exports	RCA US	RCD Brazil	American market share in Brazil imports (%)
8475	Machines; for assembling electric or electronic lamps, tubes, valves, flashbulbs, in glass envelopes, machines for manufacturing or hot working glass or glassware	26.00	614.57	2.78	0.81	3.67
8479	Machinery and mechanical appliances; having individual functions, n.e.c. in this chapter	908.62	5,859.79	1.10	1.18	13.89
8482	Ball or roller bearings	679.86	1,908.95	0.83	2.03	13.75
8501	Electric motors and generators (excluding generating sets)	749.30	3,084.14	0.81	1.35	9.65
8511	Ignition or starting equipment; used for spark-ignition or compression-ignition internal combustion engines; generators and cut outs used in conjunction with such engines	310.58	1,381.82	0.99	1.53	9.30
8515	Electric (electrically heated gas) soldering, brazing, welding machines and apparatus, capable or not of cutting, electric machines and apparatus for hot spraying of metals or sintered carbides	149.03	649.54	0.85	1.34	7.84
8529	Transmission apparatus; parts suitable for use solely or principally with the apparatus of heading no. 8525 to 8528	2,077.73	2,485.37	0.57	3.29	3.81
8535	Electrical apparatus for switching, protecting electrical circuits, for making connections to or in electrical circuits; for a voltage exceeding 1000 volts	142.13	460.11	0.88	1.88	16.44
8540	Thermionic, cold cathode or photo-cathode valves and tubes (e.g., vacuum, vapor, gas filled valves and tubes, mercury arc rectifying valves and tubes, cathode-ray and television camera tubes)	26.01	250.04	2.34	1.67	5.99
8543	Electrical machines and apparatus; having individual functions, not specified or included elsewhere in this chapter	375.03	3,669.11	1.23	0.87	12.02
8546	Electrical insulators of any material	56.42	134.98	0.81	2.33	6.35
8704	Vehicles; for the transport of goods	2,625.26	15,158.93	1.58	1.88	2.44
8707	Bodies; (including cabs) for the motor vehicles of heading no. 8701 to 8705	122.17	1,080.99	1.40	1.09	4.05
8708	Motor vehicles; parts and accessories, of heading no. 8701 to 8705	6,859.38	23,458.59	0.86	1.73	7.44
8714	Vehicles; parts and accessories of heading no. 8711 to 8713	586.95	560.57	0.42	3.04	5.62
8905	Light-vessels, fire-floats, dredgers, floating cranes, other vessels; the navigability of which is subsidiary to main function; floating docks, floating, submersible drilling, production platforms	2,509.72	568.23	0.52	15.71	0.02
8907	Boats, floating structures, other (for e.g., rafts, tanks, cofferdams, landing stages, buoys and beacons)	65.29	196.64	2.91	6.65	4.14
9007	Cinematographic cameras and projectors, whether or not incorporating sound recording or reproducing apparatus	6.38	76.63	1.52	0.87	9.98
9030	Instruments, apparatus for measuring, checking electrical quantities not meters of heading no. 9028; instruments, apparatus for measuring or detecting alpha, beta, gamma, x-ray, cosmic and other radiations	139.33	4,734.08	2.65	0.54	17.92

(Continues)

(Continued)

Product		Trade data				
HS4	Description	Brazil imports	US exports	RCA US	RCD Brazil	American market share in Brazil imports (%)
9202	Musical instruments; string, n.e.c. in heading no. 9201, (e.g., guitars, violins, harps)	23.72	112.20	1.78	2.60	0.35
9206	Musical instruments; percussion (e.g., drums, xylophones, cymbals, castanets, maracas)	5.31	43.88	1.37	1.14	4.74
9207	Musical instruments; the sound of which is produced or must be amplified, electrically (e.g., organs, guitars, accordions)	24.50	183.07	1.11	1.02	1.69
9301	Military weapons; other than revolvers, pistols and arms of heading no. 9307	13.35	102.73	3.32	2.97	6.65
9302	Revolvers and pistols; other than those of heading no. 9303 or 9304	12.14	112.08	1.60	1.20	15.51
9304	Firearms; (e.g., spring, air or gas guns and pistols, truncheons), excluding those of heading no. 9307	9.73	46.44	1.11	1.61	3.25
9604	Hand sieves and hand riddles	1.28	2.52	0.79	2.77	0.20

Source: Comtrade/UN.
Authors' elaboration.

METHODOLOGICAL NOTES, NTM NOMECLATURE AND INCIDENCE BY REPORTER AND HS2 CODE

BOX B.1

Methodological remarks on the Inventory Indexes of NTMs

Equations (1) to (3) define the inventory approach indexes for a given reporter, specifically, the Frequency Index (*FI*), the Cover Ratio (*CR*) and the Prevalence Score (*PV*). For a given reporter *i*: D_i^s is a dummy variable that controls the incidence of any NTM on a commodity *s*; *H* is the number of commodities in the nomenclature; M_i^s is the import value of product *s*; N_i^s is the number of unique NTM codes applied to product *s*.

$$FI_i = \frac{\sum_s D_i^s}{H} \times 100 \quad (1)$$

$$CR_i = \frac{\sum_s D_i^s M_i^s}{\sum_s M_i^s} \times 100 \quad (2)$$

$$PV_i = \frac{\sum_s D_i^s N_i^s}{H} \quad (3)$$

The indexes can be further qualified by manipulating the terms in the equations above. A general solution is to restrict the universe in each of the terms and select arbitrary samples for each variable. For example, it means considering only a selection of NTM codes, such as measures included in specific chapters, restricting to a subset of the commodities in the nomenclature, or to control the type of measure, or applied to whole economy (general measures), or to specific sets of countries. Each criterion can be applied in combination with others and the result is a more diverse number of perspectives that enrich the analysis and take most of the qualitative content of data.

Authors' elaboration.

BOX B.2

Classification of NTMs, by chapter

Import-related measures	Technical measures	A	Sanitary and phytosanitary measures (SPS)
		B	Technical barriers to trade (TBT)
		C	Pre-shipment inspection and other formalities
	Non-technical measures	D	Contingent trade-protective measures
		E	Non-automatic import licensing, quotas, prohibitions, quantity-control measures, and other restrictions not including sanitary and phytosanitary measures or measures relating to technical barriers to trade
		F	Price-control measures, including additional taxes and charges
		G	Finance measures
		H	Measures affecting competition
		I	Trade-related investment measures
		J	Distribution restrictions
		K	Restrictions on post-sales services
		L	Subsidies and other forms of support
		M	Government procurement restrictions
		N	Intellectual property
		O	Rules of origin
Export-related measures	P	Export-related measures	

Source: UNCTAD (2019).
Authors' elaboration.

TABLE B.1

NTMs applied by the US specifically to Brazil products: frequency index (FI), cover ratio (CR) and prevalence score (PV), by HS4 code

HS4 code	Description	FI (%)	CV (%)	PV
0102	Bovine animals; live	100.00	0.00	4.40
0103	Swine; live	100.00	0.00	4.00
0104	Sheep and goats; live	100.00	0.00	3.00
0105	Poultry; live, fowls of the species Gallus domesticus, ducks, geese, turkeys and guinea fowls	100.00	0.00	2.00
0201	Meat of bovine animals; fresh or chilled	100.00	100.00	5.00
0202	Meat of bovine animals; frozen	100.00	100.00	5.00
0203	Meat of swine; fresh, chilled or frozen	100.00	100.00	4.67
0204	Meat of sheep or goats; fresh, chilled or frozen	100.00	0.00	4.00
0205	Meat; of horses, asses, mules or hinnies, fresh, chilled or frozen	100.00	0.00	2.00
0206	Edible offal of bovine animals, swine, sheep, goats, horses, asses, mules or hinnies; fresh, chilled or frozen	100.00	100.00	2.00
0207	Meat and edible offal of poultry; of the poultry of heading no. 0105, (i.e., fowls of the species Gallus domesticus), fresh, chilled or frozen	100.00	0.00	5.00
0208	Meat and edible meat offal, n.e.c. in chapter 2; fresh, chilled or frozen	100.00	0.00	2.33
0209	Pig fat, free of lean meat, and poultry fat, not rendered or otherwise extracted, fresh, chilled, frozen, salted, in brine, dried or smoked	100.00	0.00	3.00
0210	Meat and edible meat offal; salted, in brine, dried or smoked; edible flours and meals of meat or meat offal	100.00	100.00	2.00
0401	Milk and cream; not concentrated, not containing added sugar or other sweetening matter	100.00	100.00	5.00
0402	Milk and cream; concentrated or containing added sugar or other sweetening matter	100.00	100.00	5.60
0403	Buttermilk, curdled milk and cream, yoghurt, kephir, fermented or acidified milk or cream, whether or not concentrated, containing added sugar, sweetening matter, flavored or added fruit or cocoa	100.00	0.00	5.00
0404	Whey and products consisting of natural milk constituents; whether or not containing added sugar or other sweetening matter, not elsewhere specified or included	100.00	0.00	5.50
0405	Butter and other fats and oils derived from milk; dairy spreads	100.00	100.00	4.00
0406	Cheese and curd	100.00	100.00	3.00
0407	Birds' eggs, in shell; fresh, preserved or cooked	100.00	0.00	3.00
0408	Birds' eggs, not in shell; egg yolks, fresh, dried, cooked by steaming or boiling in water, molded, frozen or otherwise preserved, whether or not containing added sugar or other sweetening matter	100.00	0.00	3.00
0409	Honey; natural	100.00	100.00	2.00
0410	Edible products of animal origin; not elsewhere specified or included	100.00	100.00	2.00
0501	Human hair; unworked, whether or not washed or scoured; waste of human hair	100.00	100.00	2.00
0502	Pigs', hogs' or boars' bristles and hair; and waste thereof	100.00	0.00	2.00
0504	Guts, bladders and stomachs of animals (other than fish); whole and pieces thereof, fresh, chilled, frozen, salted, in brine, dried or smoked	100.00	100.00	2.00
0505	Skins and other parts of birds with feathers, down; feathers, down and parts thereof; not further worked than cleaned, disinfected, treated for preservation; powder, waste and parts of feathers	100.00	0.00	2.00
0506	Bones and horn-cores, unworked, defatted, simply prepared (but not cut to shape), treated with acid or degelatinized; powder and waste of these products	100.00	100.00	2.00
0507	Ivory, tortoiseshell, whalebone and whalebone hair, horns, antlers, hooves, nails, claws and beaks unworked or simply prepared, not cut to shape; waste and powder of these products	100.00	100.00	2.00
0508	Coral and similar materials, unworked or simply prepared, shells of mollusks, crustaceans or echinoderms and cuttle-bone, not cut to shape powder and waste thereof	100.00	0.00	2.00
0510	Ambergris, castoreum, civet and musk; cantharides; bile, dried or not glands, other animal products used in preparation of pharmaceutical products, fresh chilled, frozen or otherwise provisionally preserved	100.00	0.00	2.00

(Continues)

HS4 code	Description	FI (%)	CV (%)	PV
0511	Animal products not elsewhere specified or included; dead animals of chapter 1 or 3, unfit for human consumption	100.00	100.00	2.00
0604	Foliage, branches and other parts of plants, without flowers or flower buds, and grasses, mosses and lichens; suitable for bouquets or for ornamental purposes, fresh, dried, dyed, bleached, impregnated etc.	100.00	100.00	1.00
0701	Potatoes; fresh or chilled	100.00	0.00	1.50
0702	Tomatoes; fresh or chilled	100.00	0.00	2.00
0703	Onions, shallots, garlic, leeks and other alliaceous vegetables; fresh or chilled	100.00	100.00	1.67
0704	Cabbages, cauliflowers, kohlrabi, kale and similar edible brassicas; fresh or chilled	100.00	0.00	2.00
0705	Lettuce (<i>lactuca sativa</i>) and chicory (<i>cichorium</i> spp.) fresh or chilled	100.00	0.00	2.00
0707	Cucumbers and gherkins; fresh or chilled	100.00	0.00	1.00
0708	Leguminous vegetables; shelled or unshelled, fresh or chilled	100.00	0.00	1.00
0713	Vegetables, leguminous; shelled, whether or not skinned or split, dried	100.00	100.00	1.08
0714	Manioc, arrowroot, salep, Jerusalem artichokes, sweet potatoes and similar roots and tubers with high starch or inulin content; fresh, chilled, frozen or dried, whether or not sliced or in the form of pellets; sago pith	100.00	100.00	1.17
0801	Nuts, edible; coconuts, Brazil nuts and cashew nuts, fresh or dried, whether or not shelled or peeled	100.00	100.00	1.29
0802	Nuts (excluding coconuts, Brazil and cashew nuts); fresh or dried, whether or not shelled or peeled	100.00	100.00	2.00
0805	Citrus fruit; fresh or dried	100.00	100.00	1.00
0806	Grapes; fresh or dried	100.00	100.00	1.00
0807	Melons (including watermelons) and papaws (<i>papayas</i>); fresh	100.00	100.00	5.33
0808	Apples, pears and quinces; fresh	100.00	0.00	2.33
0809	Apricots, cherries, peaches (including nectarines), plums and sloes, fresh	100.00	0.00	2.00
0810	Fruit, fresh; n.e.c. in chapter 08	100.00	0.00	1.88
1005	Maize (corn)	100.00	100.00	2.00
1203	Copra	100.00	0.00	4.00
1205	Rape or colza seeds; whether or not broken	100.00	0.00	2.00
1601	Sausages and similar products of meat, meat offal or blood; food preparations based on these products	100.00	0.00	4.00
1602	Prepared or preserved meat, meat offal or blood	100.00	100.00	3.60
1603	Extracts and juices of meat, fish or crustaceans, mollusks or other aquatic invertebrates	100.00	100.00	4.00
2203	Beer made from malt	100.00	100.00	4.00
2204	Wine of fresh grapes, including fortified wines; grape must other than that of heading no. 2009	100.00	100.00	4.00
2205	Vermouth and other wine of fresh grapes, flavored with plants or aromatic substances	100.00	0.00	4.00
2206	Fermented beverages, n.e.c. in chapter 22; (e.g., cider, perry, mead)	100.00	0.00	4.00
2208	Ethyl alcohol, undenatured; of an alcoholic strength by volume of less than 80% volume; spirits, liqueurs and other spirituous beverages	100.00	100.00	4.00
2304	Oilcake and other solid residues; whether or not ground or in the form of pellets, resulting from the extraction of soya-bean oil	100.00	100.00	4.00
2305	Oilcake and other solid residues; whether or not ground or in the form of pellets, resulting from the extraction of ground-nut oil	100.00	100.00	4.00
2306	Oilcake and other solid residues; whether or not ground or in the form of pellets, resulting from the extraction of vegetable fats or oils other than those of heading no. 2304 or 2305	100.00	0.00	4.00
2503	Sulphur of all kinds; other than sublimed, precipitated and colloidal sulfur	100.00	0.00	4.00
2511	Natural barium sulphate (barytes); natural barium carbonate, (witherite) whether or not calcined, other than barium oxide of heading no. 2816	100.00	0.00	4.00
2524	Asbestos	100.00	100.00	4.00

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HS4 code	Description	FI (%)	CV (%)	PV
2710	Petroleum oils and oils from bituminous minerals, not crude; preparations n.e.c., containing by weight 70% or more of petroleum oils or oils from bituminous minerals; these being the basic constituents of the preparations; waste oils	100.00	100.00	1.00
3002	Human blood; animal blood for therapeutic, prophylactic or diagnostic uses; antisera, other blood fractions, immunological products, modified or obtained by biotechnological processes; vaccines, toxins, cultures of micro-organisms (excluding yeasts) etc	100.00	100.00	4.00
3003	Medicaments; (not goods of heading no. 3002, 3005 or 3006) of two or more constituents mixed together for therapeutic or prophylactic use not in measured doses or in forms or packings for retail sale	100.00	100.00	4.00
3004	Medicaments; (not goods of heading no. 3002, 3005 or 3006) consisting of mixed or unmixed products for therapeutic or prophylactic use, put up in measured doses (incl. those in the form of transdermal admin. systems) or packed for retail sale	100.00	100.00	4.00
3208	Paints, varnishes; (enamels and lacquers) based on synthetic polymers or chemically modified natural polymers, dispersed or dissolved in a non-aqueous medium	100.00	100.00	1.00
3209	Paints and varnishes (including enamels and lacquers) based on synthetic or chemically modified natural polymers, dispersed or dissolved in an aqueous medium	100.00	100.00	1.00
3210	Paints and varnishes (including enamels, lacquers and distempers), excluding those of heading no. 3209, prepared water pigments of a kind used for finishing leather	100.00	100.00	1.00
3301	Oils; essential (concretes, absolutes); concentrates thereof in fats, fixed oils, waxes or the like (obtained by enfleurage or maceration); aqueous distillates, solutions and terpenic by-products thereof; resinoids; extracted oleoresins	100.00	100.00	4.00
3303	Perfumes and toilet waters	100.00	100.00	5.00
3305	Hair preparations; for use on the hair	100.00	100.00	1.00
3601	Explosives; propellant powders	100.00	0.00	5.00
3602	Prepared explosives, other than propellant powders	100.00	100.00	5.00
3603	Safety fuses; detonating fuses; percussion or detonating caps; igniters; electric detonators	100.00	100.00	5.00
3604	Fireworks, signaling flares, rain rockets, fog signals and other pyrotechnic articles	100.00	0.00	5.00
3605	Matches; other than pyrotechnic articles of heading no. 3604	100.00	0.00	5.00
3606	Ferro-cerium and other pyrophoric alloys in all forms; articles of combustible materials n.e.c. in chapter 36	100.00	0.00	5.00
3706	Cinematographic film; exposed and developed, whether or not incorporating sound track or consisting only of sound track	100.00	100.00	4.00
3808	Insecticides, rodenticides, fungicides, herbicides, anti-sprouting products, plant growth regulators, disinfectants and the like, put up in forms or packings for retail sale or as preparations or articles	100.00	100.00	1.00
3814	Organic composite solvents and thinners, not elsewhere specified or included; prepared paint or varnish removers	100.00	100.00	1.00
3901	Polymers of ethylene, in primary forms	100.00	100.00	1.00
3902	Polymers of propylene or of other olefins, in primary forms	100.00	100.00	1.00
3903	Polymers of styrene, in primary forms	100.00	100.00	1.80
3907	Polyacetals, other polyethers and epoxide resins, in primary forms; polycarbonates, alkyd resins, polyallyl esters and other polyesters, in primary forms	100.00	100.00	5.00
3909	Amino-resins, phenolic resins and polyurethanes, in primary forms	100.00	100.00	1.00
3910	Silicones in primary forms	100.00	100.00	1.00
3920	Plastics; plates, sheets, film, foil and strip (not self-adhesive); non-cellular and not reinforced, laminated, supported or similarly combined with other materials, n.e.c. in chapter 39	100.00	100.00	1.00
3921	Plastic plates, sheets, film, foil and strip n.e.c. in chapter 39	100.00	100.00	1.00
4004	Waste, parings and scrap of rubber (other than hard rubber) and powders and granules obtained therefrom	100.00	100.00	4.00
4405	Wood wool; wood flour	100.00	0.00	3.00
4406	Railway or tramway sleepers (crossties) of wood	100.00	0.00	4.00

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(Continued)

HS4 code	Description	FI (%)	CV (%)	PV
4407	Wood sawn or chipped lengthwise, sliced or peeled, whether or not planed, sanded or end-jointed, of a thickness exceeding 6mm	100.00	100.00	2.00
5003	Silk waste (including cocoons unsuitable for reeling, yarn waste and garneted stock)	100.00	0.00	4.00
5103	Waste of wool or of fine or coarse animal hair, including yarn waste but excluding garneted stock	100.00	0.00	4.00
5201	Cotton; not carded or combed	100.00	0.00	4.00
5202	Cotton waste (including yarn waste and garneted stock)	100.00	100.00	4.00
5203	Cotton, carded or combed	100.00	0.00	4.00
5505	Waste (including noils, yarn waste and garneted stock), of man-made fibers	100.00	0.00	4.00
6310	Rags; used or new, scrap twine, cordage, rope and cables and worn-out articles of twine, cordage, rope or cables, of textile materials	100.00	100.00	4.00
8104	Magnesium; articles thereof, including waste and scrap	100.00	100.00	4.00
8107	Cadmium; articles thereof, including waste and scrap	100.00	0.00	4.00
8110	Antimony; articles thereof, including waste and scrap	100.00	0.00	4.00
8701	Tractors; (other than tractors of heading no 8709)	100.00	100.00	1.00
8702	Vehicles; public transport passenger type	100.00	100.00	1.00
9301	Military weapons; other than revolvers, pistols and arms of heading no. 9307	100.00	100.00	1.00
9302	Revolvers and pistols; other than those of heading no. 9303 or 9304	100.00	100.00	1.00
9303	Firearms; other similar devices (e.g., sporting shotguns and rifles, muzzle-loading firearms, very pistols, devices for firing flares or blank ammunition, captive bolt humane killers, line throwing guns)	100.00	100.00	1.00
9304	Firearms; (e.g., spring, air or gas guns and pistols, truncheons), excluding those of heading no. 9307	100.00	0.00	2.00
9305	Firearms; parts and accessories of articles of heading no. 9301 to 9304	100.00	100.00	1.00
9306	Bombs, grenades, torpedoes, mines, missiles and similar munitions of war and parts thereof; cartridges and other ammunition, projectiles and parts thereof, including shot and cartridge wads	100.00	100.00	1.00
9701	Paintings, drawings, pastels, executed entirely by hand; not drawings of heading no. 4906 and not hand-painted, hand-decorated manufactured articles; collages and similar decorative plaques	100.00	100.00	1.00
9702	Engravings, prints and lithographs; original	100.00	100.00	1.00
9703	Sculptures and statuary; original, in any material	100.00	100.00	1.00
9704	Stamps, postage or revenue; stamp-postmarks, first-day covers, postal stationery (stamped paper) and like, used or unused, other than those of heading 4907	100.00	0.00	1.00
9705	Collections and collectors' pieces; of zoological, botanical, mineralogical, anatomical, historical, archaeological, paleontological, ethnographic or numismatic interest	100.00	100.00	1.00
9706	Antiques; of an age exceeding one hundred years	100.00	100.00	1.00
8703	Motor cars and other motor vehicles; principally designed for the transport of persons (other than those of heading no. 8702), including station wagons and racing cars	88.89	99.85	0.89
0603	Flowers; cut flowers and flower buds of a kind suitable for bouquets or for ornamental purposes, fresh, dried, dyed, bleached, impregnated or otherwise prepared	85.71	0.00	1.71
3307	Perfumery, cosmetic or toilet preparations; pre-shave, shaving, after-shave, bath preparations; personal deodorants and depilatories; room deodorizers, perfumed or not with disinfectant properties or not	83.33	97.99	0.83
0804	Dates, figs, pineapples, avocados, guavas, mangoes and mangosteens; fresh or dried	80.00	0.01	1.80
3917	Tubes, pipes and hoses and fittings thereof (for example, joints, elbows, flanges), of plastics	80.00	83.30	0.80
4401	Fuel wood, in logs, billets, twigs, faggots or similar forms; wood in chip or particles; sawdust and wood waste and scrap, whether or not agglomerated in logs, briquettes, pellets or similar forms	80.00	100.00	2.40
8705	Special purpose motor vehicles; not those for the transport of persons or goods (e.g., breakdown lorries, road sweeper lorries, spraying lorries, mobile workshops, mobile radiological units etc)	80.00	100.00	0.80
2903	Halogenated derivatives of hydrocarbons	77.78	100.00	3.15
0709	Vegetables; n.e.c. in chapter 07, fresh or chilled	72.73	100.00	0.73
3306	Oral or dental hygiene preparations; including fixative pastes and powders; yarn used to clean between the teeth (dental floss), in individual retail packages	66.67	2.93	0.67

(Continues)

(Continued)

HS4 code	Description	FI (%)	CV (%)	PV
8109	Zirconium; articles thereof, including waste and scrap	66.67	0.00	2.67
8112	Beryllium, chromium, germanium, vanadium, gallium, hafnium, indium, niobium (columbium), rhenium and thallium; and articles of these metals, including waste and scrap	63.64	0.00	2.55
0602	Plants, live; n.e.c. in heading no. 0601, (including their roots) cuttings and slips; mushroom spawn	60.00	100.00	1.40
0706	Carrots, turnips, salad beetroot, salsify, celeriac, radishes and similar edible roots; fresh or chilled	50.00	0.00	0.50
1001	Wheat and meslin	50.00	0.00	1.00
1002	Rye	50.00	0.00	1.00
1003	Barley	50.00	0.00	1.00
1004	Oats	50.00	0.00	1.00
1007	Grain sorghum	50.00	100.00	1.00
1211	Plants and parts of plants (including seeds and fruits), used primarily in perfumery, pharmacy; for insecticidal, fungicidal or similar purposes, fresh or dried, whether or not crushed or powdered	50.00	100.00	0.50
1404	Vegetable products not elsewhere specified or included	50.00	100.00	0.50
1517	Margarine; edible mixtures or preparations of animal or vegetable fats or oils or of fractions of different fats or oils of this chapter, other than edible fats or oils of heading no. 1516	50.00	6.46	0.50
2106	Food preparations not elsewhere specified or included	50.00	95.30	0.50
2301	Flours, meal and pellets, of meat or meat offal, of fish or of crustaceans, mollusks or other aquatic invertebrates, unfit for human consumption; greaves	50.00	100.00	2.00
2617	Ores and concentrates; n.e.c. in heading no. 2601	50.00	0.00	2.00
2845	Isotopes other than those of heading no. 2844; compounds, inorganic or organic, of such isotopes, whether or not chemically defined	50.00	0.00	0.50
3212	Pigments (metallic powders and flakes) dispersed in non-aqueous media in liquid or paste form, as used in manufacture of paints (including enamels); stamping foils, dyes etc in forms, packing for retail sale	50.00	94.33	0.50
3403	Lubricating preparations and those used in oil or grease treatment of textile and similar materials; excluding preparations containing 70% or more (by weight) of petroleum or bituminous mineral oils	50.00	5.55	0.50
3501	Casein, caseinates and other casein derivatives; casein glues	50.00	0.00	1.50
3507	Enzymes; prepared enzymes not elsewhere specified or included	50.00	100.00	2.00
7601	Aluminum; unwrought	50.00	38.25	2.00
7603	Aluminum; powders and flakes	50.00	100.00	2.00
7903	Zinc; dust, powders and flakes	50.00	0.00	2.00
8906	Vessels; other, including warships and lifeboats, other than rowing boats	50.00	100.00	2.00
8907	Boats, floating structures, other (for e.g., rafts, tanks, cofferdams, landing stages, buoys and beacons)	50.00	32.12	2.00
2620	Slag, ash and residues; (not from the manufacture of iron or steel) containing metals, arsenic or their compounds	44.44	0.99	1.78
3405	Polishes, creams, scouring pastes, powders and similar; in any form, (including articles impregnated, coated or covered with such), for furniture, footwear, floors, coachwork, glass or metal	40.00	0.97	1.20
3102	Fertilizers; mineral or chemical, nitrogenous	33.33	100.00	1.33
3402	Organic surface-active agents (not soap); surface-active, washing (including auxiliary washing) and cleaning preparations, containing soap or not, excluding those of heading no. 3401	33.33	0.18	0.33
3506	Prepared glues and other prepared adhesives, n.e.c. or included; products suitable for use as glues or adhesives, put up for retail sale as glues or adhesives, not exceeding 1kg net weight	33.33	24.56	1.33
3912	Cellulose and its chemical derivatives, n.e.c. or included, in primary forms	33.33	77.91	1.33
5903	Textile fabrics impregnated, coated, covered or laminated with plastics, other than those of heading no. 5902	33.33	8.15	1.33
7801	Lead; unwrought	33.33	1.12	1.33
8105	Cobalt; mattes and other intermediate products of cobalt metallurgy, cobalt and articles thereof, including waste and scrap	33.33	100.00	1.33

(Continues)

HS4 code	Description	FI (%)	CV (%)	PV
8108	Titanium; articles thereof, including waste and scrap	33.33	0.00	1.33
8415	Air conditioning machines; comprising a motor driven fan and elements for changing the temperature and humidity, including those machines in which the humidity cannot be separately regulated	33.33	0.11	0.33
8525	Transmission apparatus for radiobroadcasting or television, whether or not incorporating reception apparatus or sound recording or reproducing apparatus; television cameras, digital cameras and video camera recorders	33.33	46.86	0.33
1212	Locust beans, seaweeds and other algae, sugar beet, sugar cane, fresh, chilled, frozen or dried, whether or not ground; fruit stones, kernels and other vegetable products (including unroasted chicory roots) used primarily for human consumption, n.e.c.	28.57	20.97	0.29
1006	Rice	25.00	0.00	0.50
1008	Buckwheat, millet and canary seeds; other cereals	25.00	0.00	0.38
1702	Sugars, including lactose, maltose, glucose or fructose in solid form; sugar syrups without added flavoring or coloring matter; artificial honey, whether or not mixed with natural honey; caramel	25.00	0.00	0.75
3502	Albumins (including concentrates of two or more whey proteins, containing by weight more than 80% whey proteins, calculated on the dry matter), albuminates and other albumin derivatives	25.00	0.00	0.75
3809	Finishing agents, dye carriers to accelerate the dyeing, fixing of dyestuffs, other products and preparations, of a kind used in the textile, paper, leather or like industries, n.e.c. or included	25.00	19.45	0.25
3915	Waste, parings and scrap, of plastics	25.00	100.00	1.00
3925	Plastics; builders' wares n.e.c. or included	25.00	50.75	0.25
4005	Compounded rubber, Unvulcanized, in primary forms or in plates, sheets or strip	25.00	0.00	1.00
8311	Wires, rods, tubes, plates, electrodes of base metal or metal carbides; of a kind used for soldering, brazing, welding; wires and rods for metal spraying	25.00	0.00	1.00
8401	Nuclear reactors; fuel elements (cartridges), non-irradiated, for nuclear reactors, machinery and apparatus for isotopic separation	25.00	0.00	0.25
8803	Aircraft; parts of heading no. 8801 or 8802	25.00	77.00	1.00
9613	Cigarette lighters and other lighters, whether or not mechanical or electrical and parts thereof other than flints and wicks	25.00	96.65	1.00
0813	Fruit, dried, other than that of heading no. 0801 to 0806; mixtures of nuts or dried fruits of this chapter	20.00	0.32	0.20
1207	Oil seeds and oleaginous fruits, n.e.c. in chapter 12; whether or not broken	20.00	0.00	0.60
3304	Cosmetic and toilet preparations; beauty, make-up and skin care preparations (excluding medicaments, including sunscreen or suntan preparations), manicure or pedicure preparations	20.00	44.83	0.20
3926	Articles of plastics and articles of other materials of heading no. 3901 to 3914, n.e.c. in chapter 39	20.00	95.43	0.20
7202	Ferroalloys	20.00	5.63	0.80
8101	Tungsten (wolfram); articles thereof, including waste and scrap	20.00	0.00	0.80
0712	Vegetables, dried; whole, cut, sliced, broken or in powder, but not further prepared	16.67	0.00	0.17
0909	Seeds of anise, badian, fennel, coriander, cumin, caraway or juniper	16.67	0.00	0.17
0910	Ginger, saffron, turmeric (curcuma), thyme, bay leaves, curry and other spices	16.67	13.01	0.17
8102	Molybdenum; articles thereof, including waste and scrap	16.67	0.00	0.67
8424	Mechanical appliances for projecting, dispersing or spraying liquids or powders; fire extinguishers, spray guns, steam, sand blasting machines	16.67	0.61	0.17
1515	Fixed vegetable fats and oils (including jojoba oil) and their fractions, whether or not refined; but not chemically modified	14.29	100.00	0.57
4811	Paper, paperboard, cellulose wadding and webs of cellulose fibers, coated, impregnated, covered, surface-colored, decorated or printed, rolls or sheets, other than goods of heading no. 4803, 4809, or 4810	14.29	0.00	0.57
7204	Ferrous waste and scrap; remelting scrap ingots of iron or steel	14.29	0.00	0.57
1302	Vegetable saps and extracts; pectic substances, pectinates and pectates; agar-agar and other mucilages and thickeners, whether or not modified, derived from vegetable products	12.50	32.38	0.50

(Continued)

HS4 code	Description	FI (%)	CV (%)	PV
3105	Fertilizers; mineral or chemical, containing 2 or 3 of the elements nitrogen, phosphorus, potassium; other fertilizers; goods of chapter 31 in tablets or packages of gross weight not exceeding 10kg	12.50	14.39	0.50
1209	Seeds, fruit and spores; of a kind used for sowing	10.00	31.68	0.10
8418	Refrigerators, freezers and other refrigerating or freezing equipment, electric or other; heat pumps other than air conditioning machines of heading no. 8415	10.00	28.97	0.10
0106	Animals; live, n.e.c. in chapter 01	7.69	0.00	0.15
8708	Motor vehicles; parts and accessories, of heading no. 8701 to 8705	7.14	0.03	0.29

Sources: UNCTAD Trains and Comtrade/UN.
Authors' elaboration.

Obs.: Indexes are based on the number and imported values of unique 6-digit level codes included in the HS4 heading of the Harmonized System.

TABLE B.2

Incidence of NTMs in Brazil and the US: frequency index (FI), cover ratio (CR) and prevalence score (PV), by HS2 code

HS2	Product Description	Country					
		US			Brazil		
		FI (%)	CR (%)	PV	FI (%)	CR (%)	PV
01	Animals; live	100.00	100.00	19.56	100.00	100.00	12.21
02	Meat and edible meat offal	100.00	100.00	27.41	100.00	100.00	17.30
03	Fish and crustaceans, mollusks and other aquatic invertebrates	100.00	100.00	30.30	100.00	100.00	16.44
04	Dairy produce; birds' eggs; natural honey; edible products of animal origin, not elsewhere specified or included	100.00	100.00	35.00	100.00	100.00	12.97
05	Animal originated products; not elsewhere specified or included	100.00	100.00	15.53	100.00	100.00	9.47
06	Trees and other plants, live; bulbs, roots and the like; cut flowers and ornamental foliage	100.00	100.00	9.63	100.00	100.00	9.38
07	Vegetables and certain roots and tubers; edible	100.00	100.00	25.40	100.00	100.00	11.61
08	Fruit and nuts, edible; peel of citrus fruit or melons	100.00	100.00	28.33	100.00	100.00	14.55
09	Coffee, tea, mate and spices	100.00	100.00	22.59	100.00	100.00	15.90
10	Cereals	100.00	100.00	15.35	100.00	100.00	13.58
11	Products of the milling industry; malt, starches, inulin, wheat gluten	100.00	100.00	21.44	100.00	100.00	14.04
12	Oil seeds and oleaginous fruits; miscellaneous grains, seeds and fruit, industrial or medicinal plants; straw and fodder	100.00	100.00	18.38	100.00	100.00	13.69
13	Lac; gums, resins and other vegetable saps and extracts	100.00	100.00	22.50	100.00	100.00	12.30
14	Vegetable plaiting materials; vegetable products not elsewhere specified or included	100.00	100.00	5.00	100.00	100.00	9.00
15	Animal or vegetable fats and oils and their cleavage products; prepared animal fats; animal or vegetable waxes	100.00	100.00	19.79	100.00	100.00	16.35
16	Meat, fish or crustaceans, mollusks or other aquatic invertebrates; preparations thereof	100.00	100.00	25.78	100.00	100.00	14.29
17	Sugars and sugar confectionery	100.00	100.00	21.71	100.00	100.00	15.94
18	Cocoa and cocoa preparations	100.00	100.00	19.09	100.00	100.00	13.09
19	Preparations of cereals, flour, starch or milk; pastrycooks' products	100.00	100.00	21.47	100.00	100.00	14.58
20	Preparations of vegetables, fruit, nuts or other parts of plants	100.00	100.00	22.58	100.00	100.00	15.69
21	Miscellaneous edible preparations	100.00	100.00	21.69	100.00	100.00	14.88
22	Beverages, spirits and vinegar	100.00	100.00	27.27	100.00	100.00	12.00
23	Food industries, residues and wastes thereof; prepared animal fodder	100.00	100.00	11.43	100.00	100.00	12.13

(Continues)

Product		Country					
HS2	Description	US			Brazil		
		FI (%)	CR (%)	PV	FI (%)	CR (%)	PV
24	Tobacco and manufactured tobacco substitutes	100.00	100.00	10.40	100.00	100.00	7.40
25	Salt; sulfur; earths, stone; plastering materials, lime and cement	100.00	100.00	2.07	45.59	83.56	3.12
26	Ores, slag and ash	100.00	100.00	2.38	32.43	96.72	1.05
27	Mineral fuels, mineral oils and products of their distillation; bituminous substances; mineral waxes	100.00	100.00	2.40	74.42	86.78	1.93
28	Inorganic chemicals; organic and inorganic compounds of precious metals; of rare earth metals, of radio-active elements and of isotopes	100.00	100.00	3.20	100.00	100.00	12.11
29	Organic chemicals	100.00	100.00	4.07	100.00	100.00	13.24
30	Pharmaceutical products	100.00	100.00	16.81	100.00	100.00	14.26
31	Fertilizers	100.00	100.00	2.65	100.00	100.00	13.04
32	Tanning or dyeing extracts; tannins and their derivatives; dyes, pigments and other coloring matter; paints, varnishes; putty, other mastics; inks	100.00	100.00	2.14	100.00	100.00	11.66
33	Essential oils and resinoids; perfumery, cosmetic or toilet preparations	100.00	100.00	8.28	100.00	100.00	13.59
34	Soap, organic surface-active agents; washing, lubricating, polishing or scouring preparations; artificial or prepared waxes, candles and similar articles, modelling pastes, dental waxes and dental preparations with a basis of plaster	100.00	100.00	3.09	100.00	100.00	12.00
35	Albuminoidal substances; modified starches; glues; enzymes	100.00	100.00	19.60	100.00	100.00	13.13
36	Explosives; pyrotechnic products; matches; pyrophoric alloys; certain combustible preparations	100.00	100.00	14.13	87.50	99.43	1.63
37	Photographic or cinematographic goods	100.00	100.00	1.71	12.90	40.29	0.26
38	Chemical products n.e.c.	100.00	100.00	2.10	55.56	93.71	3.11
39	Plastics and articles thereof	100.00	100.00	4.99	19.05	14.56	0.45
40	Rubber and articles thereof	100.00	100.00	1.68	42.35	63.81	1.02
41	Raw hides and skins (other than furskins) and leather	100.00	100.00	6.14	83.78	89.06	5.68
42	Articles of leather; saddlery and harness; travel goods, handbags and similar containers; articles of animal gut (other than silk-worm gut)	65.00	37.22	1.30	95.00	100.00	1.50
43	Furskins and artificial fur; manufactures thereof	91.67	98.45	3.83	100.00	100.00	5.92
44	Wood and articles of wood; wood charcoal	100.00	100.00	5.79	100.00	100.00	8.09
45	Cork and articles of cork	85.71	44.08	3.29	100.00	100.00	4.71
46	Manufactures of straw, esparto or other plaiting materials; basketware and wickerwork	100.00	100.00	5.00	100.00	100.00	8.00
47	Pulp of wood or other fibrous cellulosic material; recovered (waste and scrap) paper or paperboard	80.95	95.09	2.38	0.00	0.00	0.00
48	Paper and paperboard; articles of paper pulp, of paper or paperboard	100.00	100.00	1.28	15.84	12.61	1.43
49	Printed books, newspapers, pictures and other products of the printing industry; manuscripts, typescripts and plans	100.00	100.00	1.00	0.00	0.00	0.00
50	Silk	100.00	100.00	6.22	88.89	99.86	1.22
51	Wool, fine or coarse animal hair; horsehair yarn and woven fabric	100.00	100.00	7.29	100.00	100.00	4.00
52	Cotton	100.00	100.00	4.49	100.00	100.00	3.08
53	Vegetable textile fibers; paper yarn and woven fabrics of paper yarn	100.00	100.00	5.30	100.00	100.00	3.48
54	Man-made filaments; strip and the like of man-made textile materials	100.00	100.00	4.01	82.86	82.56	0.83
55	Man-made staple fibers	100.00	100.00	4.15	90.65	84.89	0.92

(Continues)

(Continued)

Product		Country					
HS2	Description	US			Brazil		
		FI (%)	CR (%)	PV	FI (%)	CR (%)	PV
56	Wadding, felt and nonwovens, special yarns; twine, cordage, ropes and cables and articles thereof	96.67	99.58	4.20	96.67	98.26	1.13
57	Carpets and other textile floor coverings	100.00	100.00	5.57	95.24	81.63	0.95
58	Fabrics; special woven fabrics, tufted textile fabrics, lace, tapestries, trimmings, embroidery	84.21	56.75	3.42	86.84	92.95	0.87
59	Textile fabrics; impregnated, coated, covered or laminated; textile articles of a kind suitable for industrial use	50.00	64.50	2.33	91.67	98.80	1.08
60	Fabrics; knitted or crocheted	100.00	100.00	4.30	95.35	99.89	0.95
61	Apparel and clothing accessories; knitted or crocheted	100.00	100.00	6.38	87.74	98.77	0.98
62	Apparel and clothing accessories; not knitted or crocheted	100.00	100.00	6.39	95.54	99.52	1.14
63	Textiles, made up articles; sets; worn clothing and worn textile articles; rags	82.35	95.28	3.16	68.63	87.28	0.71
64	Footwear; gaiters and the like; parts of such articles	40.00	41.96	0.80	68.00	72.43	1.12
65	Headgear and parts thereof	37.50	21.51	0.63	37.50	81.13	0.75
66	Umbrellas, sun umbrellas, walking-sticks, seat sticks, whips, riding crops; and parts thereof	83.33	98.22	2.67	0.00	0.00	0.00
67	Feathers and down, prepared; and articles made of feather or of down; artificial flowers; articles of human hair	25.00	20.27	0.50	12.50	0.56	0.13
68	Stone, plaster, cement, asbestos, mica or similar materials; articles thereof	44.90	40.26	0.88	2.04	0.00	0.02
69	Ceramic products	65.52	64.75	0.90	37.93	46.14	0.38
70	Glass and glassware	53.13	41.47	0.98	15.63	26.50	0.66
71	Natural, cultured pearls; precious, semi-precious stones; precious metals, metals clad with precious metal, and articles thereof; imitation jewelry; coin	96.23	99.97	1.06	7.55	0.01	0.19
72	Iron and steel	4.19	9.77	0.23	4.19	3.63	0.08
73	Iron or steel articles	34.68	46.45	0.53	42.74	30.25	0.68
74	Copper and articles thereof	100.00	100.00	1.32	18.00	6.52	0.20
75	Nickel and articles thereof	100.00	100.00	1.29	5.88	0.00	0.06
76	Aluminum and articles thereof	40.00	65.32	1.06	25.71	15.73	0.43
78	Lead and articles thereof	37.50	84.25	1.38	0.00	0.00	0.00
79	Zinc and articles thereof	55.56	96.81	1.78	22.22	6.75	0.22
80	Tin; articles thereof	0.00	0.00	0.00	20.00	0.00	0.20
81	Metals; n.e.c., cermets and articles thereof	66.67	54.17	5.04	27.08	5.93	0.27
82	Tools, implements, cutlery, spoons and forks, of base metal; parts thereof, of base metal	17.19	13.04	0.34	100.00	100.00	8.36
83	Metal; miscellaneous products of base metal	19.44	6.13	0.42	0.00	0.00	0.00
84	Nuclear reactors, boilers, machinery and mechanical appliances; parts thereof	28.80	63.50	0.93	100.00	100.00	8.56
85	Electrical machinery and equipment and parts thereof; sound recorders and reproducers; television image and sound recorders and reproducers, parts and accessories of such articles	92.05	97.62	1.97	100.00	100.00	8.28
86	Railway, tramway locomotives, rolling-stock and parts thereof; railway or tramway track fixtures and fittings and parts thereof; mechanical (including electro-mechanical) traffic signaling equipment of all kinds	60.87	44.94	2.04	8.70	16.87	0.13

(Continues)

Product		Country					
HS2	Description	US			Brazil		
		FI (%)	CR (%)	PV	FI (%)	CR (%)	PV
87	Vehicles; other than railway or tramway rolling stock, and parts and accessories thereof	78.38	98.41	4.46	100.00	100.00	10.84
88	Aircraft, spacecraft and parts thereof	100.00	100.00	6.67	60.00	97.55	4.80
89	Ships, boats and floating structures	100.00	100.00	4.00	5.56	0.00	0.06
90	Optical, photographic, cinematographic, measuring, checking, medical or surgical instruments and apparatus; parts and accessories	57.24	72.56	3.57	100.00	100.00	10.31
91	Clocks and watches and parts thereof	100.00	100.00	6.37	2.04	0.56	0.06
92	Musical instruments; parts and accessories of such articles	70.59	54.85	1.41	0.00	0.00	0.00
93	Arms and ammunition; parts and accessories thereof	100.00	100.00	4.17	100.00	100.00	2.61
94	Furniture; bedding, mattresses, mattress supports, cushions and similar stuffed furnishings; lamps and lighting fittings, n.e.c.; illuminated signs, illuminated nameplates and the like; prefabricated buildings	87.18	77.90	1.67	69.23	71.07	4.67
95	Toys, games and sports requisites; parts and accessories thereof	83.87	95.91	2.26	100.00	100.00	8.35
96	Miscellaneous manufactured articles	37.50	59.16	1.00	25.00	47.66	2.06
97	Works of art; collectors' pieces and antiques	100.00	100.00	2.14	0.00	0.00	0.00
99	Commodities not specified according to kind	0.00	0.00	0.00	0.00	0.00	0.00

Sources: UNCTAD Trains and Comtrade/UN.
Authors' elaboration.

REFERENCE

UNCTAD – UNITED NATIONS CONFERENCE ON TRADE AND DEVELOPMENT. **International Classification of Non-Tariff Measures**: 2019 version. Geneva: United Nations, 2019.

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