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**BRAZIL AND RUSSIA:
HOW TO IMPROVE THE ECONOMIC RELATIONSHIP
BEYOND RESOURCE-BASED INDUSTRIES**

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BRAZIL AND RUSSIA: HOW TO IMPROVE THE ECONOMIC RELATIONSHIP BEYOND RESOURCE-BASED INDUSTRIES

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ABSTRACT

This Note summarizes the economic relationship between Brazil and Russia in the first two decades of the 21st Century. After a brief overview of the two economies, it presents some key trade indicators and discusses the evolution of both countries' trade policies over the period. An examination of the bilateral direct investment and of cooperation in technology follows. The Note ends with a set of suggestions aimed at bringing the two economies closer to each other.

Keywords: international trade; trade agreements; trade policy; foreign direct investment; Brazil; Russia.

SINOPSE

Esta Nota Técnica sumariza as relações econômicas entre Brasil e Rússia nas duas primeiras décadas do século XXI. Após um rápido panorama das duas economias, apresentam-se alguns indicadores-chave de comércio e discute-se a evolução das políticas comerciais dos dois países. Seguem-se um exame do investimento direto bilateral e uma rápida avaliação da cooperação tecnológica entre os países. A Nota termina com algumas sugestões de políticas que podem contribuir para aproximar as duas economias.

Palavras-Chave: comércio internacional; acordos comerciais; política comercial; investimento direto externo; Brasil; Rússia.

JEL: F13; F14; F15; F21; F23

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1 AN OVERVIEW OF THE TWO ECONOMIES

Despite the great distance – both in terms of geography and history – that keep them apart, Brazilian and Russian economies share some important commonalities. One is the key role played by natural resources. Another is the relative decline of the manufacturing sector over the last three decades, which was accompanied by the enlargement of the services sector.

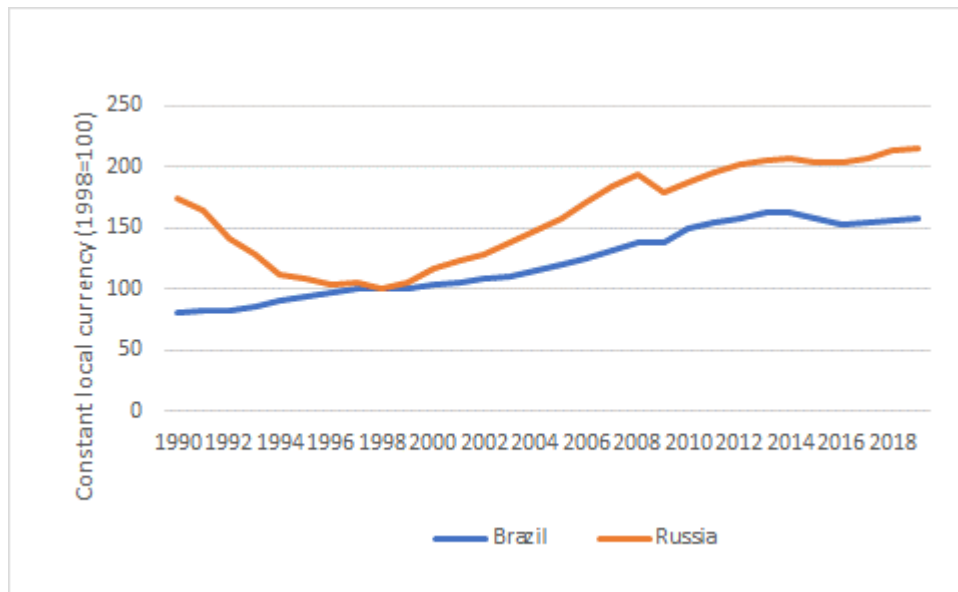
Both economies pursued, for several decades, very domestic-oriented development strategies. Russia has undergone a rapid industrialization under the communist regime, that resulted in a quite unbalanced economy, where the services industries were relatively underdeveloped whilst the heavy industry and the military complex were oversized (Dohrn; Heilemann, 1996). Trade was strongly distorted towards the members of the Council of Mutual Economic Assistance (Comecon) (Havrylyshyn; Al-Atrash, 1998). Foreign direct investment (FDI) was virtually nonexistent.

Brazil was never a centrally planned economy, but the strong hand of the State could be perceived in almost every aspect of the economy. During the import substitution era, whose heyday extended from the 1950's to the 1970's, multiple distortionary measures were adopted aiming at transforming the agrarian into an industrialized economy. Utilities and the heavy industry were largely under State control and trade was hampered by high tariffs. Despite the nationalist rhetoric, foreign capital was largely welcome, except in a few segments.

By the end of the 1980's, Brazil and Russia had two of the largest manufacturing industries in the world, whose inefficiencies remained hidden by the barriers to trade. In both countries, the 1990's were a decade of fundamental economic reforms, although the specificities of transition made it considerably more challenging to Russia. Numerous enterprises were privatized and liberalization policies were pursued in various areas, including trade and FDI. As a result, a Schumpeterian process of creative destruction took place. Uncompetitive industries and firms vanished, while others emerged, resulting in a reallocation of the factors of production across firms and industries.

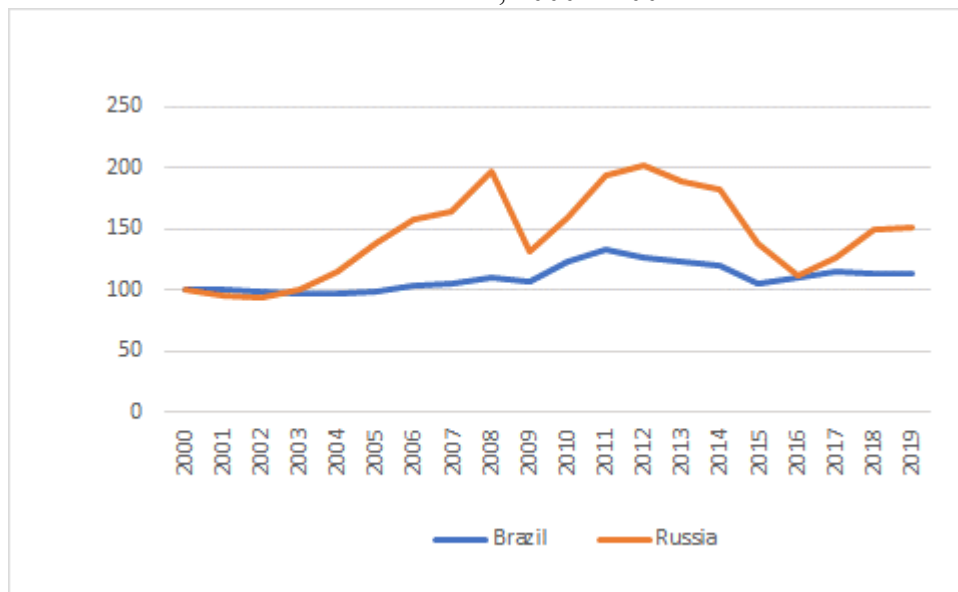
During the reformist 1990's, Brazilian economy had sluggish growth (2.6% annual average), as compared to 1950-1980. In the same period, Russia had an economic depression – per capita GDP fell 42% between 1990 and 1998. After the currency devaluations elicited by the Russian Crisis (1998), both economies entered a period of recovery, which gained momentum in the early 2000's, with the ignition of the commodities super cycle, boosted, especially, by Chinese demand for energy, raw materials and food. As shown in Figure 1.1, although both economies benefited from the China shock, Russian GDP grew considerably faster until the outbreak of the global financial crisis in 2008. This is not surprising since the (positive) terms of trade effect was much more pronounced in Russia as compared to Brazil (Figure 1.2).

FIGURE 1.1
Gross Domestic Product – Brazil and Russia
 Index number, 1998 = 100



Source: United Nations, Statistics Division

FIGURE 1.2
Terms of Trade – Brazil and Russia
 Index number, 2000 = 100



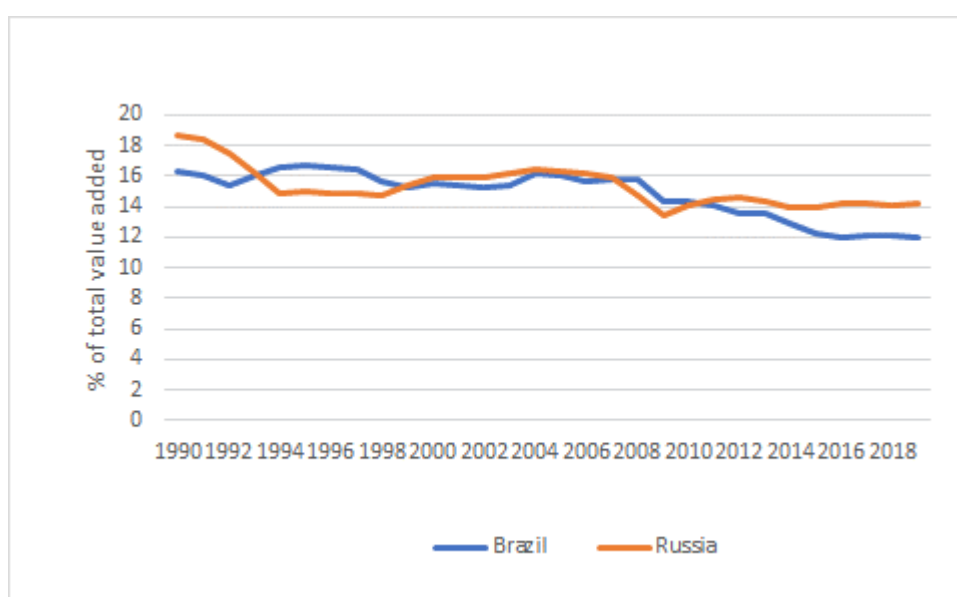
Source: World Bank, World Development Indicators.

Following the global financial crisis, both economies decelerated considerably, particularly from 2014 onwards, when commodities prices initiated a new downward trend. Russian economy was also affected by Western sanctions that followed the annexation of Crimea, which fueled a major devaluation of the Ruble in the second half of 2014. In the biennium 2015-2016, Brazil faced a major recession (GDP declined 6.7%).

In terms of growth, the 2010's were a lost decade for both countries: Russian GDP grew 11.7% between 2010 and 2020, while Brazilian GDP grew only 2% over the decade. In 2019, per capita GDP in Brazil reached US\$ 8,575 (in 2015 constant prices), while in Russia it was US\$ 9,936.

Over the last few months, we have witnessed an upsurge of commodities prices, spurred by stimulus packages adopted worldwide as a response to the Covid-19 pandemic and the announcements of ambitious investments in infrastructure and in the “green economy”. This movement may bring back to the table an issue that have permeated the discussions on economic development over the booming years: the Dutch disease, or the risks of premature deindustrialization caused by booms in natural resources exports. Indeed, both Russia and Brazil presented, by the turn of the 2010's, some of the symptoms usually related to the Dutch disease, such as the appreciation of the real exchange rate and the increase in wage levels (Pineli Alves, 2012). However, there was no contraction in manufacturing value added – on the contrary, physical production expanded considerably -, although this sector's share in employment and GDP had declined in both economies. In current prices, manufacturing share in GDP declined about 4 and 3 percentage points in Brazil and Russia, respectively, between 2003 and 2014. Nonetheless, part of these reductions is due to changes in relative prices as the prices of raw materials, utilities and services increased at a faster pace than the prices of manufactures. Figure 1.3 shows the evolution of manufacturing share in value added in (2015) constant prices. According to this Figure, deindustrialization is less of a problem in Russia than in Brazil, where it can really be viewed as a cause of concern. However, for some scholars, this is mostly an adjustment of previous overindustrialization caused by the import substitution model - Bonelli, Pessôa and Matos (2013) say that, during the 1970's and 1980's, Brazilian economy suffered from the “Soviet disease”, that is, a manufacturing share in GDP much higher than the level that should be expected given per capita GDP and factor endowment.

FIGURE 1.3
Manufacturing value added – Brazil and Russia
 As % of total value added, in 2015 constant prices



Source: United Nations, Statistics Division

Although the weight of exports in its GDP has been declining over the last two decades, Russia remains more open to international trade than Brazil. In 2019, the sum of gross exports and imports of goods and services was equivalent to 49.1% of Russian GDP, while in Brazil it was mere 29%. Considering only merchandise trade, the figures, for the same year, are 39.6%, in Russia, and 21.6%, in Brazil. Both countries run surpluses in merchandise trade, but deficits in services trade – in Brazil, the former is usually not sufficient to counterbalance the latter.

Current trade pattern between Brazil and Russia is very poor, extremely concentrated in a few products in which the countries have clear revealed comparative advantage. Briefly, Brazil buys fertilizers and sells meat, coffee, and soybeans to Russia. Commerce of more sophisticated goods remains at very low levels. This suggests that broadening the trade pattern would require considerable efforts to go beyond those few obvious products.

Brazil and Russia are competitors in some areas, such as metals, but are complementary in others, particularly in agriculture and cattle raising. Both countries can benefit from each other's large market to scale up production, particularly in the services industries. They can also benefit from technological cooperation in more sophisticated manufacturing industries, including the defense industry. This approximation can assist both countries in overcoming some of the obstacles they face in integrating into global value chains, which are quite spatially delimited in three economic zones: North America, Western and Central Europe and East and Southeast Asia.

Due to severe concentration of mutual trade, it is difficult to anticipate what would be the impact of a free-trade agreement between the two countries (or between Mercosur and the Eurasian Economic Union). However, approximation between the two economies can be fostered using other mechanisms such as the New Development Bank (NDB) and other BRICS initiatives.

This Note aims at bringing together a set of indicators and features regarding the bilateral economic relations and suggesting areas for potential complementarity. The next section presents the recent evolution and features of bilateral trade in goods and in services. Section 3 discusses some aspects related to trade policy in both countries, comprising tariffs, non-tariff measures, trade agreements and trade defense. Bilateral FDI is covered in Section 4, while Section 5 sheds light on aspects of science and technology in search of potential areas for greater cooperation. Finally, Section 6 presents some proposals to foster bilateral relations.

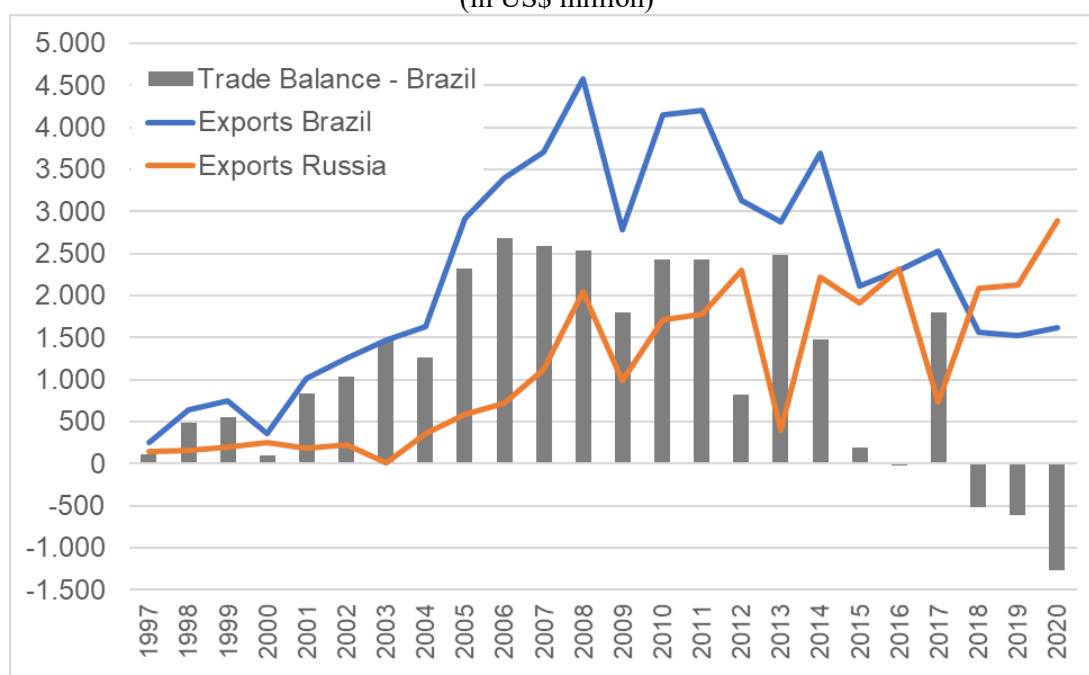
2 BILATERAL TRADE

2.1 Trade in goods

Merchandise trade flows between Brazil and Russia were not much significant until 2000. Brazilian yearly exports totaled US\$ 500 million and Russian exports were even smaller, below US\$ 200 million. In the following decade, as both countries benefited from the

commodities supercycle, their accelerated GDP growth rates and the deepening of their integration in the world economy brought an impressive increase of bilateral trade. Brazilian exports to Russia went up first – from 2001 onwards – and reached a peak of US\$ 4.6 billion in 2008 – a 1,200% increase in just eight years. Russian exports to Brazil started to grow later, in 2004, but also had a spectacular performance until 2008, reaching US\$ 2.0 billion – 12 times the average values of the period 1997-2003. Trade balance was highly favorable to Brazil during this period, with surpluses of around US\$ 2.5 billion (Figure 2.1).

FIGURE 2.1
Brazil-Russia bilateral trade – 1997-2020
(in US\$ million)

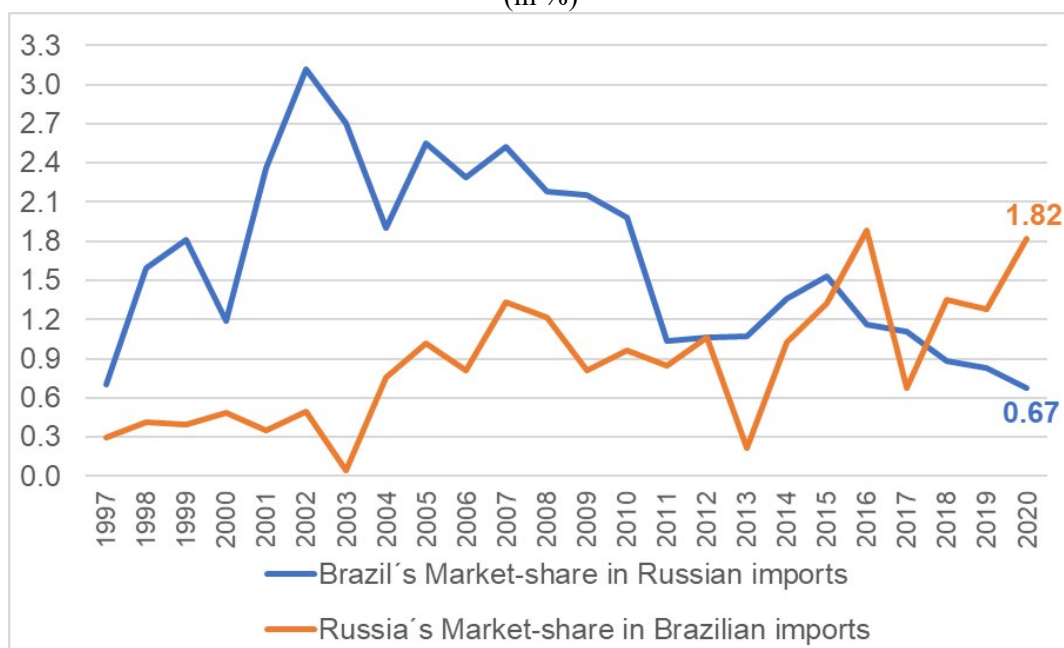


Source: Comtrade/UNCTAD.

From 2008 onwards, Brazilian exports show a downward trend, albeit with huge fluctuations, so that, in the period 2018-2020, the amounts were reduced to US\$ 1.5 billion, a third of the record registered in 2008. Russian exports also had large fluctuations since 2008, but were able to sustain annual amounts of US\$ 2 billion, and indeed reached its historical peak in 2020 – almost US\$ 3 billion. Trade balance remained positive for Brazil until 2017, but in the last three years the balance shifted, with Russia reaching a surplus of US\$ 1.26 billion in 2020.

The evolution of Brazil's and Russia's market shares in each other's total imports present clearly divergent patterns. Brazil's market share was 0.7% in 1997 and reached a peak of 3.12% in 2002. In 2008, the year of Brazilian record exports in monetary terms, it decreased to 2.18%, and remained declining in the following years, returning to 0.67% in 2020 (Figure 2.2). In turn, the increase of Russia's market share in Brazilian imports was less impressive in the first years, going from 0.3% in 1997 to 1.34% in 2007, but remained in such levels in the following years, reaching a historical peak in 2016 (1,88%). In 2020, it was slightly lower, 1.82%.

FIGURE 2.2
Brazil and Russia market-share on partner's imports– 1997-2019
 (in %)



Source: Comtrade/UNCTAD.

Regarding both countries' share in each other's total exports, figure 2.3 indicates that Russia became an important market for Brazilian exports, at least until 2010. The country's share increased from 0.52%, in 1997, to nearly 2.4% in 2010. In the following years, though, it fell almost continually, reaching 0.77% in 2020, thus returning to the late 1990's levels. For Russia, Brazil has never been one of the most important partners, so that its share in total exports has always been below 1% – except for 2011 (1.15%). Nonetheless, it is worth to note that in 2020, for the first time, Brazil's importance for Russian exports exceeded Russia's relevance for Brazilian exports.

FIGURE 2.3
Brazil and Russia share on partner's exports– 1997-2019
(in %)



Source: Comtrade/UNCTAD.

These numbers demonstrate that, although bilateral trade is currently more significant than in the 1990's, it is still low in relative terms, especially when we consider that Brazilian exports reached much higher levels some years ago and that both countries have a weak position in each other's export bill.

2.1.1 Main Products

The product composition of bilateral trade flows shows two remarkable features: a high degree of concentration and a low level of intra-industry trade, with Brazilian exports made up of mineral and agri-food commodities and Russian exports constituted by fertilizers, oil and oil derivatives.

Table 2.1 shows that, in the period 1998-99, more than 60% of Brazilian exports to Russia were comprised of sugar, with also significant shipments of coffee and tobacco. However, the spectacular growth of exports seen in the years up to 2008 was mainly due to meat products, that accounted for half of total exports, especially bovine meat (28.9%), but also swine (15.0%) and chicken (7.0%). Sugar (26.2%) remained an important item, as well as coffee and tobacco, and there was also a huge increase in soybeans exports. As for manufacturing products, road tractors had a significant number of shipments (4.7% of the total). So, we testified some diversification of the export bill.

Things changed drastically in the following years, with strong reductions in meat and sugar exports. These items accounted for a loss of US\$ 2.9 billion in exports between 2007-08 and 2018-19. Indeed, the only product that had a significant export growth was soybeans, alongside items with smaller amounts, like Aluminum oxide, Ferro-niobium, Motor vehicles for the transport of goods and Shelled groundnuts.

TABLE 2.1
Brazilian exports to Russia, according to main products – selected periods
(in US\$ Million and %)

Products	US\$ Million			Contribution to growth (%)		Market-share in Russian imports		
	1998-99(A)	2007-08(B)	2018-19(C)	(B)/(A)	(C)/(B)	1998-99	2007-08	2018-19
Bovine meat	-	1.197,4	112,7	34,7	-41,7	-	96,7	14,9
Sugar	482,1	1.085,8	80,6	17,5	-38,7	45,5	84,7	3,3
Swine meat	0,0	623,9	8,6	18,1	-23,7	0,0	39,2	5,0
Chicken meat	8,2	289,2	109,8	8,1	-6,9	1,5	14,2	59,4
Road tractors	-	196,7	166,5	5,7	-1,2	-	9,8	16,5
Coffee	58,8	106,6	75,9	1,4	-1,2	6,8	12,9	23,5
Tobacco and cigarettes	77,5	72,2	65,2	-0,2	-0,3	11,4	15,1	17,8
Soybeans	1,1	46,5	402,5	1,3	13,7	4,2	89,2	51,2
Aluminium oxide	16,0	9,3	63,4	-0,2	2,1	2,2	0,3	10,4
Ferro-niobium	-	3,2	52,9	0,1	1,9	-	97,8	94,8
Motor vehicles for the transport of goods	-	2,7	28,1	0,1	1,0	-	0,5	2,7
Shelled groundnuts	-	2,1	86,1	0,1	3,2	-	2,3	59,6
Other products	52,6	511,2	294,3	13,3	-8,3	0,1	0,4	0,6
Total	696,3	4.146,9	1.546,9	100,0	-100,0	1,7	2,4	0,9

Source: Comtrade/UNCTAD.

Brazilian bovine and swine meat exports in fact suffered from an embargo imposed by Russia in 2017, after the feed additive ractopamine was found in some shipments. In 2018, the country started to gradually lift the restrictions, allowing some Brazilian plants to resume shipments. However, some restrictions persist, and in 2020 meat exports amounted to only US\$ 303.4 million.

In the meantime, Brazil was able to increase its meat exports by redirecting them to other fast-growing markets, especially China and Hong Kong. These two destinations accounted for more than 50% of total exports in 2020, and Russia for only 1.9%. In 2008, Russia was the most important market for Brazilian meat, with 20% of shipments. In this landscape, it is possible that, even if all restrictions imposed by Russia are eliminated, Brazilian exports would not return to previous levels, at least not in the short term. So, the growth of Brazilian exports to Russia should rely on other products.

Russia's exports to Brazil show an even higher level of concentration, with fertilizers accounting for 70% to 80% of the total over the whole period analyzed. Crude petroleum, Russia's most important export product, only had a significant share of shipments to Brazil in some specific years, as well as oil derivatives like Naphtha, gasoline, other fuel oils and Bituminous coal. In recent years, there were also significant exports of rubber products and iron and steel.

TABLE 2.2
Russian exports to Brazil, according to main products – selected periods
(in US\$ Million and %)

Products	US\$ Million			Contribution to growth (%)		Market-share in Brazilian imports		
	1998-2000(A)	2011-12(B)	2018-19(C)	(B)/(A)	(C)/(B)	1998-99	2011-12	2018-19
Fertilisers	141,3	1.640,5	1.874,4	80,2	50,2	49,9	20,1	22,8
Naphtha, gasoline, other fuel oils	-	-	234,8	0,0	50,4	-	1,0	1,9
Bituminous coal	-	34,8	94,8	1,9	12,9	-	1,8	9,1
Crude petroleum	-	159,3	-	8,5	-34,2	-	0,8	-
Rubber	0,1	51,1	55,2	2,7	0,9	0,4	3,2	2,8
Iron and steel	13,9	77,2	35,0	3,4	-9,1	6,8	2,7	8,3
Other products	19,3	80,5	214,6	3,3	28,8	0,02	0,02	0,07
Total	174,6	2.043,3	2.508,8	-	-	0,8	1,1	0,9

Source: Comtrade/UNCTAD.

2.1.2 Opportunities in Trade in Goods

When it comes to exports, Brazil, as well as Russia, has been increasingly specialized in a limited number of products. In Brazil, agriculture, food, minerals and crude petroleum account for more than 60% of the total, and their share has increased in the last ten years. In Russia, crude petroleum and oil derivatives represent 60% to 70% of total exports since the 1990's. In this sense, the diversification of the bilateral trade is a big challenge, especially regarding manufacturing goods not related to natural resources.

Yet, it is possible to make a brief assessment of trade opportunities between Brazil and Russia considering goods for which bilateral trade exists to some magnitude, and that combine (i) a good competitive position of one country in the international market and (ii) a significant amount imported by the other country. The usual way of assessing this is through the revealed comparative advantage (RCA) index, at the exporter's side, and the revealed comparative disadvantage (RCD) index, at the importer's side, following the indicator proposed by Balassa (1965) to evaluate the international trade specialization of countries.

For this Note, RCAs and RCDs were calculated for each product at the 4-digit level of the Harmonized System (HS) classification of international trade, encompassing 1,223 items. Products with exporter's RCA and importer's RCD equal to or greater than 0,95 were selected³. Products in which the country has at least a 10% market share in the partner's imports were also excluded.

In the case of Brazilian exports to Russia, 62 products were selected – the complete list is available in Appendix A. Table 2.3 highlights 3 items related to transport equipment, in which Russian imports amounts to US\$ 7.6 billion: Other rail locomotives (SH 8602); Tractors (SH 8701) and aircraft (SH 8802). Brazilian exports of these items to Russia are also significant, amounting to US\$ 311 million in 2018-19, but the market

³ A country is considered to have comparative advantage/disadvantage if the RCA/RCD is equal to or higher than 1, but this threshold was reduced to 0.95 in this study as to capture some borderline products.

share is only 4.1%, thus indicating significant space for growth.

There are also good opportunities in eight items of Machinery and equipment (including some machines for agricultural purposes); eight items of Base metals and articles (especially some goods made of iron and steel); nine products of the Chemical industry; five goods of Wood and paper; five products classified as Food and edible products; two items of Footwear; three items of Meat and animal products; four goods related to Fruit, pepper and ginger; four goods of Non-metallic minerals products; six Mineral products; and five classified as Other products.

Considering that Russian imports of these 62 items amount to US\$ 26.1 billion, each percentage point of market share gained by Brazil would mean US\$ 261 million of extra exports, a 17% increase from the current level.

TABLE 2.3
Export opportunities from Brazil to Russia, according to product groups
(in US\$ Million and %)

Products	Number of products	Russia's total imports	Brazil's total exports	Brazil's exports to India	Brazil's market-share (%)
Transport equipment	3	7.570,8	5.122,4	311,2	4,1
Machinery and equipment	8	4.915,1	3.360,3	42,9	0,9
Base metals and articles of base metal	8	2.449,6	1.722,5	2,0	0,1
Chemicals	9	2.448,0	3.312,5	136,3	5,6
Wood and paper products	5	1.753,8	850,9	2,8	0,2
Food and edible products	5	1.282,0	656,2	7,4	0,6
Footwear	2	940,9	516,3	6,1	0,7
Meat and animal products	3	866,6	1.954,4	16,2	1,9
Fruit, pepper, ginger	4	681,4	844,1	21,6	3,2
Non-metallic minerals products	4	623,7	1.190,2	2,8	0,4
Mineral products	6	386,6	979,7	3,0	0,8
Other products	5	2.141,2	1.204,5	2,0	0,1
Total	62	26.059,8	21.714,1	554,3	2,1

Source: Comtrade/UNCTAD.

The same exercise relating to Russia's export opportunities to Brazil selected 46 products. In absolute terms, the most important ones are 5 items related to Mineral fuels and oils, of which Brazilian imports amounted to US\$ 19.2 billion in recent years. Among them, the most import is Petroleum oils and oils obtained from bituminous minerals, other than crude (SH 2710), with Brazilian imports of US\$ 12.6 billion.

There are also opportunities in seven Vegetable products, of which the most significant is Wheat and meslim, but also Dried leguminous vegetables (SH 0713) and Barley (SH 1003); six items of Base metals and articles (highlighting Refined copper and copper alloys); fourteen Chemical products; two Fish items; two Mineral products; two Food items; two Machine and equipment products; three Transport equipment items; Wallpaper and wall coverings; and Asbestos and mica.

Each percentage point gain of Brazil's market share in these products would mean US\$ 255 million extra exports to Russia, a 10% increase from the current level.

TABLE 2.4
Export opportunities from Russia to Brazil, according to product groups
(in US\$ Million and %)

Products	Number of products	Brazil's total imports	Russia's total exports	Russia's exports to Brazil	Russia's market-share
Mineral fuels and oils	5	19.246,3	103.831,9	579,9	3,0
Vegetable products	7	1.767,0	4.604,3	8,1	0,5
Base metals and articles	6	1.632,9	4.495,8	13,0	0,8
Chemicals	14	1.571,5	2.434,6	12,6	0,8
Fish	2	527,2	3.699,4	0,0	0,0
Mineral products	2	410,6	565,2	-	-
Food	2	148,5	169,6	-	-
Machine and equipment	2	96,2	125,2	0,0	0,0
Transport equipment	3	76,3	125,6	-	-
Wallpaper and wall coverings	1	13,1	68,6	-	-
Asbestos and mica	2	4,7	13,0	-	-
Total	46	25.494,2	120.133,2	613,7	2,4

Source: Comtrade/UNCTAD.

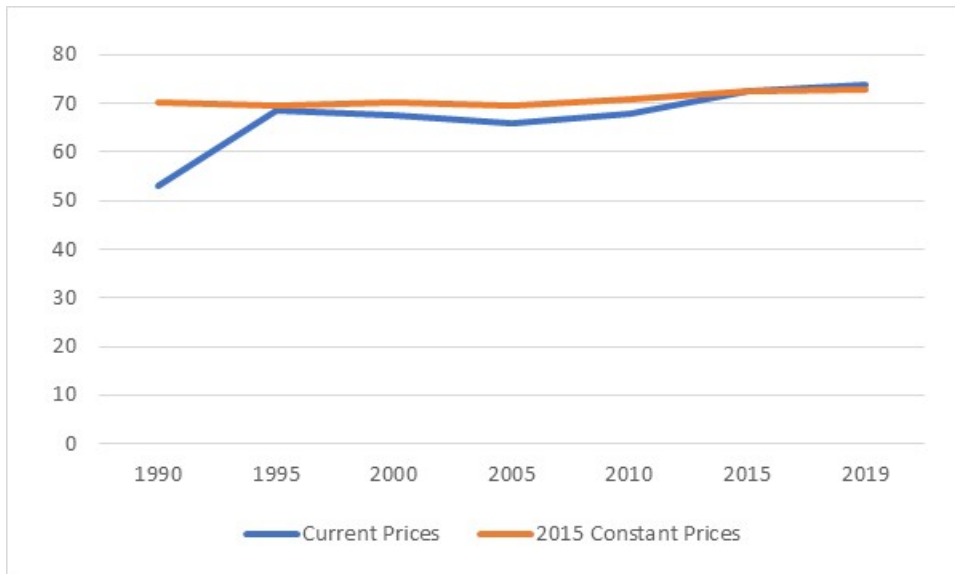
2.2 Trade in Services

The driving force of most economies over the next decades will be the services sector. Although comprise a highly heterogeneous set of activities, services tend to be “superior goods”, that is, the consumption of services increases disproportionately when personal income increases. Thus, as nations become richer, the share of services in GDP tends to increase. In addition, a tendency of servitization can be noted in manufacturing, what means that, in order to differentiate their products in the market, create customer dependency and setting up barriers to competitors, manufacturing firms are increasingly hybrid firms that offer “fuller market packages or ‘bundles’ of customer focused combinations of goods, services, support, self-service and knowledge” (Vandermerwe; Rada, 1988, p. 314). Furthermore, considering that manufacturing activities tend to concentrate spatially due to agglomeration economies, we can say that services will be the key sector for the creation of “good jobs”. Having this in mind, this section brings some statistics of the sector and present areas in which trade in services between Brazil and Russia have potential to grow.

The evolution of the services sector in Brazil and Russia over the last three decades is shown in Figures 2.4 and 2.5, respectively. In Brazil, the sector's share remained almost constant, at roughly 70% of GDP, when prices are held constant.

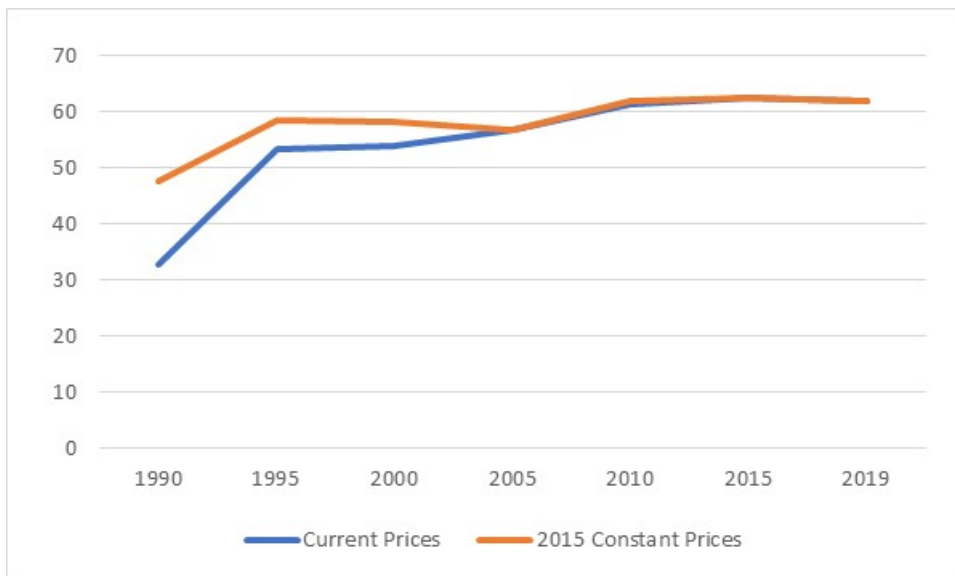
In Russia, in turn, the services sector increased its share in GDP, particularly in the period 1990-1995, when the oversizing of the manufacturing sector was largely reversed. In addition to the adjustment of the economic structure, it can be noted a realignment of relative prices, with a substantial increase in the prices of services, which was virtually completed by 2005. However, comparing Figures 2.4 and 2.5 we can perceive that the services sector is still less important to the Russian economy than it is to the Brazilian economy – a difference of nearly 10 percentage points in terms of services sector's share in GDP.

FIGURE 2.4
Brazil – Services Sector
 (% of GDP)



Source: United Nations, Statistics Division

FIGURE 2.5
Russia – Services Sector
 (% of GDP)

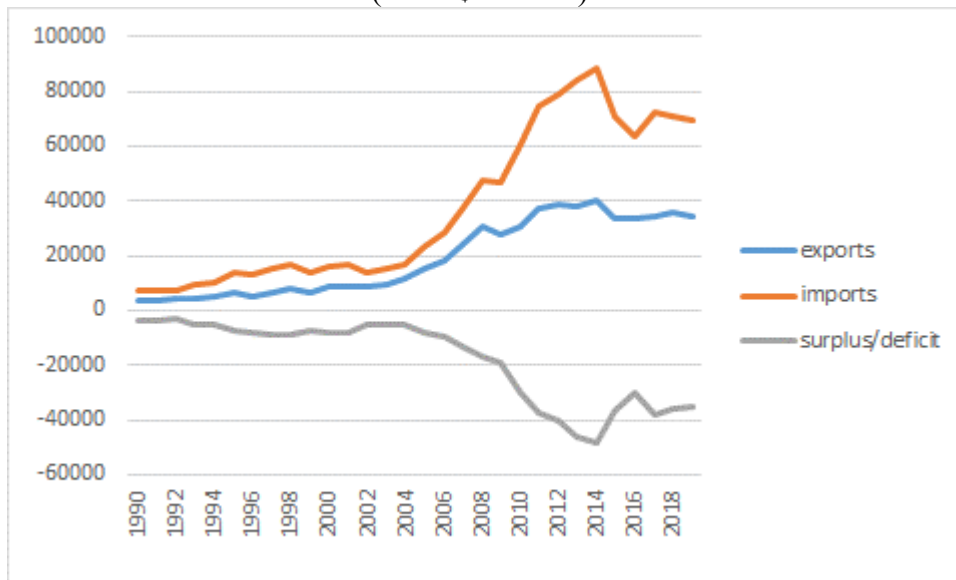


Source: United Nations, Statistics Division

As in any country in the world, the services sector in Brazil and Russia serves, mainly, the domestic market. Indeed, despite the increasing tradability of some services across borders, most activities remain locally provided. Brazilian exports of services in 2019 corresponded to just 2% of GDP. In Russia, they were a bit higher, 3.2% of GDP.

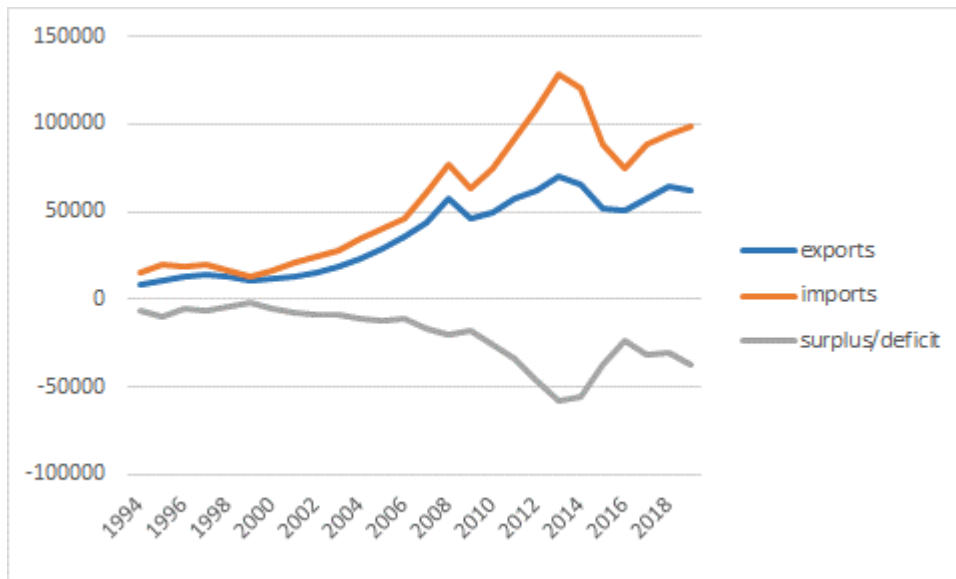
In both countries, the wider services sector lacks international competitiveness. Spoken languages are certainly obstacles, especially in Brazil, where a very tiny part of the population is fluent in English. In addition, Brazilian firms faces complex and burdensome regulatory and tax systems, coupled with deficiencies in infrastructure and a certain mismatch between the workers' skills and the firms' requirements. As shown in Figures 2.6 and 2.7, both Brazil and Russia have structural deficits in trade in services. The shape of the curves is quite similar for both countries: trade in services grows at high annual rates during the commodities boom period and declines after the peak in 2013-14. During the ascending phase, imports grow much faster than exports, causing an enlargement of the deficit in services. In 2019, Brazil had a deficit of US\$ 35.1 billion, slightly lower than Russia's deficit of US\$ 36.7 billion.

FIGURE 2.6
Brazil – Trade in Services
(In US\$ Million)



Source: World Development Indicators, World Bank

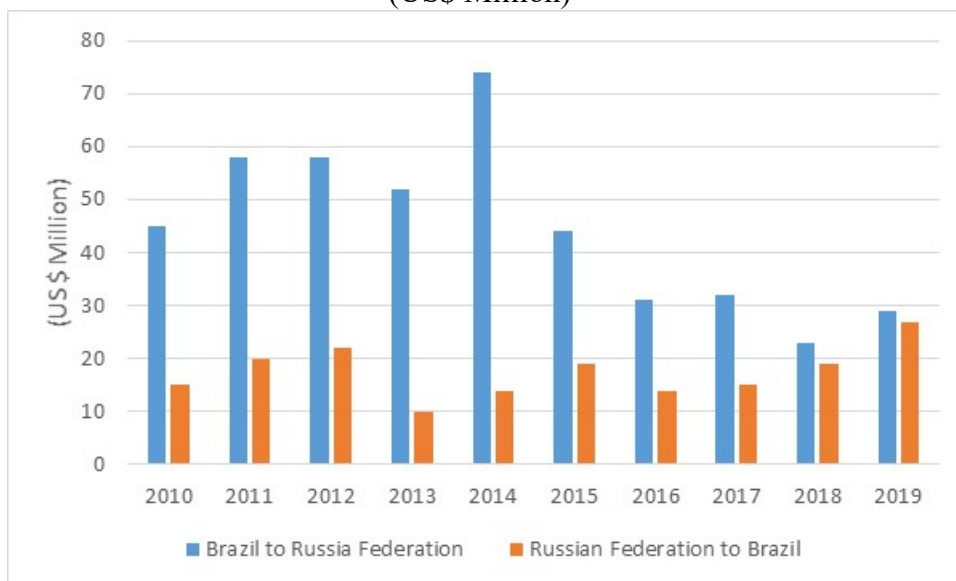
FIGURE 2.7
Russia – Trade in Services
(In US\$ Million)



Source: World Development Indicators, World Bank

Figure 2.8 displays the evolution of services trade between Brazil and Russia over the last decade. Brazil is clearly a net exporter of services to Russia but what really stand out is the low level of services trade between the two countries and, worse, the downward trend post-2014.

FIGURE 2.8
Brazil-Russia Trade in Services
(US\$ Million)



Source https://www.wto.org/english/res_e/statis_e/trade_datasets_e.htm.

As shown in Table 2.5, Russia's share in Brazilian exports is insignificant even for a modest player in the international services market such as Brazil. The same can be said in respect to Brazil's share in Russian exports of services, as presented in Table 2.6.

TABLE 2.5
Composition of Brazilian services exports to Russia
Annual average – 2015-2019

Sector	Partner	US\$ million	% of the total
Transport	Russia	6.2	0.11
	World	5,447.8	
Travel	Russia	7.2	0.12
	World	5,902.2	
Other commercial services	Russia	16.6	0.08
	World	21,427.0	
Goods-related services	Russia	0.8	0.12
	World	663.0	
Total services	Russia	31.8	0.09
	World	34,199.6	

Source: https://www.wto.org/english/res_e/statis_e/trade_datasets_e.htm

TABLE 2.6
Composition of Russian services exports to Brazil
Annual average – 2015-2019

Sector	Partner	US\$ million	% of the total
Transport	Brazil	0.4	0.00
	World	19,468.8	
Travel	Brazil	14.8	0.16
	World	9,500.0	
Other commercial services	Brazil	1.8	0.01
	World	24,488.8	
Goods-related services	Brazil	-	0.00
	World	3,081.2	
Total services	Brazil	18.8	0.03
	World	57,444.8	

Source: https://www.wto.org/english/res_e/statis_e/trade_datasets_e.htm

It is remarkable the low level of trade between the two countries in some key areas of the services sector. According to Siscoserv⁴ statistics, in the period 2017-2019, Brazil exported to Russia US\$ 24.5 million in professional services (excluding law and

⁴ Siscoserv was an electronic system that registered the international transactions in services made by Brazilian companies. The system was discontinued in 2020.

accounting services) and US\$ 5.3 million in IT services. Imports from Russia were even lower: US\$ 6.1 million in professional services and only US\$ 0.7 million in IT services.

Notwithstanding the current low level, expanding trade in services is possible in some specific areas. Table 2.7 matches Russian imports from the world with Brazilian exports to the world for a number of activities. The same is done in Table 2.8 for Brazilian imports and Russian exports. There is certainly space for a greater flow of tourists in both directions. Also, expansion seems quite viable in computer services and in professional and technical services, areas in which both countries are, at the same time, large customers and non-negligible exporters to the world.

TABLE 2.7
Russian imports from and Brazilian exports to the World – Selected Services
Annual average – 2015-2019 (US\$ Million)

	Russian Imports From the World	Brazilian Exports to the World
Travel	32,073.0	5,902.2
Telecommunications services	1,712.0	454.2
Computer services	3,268.8	1,620.4
Information services	447.8	67.4
Research and development services	156.0	575.8
Professional and management consulting services	5,427.8	4,089.0
Technical, trade-related, and other business services	13,746.2	11,928.6

Source: https://www.wto.org/english/res_e/statis_e/trade_datasets_e.htm

TABLE 2.8
Brazilian imports from and Russian exports to the World – Selected Services
Annual average – 2015-2019 (US\$ Million)

	Brazilian imports from the world	Russian exports to the world
Travel	17,343.0	9,500.0
Telecommunications services	561.2	1,112.6
Computer services	3,413.0	3,417.0
Information services	199.4	118.6
Research and development services	76.6	400.6
Professional and management consulting services	2,259.2	5,660.6
Technical, trade-related, and other business services	24,302.2	6,432.6

Source: https://www.wto.org/english/res_e/statis_e/trade_datasets_e.htm

3 TRADE POLICY

3.1 Historical Background

Few countries have experienced more dramatic changes in their economic environment as did Russia in the last decade of the 20th century, after the disintegration of the Soviet Union and during the transition from a centrally planned structure to a capitalist market economy, and trade policy was no exception. The reconstruction of the country's foreign

trade structure, after 1991, was almost complete, starting from measures as fundamental as the abolition of the state monopoly in trade, the elimination of widespread quantitative controls, and the implementation of a tariff structure (Ahrend e Tompson, 2005).

As one might expect, the first years of this completely new regime were erratic. Foreign trade was completely free of impediments during the first eight months of 1992, until the adoption of a flat tariff rate (with few exceptions) in September of that year. In April 1993, a much more diversified tariff schedule was introduced, and the following years witnessed frequent and deep changes – partly as a response to the heightened imports driven by the strong Ruble strategy of price stabilization –, until the approval, in 1997, of legislation establishing a unified procedure for tariff revisions, according to WTO standards, leading to stabilization of the tariff regime. Another interesting characteristic of this early period was the virtually complete absence of non-tariff measures on imports – in particular, there were no quantitative barriers to trade, and no legal basis for trade remedies such as antidumping or import licensing (Afontsev, 2000). The export regime, however, was highly regulated from the beginning, with quotas and licensing for a host of “sensitive” products (Dabrowski, 1993).

The weaker currency after the 1998 crisis opened space for a simplification of the tariff regime, whose complexity in the late 1990’s gave rise to a widespread misclassification problem; in 2000 and 2001, therefore, tariffs were unified into broad commodity categories, and tariff peaks were trimmed (Afontsev, 2012).

The mid-2000’s, especially after the 2004 presidential elections, witnessed the beginning of a major turn in trade policy stance towards a more protectionist and self-reliable development strategy (Åslund, 2010). This shift was reinforced first by the 2008 crisis – to which Russian trade policy response was very active, both in the tariff and non-tariff fronts (Gerasimenko, 2012) –, and later by the difficulties posed by the sanctions imposed by the US and European countries starting in 2014.

Interestingly, between these two episodes Russian trade policy experienced a brief recess in its growing self-sufficient tendencies with the culmination, in 2012, of its two-decade process of accession to the WTO, significantly delayed by a myriad of factors ranging from mutual skepticism to internal lobbying by import-competing industries (Cristea e Miromanova, 2020).

Even before the introduction of the 2014 sanctions, however, the shift towards “economic sovereignty” was heightened, and import substitution became official State policy (Connolly e Hanson, 2016). A host of measures, ranging from sectoral incentives in government procurement to import restrictions, were included in the import substitution scheme – although transparency with regard to goals, mechanisms and expenditures is lacking (European Commission, 2020).

In Brazil, import substitution has a long-standing history. Despite being an original signatory of the 1947 General Agreement on Tariffs and Trade (GATT), Brazilian 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 clear 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, e 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.

Actually, beginning in the mid-2000s, this liberalizing trend was partly reversed. 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

The recent behavior of Russian trade policy was crucially affected by the sanctions imposed by western countries and the geopolitical tensions that ensued. Trade policy is increasingly subordinated to security concerns, and the management of foreign trade has been used as a tool to increase the country’s “economic sovereignty” (Connolly e Hanson, 2016).

In this context, the limitations imposed by the external sanctions have helped spur the import substitution regime, which is viewed as an opportunity to diversify the country’s economic structure away from commodities (especially energy) production and exports. As usual, the strategy aims at promoting exports, but its implementation is centered in protectionist measures, such as import restrictions, local content requirements, and preferential treatment for domestic producers in public procurement – which is especially relevant given the recent trend of increasing state ownership in relevant sectors (Djankov, 2015).

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.

3.3 Trade Agreements

Neither Brazil nor Russia have fully embarked on the wave of regional trade agreements that spread around the world since the 1990s. Both countries have signed relatively few deals, and none of them with relevant players in global trade⁵.

As mentioned before, Russia is a latecomer in the multilateral trade arena, having joined the WTO only in 2012; this estrangement to the trading system possibly explains why most of its earlier agreements are bilateral deals with geographically close countries in Central Asia (Uzbekistan and Turkmenistan), Southeast Europe (Serbia) and the South Caucasus (Azerbaijan and Georgia). Subsequently, Russian agreements progressed to regional pacts to replace existing bilateral agreements between countries, such as the Commonwealth of Independent States (CIS) free trade agreement and the Eurasian Economic Union (EAEU). As noted in Table 3.1, the agreements handled by Russia do not cover regions other than the neighboring ones.

The Commonwealth of Independent States (CIS) brings together Russia and some of the neighboring countries that once formed the Soviet Union. Initially, CIS was a regional organization created to develop a common economic space based on the free movement of goods, services, labor and capital; establish a consensus on monetary, tariff and tax policies; and develop methods for regulating economic activity. In 2012, eight member countries of the CIS – Russia, Armenia, Belarus, Kazakhstan, Kyrgyzstan, Moldova, Tajikistan and Ukraine⁶ – established a free trade area between them, replacing the multitude of bilateral agreements that were in place. However, the bilateral agreement between Russia and Ukraine under the CIS Free Trade Area (FTA) is suspended since 2016.

Most members of the CIS FTA are also members of the Eurasian Economic Union (EAEU), which developed from the Russia-Belarus-Kazakhstan Customs Union, formed in 2010. Established in May 2014 by those three original members, EAEU was enlarged later in that year through the joining of Armenia and Kyrgystan. EAEU is a relevant tool for promoting the economic integration of member countries, based on the idea of integration undertaken in the European Union, and allows the free movement of goods, capital, services and people. Long-term goals include the establishment of a common currency, as well as broader integration with outside partners – initial efforts in this direction were the deals with Vietnam, in 2016, and Iran, in 2019.

Other recent efforts to enlarge the geographical scope of Russia's trade deals

⁵ The first exception to this, the Mercosur-European Union FTA, is yet to be ratified, as discussed below.

⁶ Azerbaijan is a full member of the CIS but have not adhered to the free trade area.

include negotiations for a FTA with New Zealand, and another involving the Russia-Belarus-Kazakhstan Currency Union and the European Free Trade Area (EFTA, which comprises Norway, Switzerland, Iceland and Liechtenstein).

Brazil is a founding member of Mercosur, a customs union created in 1991 with its south cone neighbors Argentina, Paraguay and Uruguay. Most of the trade deals in which Brazil takes part are either signed in the scope of Mercosur or the Latin American Integration Association (ALADI). As shown in Table 3.2, through these two mechanisms, Brazil has closed free trade deals with all South American countries except Suriname and Guyana (with which only partial coverage agreements were signed), as well as a FTA with Panama and partial scope agreements with Cuba and Mexico. The latter covers mainly the automotive sector, but recently Mercosur and Mexico have been involved in talks to extend its coverage more broadly.

Deals with extra-regional partners are scarce: Brazil (also through Mercosur) has signed free trade agreements with Israel, Egypt and Palestine (although the latter is not yet in force), and partial scope agreements with India and the South African Customs Union (which includes South Africa, Botswana, Lesotho, Namibia and Eswatini).

The main effort to change this lack of integration is the recent deal signed by Mercosur and the European Union, which is yet to be approved and ratified by the members of the European bloc. Other initiatives include negotiations with relevant players such as Canada, South Korea and the EFTA, as well as hints of a possible approximation with the United States and Japan.

TABLE 3.1
Preferential trade agreements of Russia

Russian Federation - RTA Name	Coverage	Type	Year	Signatories	Remarks
Russian Federation - Azerbaijan	Goods	FTA	1993	Azerbaijan; Russian Federation	
Russian Federation - Turkmenistan	Goods	FTA	1993	Russian Federation; Turkmenistan	
Russian Federation - Uzbekistan	Goods	FTA	1993	Russian Federation; Uzbekistan	
Georgia - Russian Federation	Goods	FTA	1994	Georgia; Russian Federation	
Russian Federation - Belarus - Kazakhstan	Goods	CU	1997	Belarus; Kazakhstan; Russian Federation	This Agreement has taken place in the context of the consideration process of the Eurasian Economic Union (EAEU).
Common Economic Zone (CEZ)	Goods	FTA	2004	Belarus; Kazakhstan; Russian Federation; Ukraine	This Agreement has taken place in the context of the consideration process of the Eurasian Economic Union (EAEU).
Russian Federation - Serbia	Goods	FTA	2006	Russian Federation; Serbia	
Russian Federation - Turkmenistan	Goods	CU	2000 - 2014	Russian Federation; Turkmenistan	
Russian Federation - Uzbekistan	Goods	CU	2001 - 2008	Russian Federation; Uzbekistan	
Treaty on a Free Trade Area between members of the Commonwealth of Independent States (CIS)	Goods	FTA	2012	Armenia; Belarus; Kazakhstan; Kyrgyz Republic; Moldova, Republic of; Russian Federation; Tajikistan; Ukraine	Dates of entry into force: Armenia, Belarus, Kazakhstan, Republic of Moldova, Russian Federation and Ukraine: 2012; Kyrgyz Republic: 2013; Tajikistan: 2015. Note that a number of agreements previously in force are terminated.
Eurasian Economic Union (EAEU)	Goods, Services	CU, EIA	2015	Armenia; Belarus; Kazakhstan; Kyrgyz Republic; Russian Federation	Dates of entry force: Belarus, Kazakhstan and the Russian Federation: 2015; Armenia: 2015; Kyrgyz Republic: 2015.
Eurasian Economic Union (EAEU) - Viet Nam	Goods, Services	FTA, EIA	2016	Viet Nam; Armenia; Belarus; Kazakhstan; Kyrgyz Republic; Russian Federation	
Eurasian Economic Union (EAEU) - Iran	Goods	FTA	2019	Iran; Armenia; Belarus; Kazakhstan; Kyrgyz Republic; Russian Federation	

Source: Mario Larch (2021) and WTO (2021a).

TABLE 3.2
Preferential trade agreements of Brazil.

Brazil - RTA Name	Coverage	Type	Year	Signatories	Remarks
Southern Common Market (MERCOSUR)	Goods, Services	CU, EIA	1991	Argentina; Brazil; Paraguay; Uruguay	
Latin American Integration Association (LAIA)	Goods	PSA	1981	Argentina; Bolivia, Plurinational State of; Brazil; Chile; Colombia; Cuba; Ecuador; Mexico; Paraguay; Peru; Uruguay; Venezuela, Bolivarian Republic of	
Mercosul-Bolivia	Goods	FTA	1996	Brazil, Argentina, Paraguai, Uruguai, Bolívia	
Mercosul-Chile	Goods	FTA	1996	Brazil, Argentina, Paraguai, Uruguai, Chile	
Mercosul-Colômbia	Goods	FTA	2017	Brazil, Argentina, Paraguai, Uruguai, Colombia	Overlapped the FTA between Mercosur and Andean Community, signed in 2005
Mercosul- Andean Community	Goods	FTA	2005	Brazil, Argentina, Paraguai, Uruguai, Equador, Colombia, Venezuela	
Mercosul-Peru	Goods	FTA	2005	Brazil, Argentina, Paraguai, Uruguai, Peru	
Mercosul-Venezuela	Goods	FTA	2012	Brazil, Argentina, Paraguai, Uruguai, Venezuela	Overlapped the FTA between Mercosur and Andean Community, signed in 2005. Venezuela became a member of Mercosur, 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	
Mercosul-Cuba	Goods	PSA	2006	Brazil, Argentina, Paraguai, Uruguai, Cuba	
Brazil-Suriname	Goods	PSA	2005	Brazil, Suriname	
Brazil-Guiana-San Cristovan and Nevis	Goods	PSA	2001	Brazil-, Guiana, San Cristovan 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.
Mercosul-Palestine	Goods	FTA	2011	Palestine; Argentina; Brazil; Paraguay; Uruguay	Not yet enforced.
MERCOSUR - Southern African Customs Union (SACU)	Goods	PSA	2016	Argentina; Brazil; Paraguay; Uruguay; Botswana; Lesotho; Namibia; South Africa; Eswatini	

Source: Mario Larch (2021) and WTO (2021).

3.4 Tariff Profile

Table 3.3 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.

The first conclusion that emerges from the data is that Russia has much lower tariff protection: the simple average tariffs for all goods in Brazil is roughly twice that of Russia. Moreover, it is visible from the second panel of Table 3.3 that the difference stems mainly from the industrial goods, while the tariff averages for agricultural goods is the same.

The third panel of Table 3.3, in turn, shows that Russian tariffs are much smaller than those of Brazil for finished and semi-finished products, but higher for raw materials. Consequently, neither country seems to follow completely the tariff escalation principle, even though both apply higher tariffs for consumer goods: Russian tariffs on raw materials are much higher than they should be according to the principle, and similarly for Brazil in the case of capital goods – even though for the latter 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 3.3 presents the average tariffs by two-digit ISIC rev. 3 sectors, and the aforementioned difference in protection of manufactured goods is stark. While the tariffs for agricultural and mineral commodities and for food industries are either similar or higher for Russia, the opposite is true for almost all the manufacturing sectors, from traditional industries such as textiles, apparel and footwear to more sophisticated ones, like electrical machinery or information and communication equipment.

TABLE 3.3
Sectoral import tariffs in Brazil and Russia - 2019

Most favored nation (MFN) and bilateral tariffs (in %)

Products	Brazil (MFN)	Brazil (Bilat. with Russia)	Russia (MFN)	Russia (Bilat. with Brazil)
Total Trade	13.8	11.4	6.7	6.2
WTO HS Aggricultural	10.1	15.7	10.1	9.0
WTO HS Industrial	14.2	11.3	6.2	5.8
WTO HS Petroleum	0.4		4.4	
Capital goods	13.0	12.1	3.5	3.2
Consumer goods	19.5	17.1	9.0	8.3
Intermediate goods	11.8	8.0	6.3	6.1
Raw materials	6.8	1.5	8.0	8.8
Agriculture & Hunting	7.4		5.4	4.4
Forestry	5.4		6.9	7.8
Fishing	8.8		7.2	
Coal Mining & Peat Extraction	0.0	0.0	4.6	
Petroleum and Gas Extraction	0.0		2.9	
Mining of Uranium and Thorium Ores	4.0		5.0	
Mining of Metal Ores	2.2		1.7	2.5
Other Mining and Quarrying	4.0	2.7	5.0	5.4
Food & Beverages	12.5	15.2	12.7	13.9
Tobacco	18.0	20.0	15.9	
Textiles	24.2	33.2	8.0	9.3
Wearing Apparel	33.8	35.0	11.3	10.6
Leather and Shoes	20.6	27.1	6.9	7.4
Wood Products	9.4	14.0	7.9	8.1
Paper Products	11.9	11.2	7.4	6.4
Publishing and Printing	10.1	5.6	4.5	6.8
Oil and Coke Refinery	1.9	3.3	4.8	
Chemical Products	8.0	7.5	4.7	4.7
Rubber and Plastics	15.0	14.4	6.2	5.6
Other Non-Metallic Mineral Products	10.8	10.0	10.5	10.6
Basic Metals	9.8	8.8	6.4	5.9
Fabricated Metal Products	16.0	15.5	8.4	8.0
Machinery & Equipment nes	13.4	13.2	3.3	2.8
Office, Accounting and Computing Equipment	11.9	9.8	0.2	0.0
Electrical Machinery and Apparatus	14.6	14.0	5.6	6.1
Radio, Television and Communication Medical, Precision and Optical Equipment	12.8	5.2	3.4	0.5
Motor Vehicles	13.7	11.2	5.0	3.6
Other Transport Equipment	25.2	16.6	8.0	5.8
Furniture and other manufactures nes	11.4	3.5	7.3	8.5
	17.4	19.6	9.9	9.7

Source: WITS.

3.5 Non-Tariff Measures

There is growing evidence that the widespread reduction in 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). This trend was particularly acute in the aftermath of the global crisis from 2008 onwards, when a large set of countries, bound by previous commitments (such as WTO's multilateral rules or regional arrangements) that precluded increases in tariffs, resorted to NTMs in order to try to insulate their economies from the adverse effects of the meltdown (Nicita, Neagu, and Kee, 2010; Niu et al., 2018).

One of the ways used in the literature to quantify this rise in non-tariff protection is through the computation of ad-valorem equivalents (AVE), which, broadly speaking, measure the tariff rate that would lead to the same protection level imposed by a given measure or set of measures. A recent example is Niu et al. (2018); their estimates show that the average AVE across all countries in their sample (composed of 97 countries) has increased (albeit non-monotonically) from 20% in 1997 to 57% in 2015. For Brazil, the figures were 39% in 1997 and 76% in 2015, suggesting an above-average level of non-tariff protection; for Russia, data are only available from 2009 onwards, rising from 61% in that year to 70% in 2015 – that is, broadly similar levels for the two countries, at least in the period covered by available data.

In this section, we analyze the incidence of NTMs in Russia and Brazil, using data from UNCTAD TRAINS⁷ and COMTRADE⁸. We explore the data using an inventory approach based on three distinct indices⁹: the frequency index (*FI*), given by the percentage of products in the nomenclature exposed to any NTM; the prevalence score (*PV*), which is the average number of unique NTM codes applied to a set of commodities; and the coverage ratio (*CR*), the percentage of imports exposed to any NTM. The effort to understand NTMs is linked to the development of the International Classification of Non-Tariff Measures, a nomenclature that classifies each measure using up to a 4-digit code. Chart B.1, available in 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 exporting to the economy; Specific Measures are measures applied to an arbitrary set of partners.

Table 3.4 describes the incidence of NTMs in Russia, Brazil and the average of a sample of countries. Considering all measures, both Russia and Brazil cover more commodity codes (*FI*) and import value (*CR*) with NTMs than the average of reporters. Brazil applies NTMs to almost 76% (*FI*) of all commodities 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. Russia applies NTMs to almost all commodities (*FI*) and 100% of trade (*CR*). On average, each 6-digit level code has more than 6 distinct NTM

⁷ Available at: <https://trains.unctad.org/>.

⁸ Available at: <https://comtrade.un.org/>.

⁹Nicita and Gourdon (2013) and UNCTAD (2017) are key references on the use of inventory approach to describe NTMs. The methodological Appendix B provides formalism on how to compute the measures.

codes applied to it (*PV*).

Most NTMs 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). Both chapters cover more than 80% of imports and Chapter B is also the one most intensively used (*PV*). Other important chapters are A (Sanitary and Phytosanitary Measures - SPS); C (Pre-shipment inspection and other formalities) and P (Export-related measures). In Russia, more than 93% of commodities in the nomenclature have Chapter P measures applied to. Considering the cover ratio (*CR*), other important chapters are B, E and A, the most intensively used (*PV*).

The results regarding global measures are similar for both countries and show that the incidence of measures applied to the world in the two countries is broader than the average of reporters. The incidence of specific measures is a distinguishing feature of the Russian case, being broader than Brazil and the average of reporters. Specific measures cover more than 93% of commodities in the nomenclature (*FI*), what represents 95% of imports (*CR*). The results for the average of countries are 11.79% and 10.80%, respectively. 88% of imports are covered by Chapter P and close to 39% covered by Chapter E.

Table 3.4
Incidence of Non-Tariff Measures - Frequency Index, Cover Ratio and Prevalence Score, by
type of measure and chapter. Brazil and Russia.

Measures/Chapters	Russia			Brazil			Sample of Reporters (1)		
	FI (%)	CR (%)	PV	FI (%)	CR (%)	PV	FI (%)	CR (%)	PV
All Measures	99.23	99.47	6.19	75.95	86.24	6.72	70.36	71.96	5.14
A	20.51	17.13	2.12	57.18	69.84	2.20	24.99	18.07	1.66
B	61.89	79.38	1.90	73.61	81.85	2.98	60.72	63.88	2.19
C	24.15	17.69	0.25	26.68	42.47	0.27	8.55	6.81	0.09
E	22.05	40.26	0.33	58.57	80.88	1.02	40.63	46.81	0.58
F	1.02	5.12	0.01	0.92	6.30	0.01	6.43	7.55	0.10
G	0.00	0.00	0.00	0.00	0.00	0.00	1.37	2.07	0.01
H	7.65	19.15	0.08	0.61	9.55	0.01	1.25	1.82	0.01
I	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.13	0.00
P	93.60	96.10	1.51	23.97	45.63	0.25	19.35	16.77	0.47
General Measures	72.78	86.70	4.77	75.91	86.24	6.70	68.07	70.19	4.81
A	19.86	16.95	1.97	57.18	69.84	2.18	24.31	17.56	1.61
B	61.89	79.38	1.90	73.61	81.85	2.98	60.02	63.07	2.15
C	24.13	17.69	0.24	26.68	42.47	0.27	5.35	5.14	0.06
E	12.54	31.21	0.13	58.53	80.88	1.02	37.10	44.81	0.52
F	1.02	5.12	0.01	0.92	6.30	0.01	6.27	7.16	0.09
G	0.00	0.00	0.00	0.00	0.00	0.00	1.37	2.07	0.01
H	7.65	19.15	0.08	0.61	9.55	0.01	1.19	1.76	0.01
I	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.07	0.00
P	29.10	45.37	0.44	23.68	45.59	0.25	14.38	12.83	0.35
Specific Measures	93.62	95.42	1.57	4.44	8.40	0.09	11.79	10.80	0.42
A	14.39	12.27	0.23	3.61	4.00	0.07	3.41	2.33	0.09
B	0.21	0.06	0.00	0.52	4.37	0.01	4.61	3.33	0.06
C	5.51	5.04	0.06	0.00	0.00	0.00	3.49	1.89	0.04
E	19.55	38.91	0.20	0.54	4.37	0.01	4.51	3.51	0.07
F	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.39	0.00
G	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
H	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.06	0.00
I	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.06	0.00
P	84.94	88.63	1.07	0.29	0.04	0.00	7.32	7.11	0.15

Note: The table displays inventory indexes of the incidence of Non-Tariff Measures applied by India and Brazil. The results are presented by the type of NTM, All Measure, General or Specific, and chapter of the NTM nomenclature (version of 2017). 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. Data collected in 2016.

(1) Sample 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

Source: UNCTAD TRAINS and COMTRADE.

Table 3.5 lists and describes the 4-digit level commodity codes that have measures applied by Brazil specifically to Russia. All NTMs are covered in Chapter A, although none of the codes are actually imported by Brazil. Differently, a variety of 163 distinct 4-digit level commodities is affected by NTMs applied by Russia to Brazil. The average *FI* of each heading is more than 82% and NTMs cover 20% of imports. Most of headings are included in chapters 84 (Nuclear reactors, boilers, machinery and mechanical appliances; parts thereof) and chapters 01 to 05 (Live animals, animal products section). Table B.1, in Appendix B, describes the incidence of NTMs by the 2-digit level of the

Harmonized System, considering All Measures.

Table 3.5
NTM applied by Brazil specifically to Russia
Inventory Indexes and NTM4-digit codes, by HS4 code

HS4	Description	Specific Measures Applied by Russia			
		FI (%)	CV (%)	PV (%)	NTM Codes
0901	Coffee, whether or not roasted or decaffeinated; husks and skins; coffee substitutes containing coffee in any proportion	20	0	0.2	A9
1001	Wheat and meslin	50	0	0.5	A83
0101	Horses, asses, mules and hinnies; live	100	0	4	A82; A83;A84; A86

Note: 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 the Partner

Brazil is one of the most intense users of trade defense measures in the world, especially concerning anti-dumping rights. According to the last report of the WTO Committee on Anti-dumping Practices¹⁰, Brazil ranked third in the number of anti-dumping measures in force in June 2020, with 159 measures¹¹, after United States (517 measures) and India (173 measures). Russia issued only 16 anti-dumping measures.

Table 3.6 lists the products that are subject to anti-dumping measures imposed since 2010 by Brazil and that affects Russia. There are seven such measures, most of which related to chemicals, iron and steel and rubber products. Two of them were terminated, so there are five still in force. Only one affects exclusively Russian Federation: Magnesium containing at least 99.8% by weight of magnesium, imposed in 2011.

Russian Federation did not impose any anti-dumping measure that affects Brazil.

¹⁰ <https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/G/L/1366.pdf&Open=True>.

¹¹ The number considers each pair of measure-country affected.

TABLE 3.6
Antidumping measures applied by Brazil that affects Russian Exports (2010-2020).

Member/Observer	Implemented	Terminated	Affected chapters	Affected products	Description	Affected trading partners
Brazil	2020		29	2917	Phthalic anhydride	Israel, Russian Federation
	2020	2020	29	291735	Phthalic anhydride	Israel, Russian Federation
	2016		29	290513	N-butanol	Russian Federation, South Africa
	2013		40	401120	Radial tyres of rubber for buses and lorries	Japan, Korea, Republic of, Russian Federation, South Africa, Chinese Taipei, Thailand
	2012		72	720851, 720852	Ron or non-alloy steel, of a width of 600 mm or more, hot-rolled, not clad, plated or coated, of a thickness of 4.75 mm or more	Australia, China, Korea, Republic of, Russian Federation, South Africa, Ukraine
	2011		81	810411	Magnesium containing at least 99.8% by weight of magnesium	Russian Federation
	2010	2011	72	720851, 720852	Heavy plates	Korea, Republic of, Mexico, Romania, Russian Federation, Spain, Chinese Taipei, Turkey

Source: Own elaboration based on the WTO (2021b) and Ministry of Economy (2021). * Measures updated by the Special Secretariat for Foreign Trade and International Affairs (Ministry of Economy, Brazil) and not notified to the WTO.

4 BILATERAL DIRECT INVESTMENT

Brazil and Russia are two important destinations of FDI. During the booming 2000's, they also became important sources of FDI, with investments in both advanced economies and the developing world. However, bilateral FDI is negligible. As displayed in Table 4.1, Russia's share in Brazilian outward FDI stock is just 0.0016%. Those US\$ 6 million is a drop in the ocean of US\$ 493,156 million invested by foreigners in Russia, according to the Bank of Russia (CBR)¹². However, things do not change very much when it comes to Brazil's inward FDI: Russia is the source of mere 0.0289% of the total stock. Again, a very small amount when we consider Russia's outward stock of US\$ 407,318 million by the end of 2019. According to the Census of Foreign Capital, carried out by the Central Bank of Brazil, there were, in 2015, only 19 firms in Brazil with Russian investment.

TABLE 4.1
Brazil - FDI stocks (equity)
(US\$ million)

	2010	2015	2019
Outward FDI			
Total	171,778	299,110	385,009
Russia	1	4	6
Russia/Total	0.0006%	0.0013%	0.0016%
Inward FDI			
Total	587,209	362,516	623,317
Russia	65	57	180
Russia/Total	0.0111%	0.0157%	0.0289%

Source: Central Bank of Brazil.

During the research for this Note, very few operations of Russian companies in Brazil – and vice-versa – were found. We can mention the investments of Rosneft in natural gas prospection in the Solimoes River basin, inherited from TNK-BP when this company was acquired by Rosneft, in 2013; Power Machines' controlling stake in Fezer, a producer of capital goods in the State of Santa Catarina, acquired in 2015; and Uralkali's stake in Terminais Portuários da Ponta do Felix, a company that operates port terminals in Antonina, State of Parana, which is used for importing fertilizers. Sodrugestvo Group, the largest processor of soybeans in Russia, also has industrial operations in Brazil, but the company is headquartered in Luxembourg since 2012. In the other direction, aside a few sales offices established in Russia by Brazilian exporters, we could only find the industrial plant of commercial refrigerators producer Metalfrio, in Kaliningrad.

There is no investment treaty involving Brazil and Russia. Brazil has been quite averse to the traditional blueprint of bilateral investment treaties (BITs), especially to the usual investor-State dispute clauses. For this reason, the country has signed a relatively low number of BITs (26), most of which has never been ratified by the Brazilian

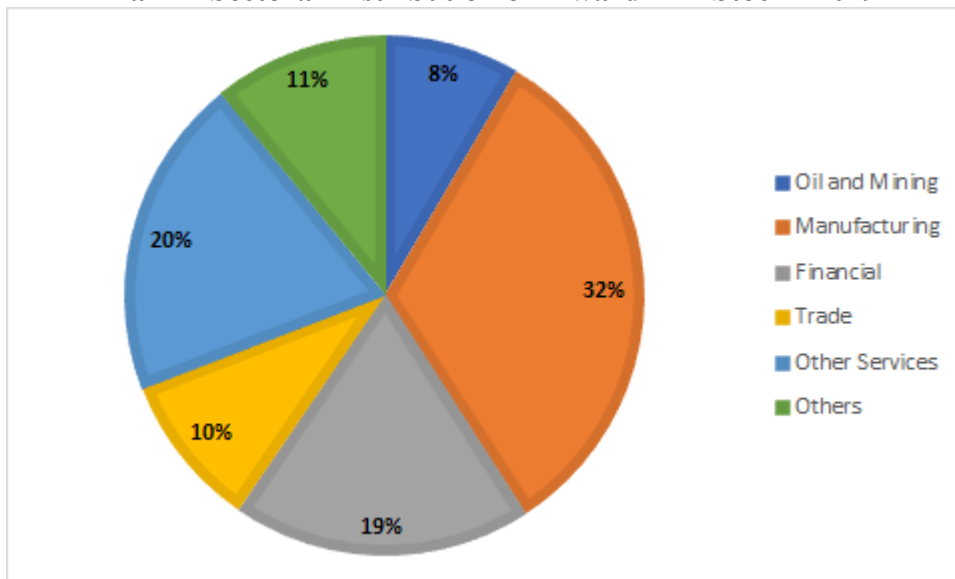
¹² Available at:

<http://www.cbr.ru/vfs/eng/statistics/credit_statistics/direct_investment/CDIS_Out_e_2019.xlsx>

Parliament. At present, Brazil has only 2 BITs in force, with Angola and Mexico, while Russia has signed 78 BITs, of which 62 are currently in force.

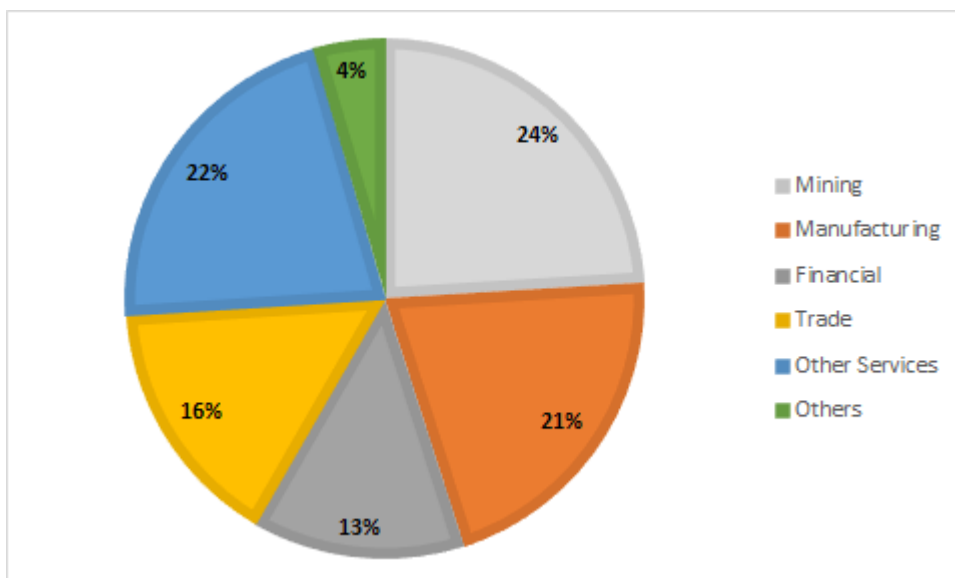
Given the almost nonexistent bilateral FDI, it is difficult to predict potential areas for new investments. These will depend on the location advantages of host countries as well as the competitive advantages of investing firms. Thus, Figures 4.1 and 4.2, which display the current sectoral distribution of inward FDI stocks in Brazil and Russia, are simply a rough indication of potential areas for future investments. Nonetheless, a high share may be interpreted both as an opportunity and as a barrier, if such sector is currently saturated.

FIGURE 4.1
Brazil – Sectoral Distribution of Inward FDI Stock - 2019



Source: Central Bank of Brazil.

FIGURE 4.2
Russia – Sectoral Distribution of Inward FDI Stock - 2020



Source: Bank of Russia.

6 COOPERATION IN TECHNOLOGY

Brazil and Russia are both upper middle-income economies, in which small groups of world-class companies coexist with countless firms operating far from the efficiency frontier. Lack of access to adequate technologies tends to perpetuate this sort of dualism. Catching up with the richest economies requires efforts to make the best technologies available to domestic firms, and, as the country gets closer to the technological frontiers, efforts to develop cutting edge technologies on its own or in cooperation with other countries is fundamental to keep ascending.

Brazil's recent history in science, technology and innovation (SCI) is somewhat paradoxical. The country has been successful in climbing scientific rankings in terms of publications. However, this has not been (fully) translated in the number of patents granted (Cavalcante, 2009). Such a pattern resembles the notorious divorce between basic research and the commercial use of knowledge that permeated the Soviet Union's economy (Pomeranz, 2012).

Over the last decade, Brazil managed to increase R&D spending, from about 1% of GDP in the 2000's, to 1.26% in 2016-17. In Russia, the correspondent figures have oscillated in the range 1-1.1% in the last few years¹³. Compared to China – whose spending on R&D has been exceeding 2% of GDP since 2014 – these cannot be viewed as outstanding performances. Furthermore, while in China most of the innovation effort is financed by the business enterprise sector, in Brazil and Russia it is mostly financed by public funds¹⁴. Perhaps not surprisingly, both countries are not rising stars in innovation indicators. Indeed, Brazil appears in 62nd position in the Global Innovation Index (GII) 2020, while Russia ranks 47th (Cornell University; INSEAD; WIPO, 2020) – for comparison, in the first edition of the GII (2007), they ranked 40th and 54th, respectively.

Scientific cooperation among BRICS countries has been in the grouping's agenda since, at least, 2011, when Russia promoted a Senior Official meeting on the matter, encompassing fields such as microelectronics, nanotechnologies and materials, biotechnologies, energy efficiency and renewable energy, and research on climate change. Since then, a series of events, including Ministerial meetings, has taken place, with a continued enlargement of the initial agenda. An increasing formalization can also be perceived, as exemplified by the constitution of permanent working groups in several areas¹⁵.

At the bilateral level, the Brazilian-Russian High-Level Cooperation Commission (CAN) was established in 1997, co-chaired by the Vice-President of Brazil and the Prime Minister of Russia. The technical and operational mechanism of the CAN is the Brazil-Russia Intergovernmental Commission for Economic, Commercial, Scientific and Technological Cooperation (CIC), chaired by Brazil's Secretary-General of Foreign Affairs and Russia's Deputy Minister of Economic Development. In 2002, the countries' relations was upgraded to the status of "strategic partnership". In 2004, during the preparations for the visit of President Vladimir Putin to Brazil, a Cooperation Program

¹³ Available at: < <https://data.worldbank.org/indicator/GB.XPD.RSDV.GD.ZS?locations=BR-RU-CN>>

¹⁴ Available at: < https://stats.oecd.org/Index.aspx?DataSetCode=MSTI_PUB>. See also Koeller, Viotti and Rauen (2016).

¹⁵ For further details, see Kubota (2020).

on Science and Technology for the period 2004-06 was signed, establishing a number of projects in the areas of biotechnology, health, astronomy, metrology, food technology, earth sciences and energy. During that President Putin's visit, a "technological alliance" between the two countries was celebrated. In 2010, during a visit of President Luiz Inácio Lula da Silva to Moscow, the Strategic Partnership Action Plan was signed, setting objectives, aims and guidelines for bilateral relations. In 2012, during a visit of President Dilma Rousseff to Russia, that Plan was further developed in a new official document. Closer ties have been forged in the last few years, under the presidencies of Michel Temer and Jair Bolsonaro, with the signature of agreements in several areas.

Nonetheless, it must be said that, during Head-of-State visits, numerous memoranda of understanding (and documents alike) are usually signed, but quite often they remain in the world of intentions, not leading to further developments. For this reason, it is worth to cite initiatives that resulted in real cooperation, such as the participation of Brazilian research institutions in the Russian satellite navigation system GLONASS. Brazil is the largest host of the system outside Russia, with two reception stations at the University of Brasilia, one at the Federal University of Santa Maria, in Brazil's extreme South, and another in the Technological Institute of Pernambuco, in the Northeast region. There has also been some exchange between Brazilian and Russian science parks. Indeed, in 2018 representatives of three Brazilian science parks visited Russia aiming at facilitating the internationalization of Brazilian start-ups in Russia.

6 SUGGESTED FURTHER STEPS TO FOSTER BILATERAL RELATIONS

Previous sections have shown that potential for intensifying the economic relations between Brazil and Russia exists but is largely overlooked. Constructing an agenda, with strong political support, may help to foster the dormant potential. Given the current situation, we do not give priority to any of the suggested measures, since all of them could help to get the two economies closer. However, we acknowledge that they are likely to face various internal political economy challenges until become reality. The measures include:

- i) assign preferential status to the trading partner, in order to improve its competitive edge vis-à-vis third parties. Brazil and Russia might consider the negotiation of a partial trade agreement, focused on products in which the countries show greater potential of increasing exports to the partner, like the ones highlighted in section 2 (and others that could be identified by in-depth studies). This agreement should include the reduction or even the elimination of some non-tariff measures, like the ones applied by Russia on Brazilian meat exports. This agreement should be considered as a first step towards a more ambitious and comprehensive free trade agreement.
- ii) despite the well-known aversion to traditional BITs, Brazil has, in recent years, put in place a new model of investment treaty, generically known as Agreement on Cooperation and Facilitation of Investments (ACFI). In order to encourage bilateral FDI, Brazil and Russia could negotiate an ACFI, whose

clauses tend to be less draconian than those found in usual BITs. This action could be viewed as a signal of the commitment of host countries, thus reducing investors' perceived risks.

- iii) negotiations to foster joint R&D projects in areas in which both countries have recognized expertise, in basic research and/or in business enterprise R&D. Areas of potential cooperation include (but are not restricted to): IT, biotechnology, nanotechnology, new materials, energy and defense industry.
- iv) make more effective use of the existing cooperation mechanisms, especially the Brazilian-Russian High-Level Cooperation Commission (CAN), as a way of strengthening the bilateral "strategic partnership" and of putting into practice the ideas and commitments made over the last 10 to 20 years, as established in several agreements and memoranda of understanding.

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APPENDIX A: TRADE OPPORTUNITIES

TABLE A.1

List of Brazilian Export Opportunities to Russia, by HS4 code

HS4	Description	Imports Russia	Exports Brazil	Exports Bra to Rus	RCA Brazil	RCD Russia	M-S Brazil
0102	Live bovine animals	200,850.5	392,536.0	-	1.6	5.9	-
0201	Meat of bovine animals, fresh or chilled	324,214.0	757,898.0	720.1	1.0	1.6	0.22
0206	Edible offal of bovine animals, swine, sheep, goats, horses, asses, mules or hinnies, fresh, chilled or frozen	170,812.7	722,728.3	15,441.9	1.7	13.4	9.04
0305	Fish, dried, salted or in brine; smoked fish, whether or not cooked before or during the smoking process; flours, meals and pellets of fish, fit for human consumption	170,730.5	81,213.4	-	2.0	1.2	-
0804	Dates, figs, pineapples, avocados, guavas, mangoes and mangosteens, fresh or dried	201,731.6	447,631.4	17,475.1	1.0	7.5	8.66
0806	Grapes, fresh or dried	391,115.6	139,609.7	166.9	2.6	1.4	0.04
0904	Pepper of the genus Piper; dried or crushed or ground fruits of the genus Capsicum or of the genus Pimenta	48,103.3	225,028.4	2,204.5	1.1	1.3	4.58
0910	Ginger, saffron, turmeric (curcuma), thyme, bay leaves, curry and other spices	40,400.4	31,816.6	1,784.8	1.2	1.7	4.42
1301	Lac; natural gums, resins, gum-resins and oleoresins (for example, balsams)	29,219.6	32,069.2	0.2	2.4	1.0	0.00
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	194,306.3	96,729.1	1,746.6	2.1	1.9	0.90
1804	Butter, fat and oil, from cocoa	210,758.7	124,776.3	-	2.7	3.1	-
1805	Cocoa (powder), without added sugar or other sweeteners	109,306.5	49,025.5	40.8	3.5	1.7	0.04
2106	Food preparations not elsewhere specified or included	831,780.4	626,139.4	15,560.4	1.5	20.7	1.87
2309	Preparations of a kind used in animal feeding	738,456.3	353,615.4	5,660.8	1.8	4.4	0.77
2506	Quartz (other than natural sands); quartzite, whether or not roughly trimmed or merely cut, by sawing or otherwise, into blocks or slabs of a rectangular (including square) shape	9,803.9	51,099.7	189.8	1.0	2.4	1.94
2507	Kaolin and other kaolinic clays, including calcined	33,686.5	256,367.4	2,461.8	1.3	1.7	7.31
2514	Slate, whether trimmed or merely cut, by sawing or otherwise, into blocks or slabs of a square or rectangular shape	1,396.9	6,804.6	2.8	1.2	1.3	0.20
2519	Natural magnesium carbonate (magnesite); fused magnesia; dead-burned (sintered) magnesia, whether or not containing small quantities of other oxides added before sintering; other magnesium oxide, whether or not pure	63,338.2	110,521.7	300.6	2.0	1.8	0.47
2525	Mica, including splittings; mica waste	3,557.2	3,204.1	2.9	1.1	2.8	0.08
2602	Manganese ores & concentrates inc mangnfrs iron ores	274,849.0	551,744.9	0.1	2.3	1.6	0.00
2818	Artificial corundum, whether or not chemically defined; aluminium oxide; aluminium hydroxide	1,948,321.9	2,867,677.5	132,317.7	8.0	1.5	6.79
2820	Manganese oxides	13,079.8	7,066.7	24.6	2.3	1.3	0.19
2821	Iron oxides and hydroxides; earth colours containing 70 % or more by weight of combined iron evaluated as Fe2O3	28,033.7	28,532.0	-	2.1	1.6	-
2825	Hydrazine and hydroxylamine and their inorganic salts; other inorganic bases; other metal oxides, hydroxides and peroxides	145,033.5	200,126.4	1,636.0	2.1	2.8	1.13
2829	Chlorates and perchlorates; bromates and perbromates; iodates and periodates	23,829.1	13,248.1	0.3	2.6	3.4	0.00
2847	Hydrogen peroxide, whether or not solidified with urea	36,699.1	52,710.9	-	5.4	3.3	-

TABLE A.1 (cont.)
List of Brazilian Export Opportunities to Russia, by HS4 code

HS4	Description	Imports Russia	Exports Brazil	Exports Bra to Rus	RCA Brazil	RCD Russia	M-S Brazil
2923	Quaternary ammonium salts and hydroxides; lecithins and other phosphoaminolipids, whether or not chemically defined	56,042.1	51,568.9	1,565.7	1.7	1.7	2.79
3504	Peptones, other proteins and derivatives, etc, hide powder	110,067.7	77,092.8	1,959.8	2.3	2.8	1.78
3605	Matches, other than pyrotechnic articles	2,064.0	3,212.8	-	2.2	1.2	-
3912	Cellulose and its chemical derivatives, not elsewhere specified or included, in primary forms	194,937.8	88,403.2	802.6	1.3	2.6	0.41
4011	New pneumatic tyres, of rubber	2,039,204.1	1,039,590.8	1,823.1	1.2	2.0	0.09
4302	Tanned or dressed furskins (including heads, tails, paws and other pieces or cuttings), unassembled, or assembled (without the addition of other materials) other than those of heading No 4303	22,198.6	26,032.6	33.9	1.5	1.1	0.15
4410	Particle board and similar board (for example, oriented strand board and waferboard) of wood or other ligneous materials, whether or not agglomerated with resins or other organic binding substances	133,571.9	123,725.6	-	1.2	1.1	-
4411	Fibreboard of wood or other ligneous materials, whether or not bonded with resins or other organic substances	209,996.2	158,727.9	166.8	1.5	1.7	0.08
4810	Paper and paperboard, coated on one or both sides with kaolin (china clay) or other inorganic substances, with or without a binder, and with no other coating, whether or not surface-coloured, surface-decorated or printed, in rolls or rectangular (including	640,060.4	302,575.3	1,142.3	1.0	1.8	0.18
4811	Paper, paperboard, cellulose wadding and webs of cellulose fibres, coated, impregnated, covered, surface-coloured, surface-decorated or printed, in rolls or rectangular (including square) sheets, of any size, other than goods of the kind described in head	670,522.3	235,498.9	-	1.0	2.6	-
4813	Cigarette paper, whether or not cut to size or in the form of booklets or tubes	99,615.8	30,380.0	1,512.0	1.3	3.6	1.52
5607	Twine, cordage, ropes and cables, whether or not plaited or braided and whether or not impregnated, coated, covered or sheathed with rubber or plastics	27,003.6	46,570.4	49.5	1.9	1.0	0.18
6402	Other footwear with outer soles and uppers of rubber or plastics	774,130.6	396,069.8	5,090.6	1.1	1.9	0.66
6406	Parts of footwear (including uppers whether or not attached to soles other than outer soles); removable insoles, heel cushions and similar articles; gaiters, leggings and similar articles, and parts thereof	166,761.6	120,262.7	1,037.0	1.4	1.7	0.62
6802	Worked monumental or building stone (except slate) and articles thereof, other than goods of heading 6801; mosaic cubes and the like, of natural stone (including slate), whether or not on a backing; artificially coloured granules, chippings and powder, of	131,086.5	803,112.9	2,221.7	7.2	1.0	1.69
6814	Worked mica and articles of mica, including agglomerated or reconstituted mica, whether or not on a support of paper, paperboard or other materials	3,592.3	7,478.3	-	1.6	2.0	1.15
6902	Refractory bricks, blocks, tiles and similar refractory ceramic constructional goods, other than those of siliceous fossil meals or similar siliceous earths	43,917.8	107,570.2	473.1	1.1	2.1	1.89
6907	Unglazed ceramic flags and paving, hearth or wall tiles; unglazed ceramic mosaic cubes and the like, whether or not on a backing	54,013.1	377,551.1	75.3	1.9	1.9	1.36
7208	Flat-rolled products of iron or non-alloy steel, of a width of 600 mm or more, hot-rolled, not clad, plated or coated	186,295.4	703,910.9	-	1.4	1.0	0.96

TABLE A.1 (cont.)
List of Brazilian Export Opportunities to Russia, by HS4 code

HS4	Description	Imports Russia	Exports Brazil	Exports Bra to Rus	RCA Brazil	RCD Russia	M-S Brazil
7209	Flat-rolled products of iron or non-alloy steel, of a width of 600 mm or more, cold-rolled (cold-reduced), not clad, plated or coated	113,183.3	247,411.4	32.4	1.0	1.1	1.24
7214	Other bars and rods of iron or non-alloy steel, not further worked than forged, hot-rolled, hot-drawn or hot-extruded, but including those twisted after rolling	65,426.7	352,253.9	-	1.2	1.8	1.04
7304	Tubes, pipes and hollow profiles, seamless, of iron (other than cast iron) or steel	126,383.2	732,371.6	79.4	1.0	2.3	1.66
7904	Zinc bars, rods, profiles and wire	909.4	4,152.6	-	1.7	1.2	1.02
8211	Knives with cutting blades, serrated or not (including pruning knives), other than knives of heading No 8208, and blades therefor	23,280.9	65,821.4	1,919.5	1.0	1.8	1.27
8212	Razors and razor blades (including razor blade blanks in strips)	30,854.3	155,648.1	-	1.3	2.5	1.18
8309	Stoppers, caps and lids (including crown corks, screw caps and pouring stoppers), capsules for bottles, threaded bungs, bung covers, seals and other packing accessories, of base metal	59,830.9	188,032.4	2.6	1.2	2.1	5.30
8410	Hydraulic turbines, water wheels, and regulators therefor	7,929.3	67,036.9	2,954.3	5.3	4.9	3.67
8429	Self-propelled bulldozers, angledozers, graders, levellers, scrapers, mechanical shovels, excavators, shovel loaders, tamping machines and road rollers	177,931.2	1,706,821.0	27,268.8	3.7	2.8	1.13
8432	Agricultural, horticultural or forestry machinery for soil preparation or cultivation; lawn or sports-ground rollers	34,303.4	436,032.6	452.9	1.1	4.3	1.20
8433	Harvesting or threshing machinery, including straw or fodder balers; grass or hay mowers; machines for cleaning, sorting or grading eggs, fruit or other agricultural produce, other than machinery of heading 8437	255,777.3	623,194.6	414.4	1.2	2.2	1.30
8437	Machines for cleaning, sorting or grading seed, grain or dried leguminous vegetables; machinery used in the milling industry or for the working of cereals or dried leguminous vegetables, other than farm-type machinery	24,193.5	63,519.5	23.8	1.3	2.8	0.10
8455	Metal-rolling mills and rolls therefor	90,157.7	179,161.2	877.1	1.2	3.2	0.97
8474	Machinery for sorting, screening, separating, washing, crushing, grinding, mixing or kneading earth, stone, ores or other mineral substances, in solid (including powder or paste) form; machinery for agglomerating, shaping or moulding solid mineral fuels,	112,572.2	822,432.8	3,328.4	1.0	4.0	2.96
8501	Electric motors and generators (excluding generating sets)	650,939.2	1,016,929.7	7,564.7	1.1	1.4	
8602	Other rail locomotives; locomotive tenders	39,729.2	17,883.5	-	1.5	1.7	
8701	Tractors (other than tractors of heading 8709)	92,182.3	1,558,103.1	164,008.2	2.0	2.2	
8802	Other aircraft (for example, helicopters, aeroplanes); spacecraft (including satellites) and suborbital and spacecraft launch vehicles	613,512.3	5,994,791.0	147,165.3	2.2	3.1	
9303	Other firearms and similar devices which operate by the firing of an explosive charge (for example, sporting shotguns and rifles, muzzle-loading firearms, Very pistols and other devices designed to project only signal flares, pistols and revolvers for fir	2,797.2	20,105.0	-	1.1	1.1	
9609	Pencils (other than pencils of heading 9608), crayons, pencil leads, pastels, drawing charcoals, writing or drawing chalks and tailors' chalks	25,063.5	32,729.6	82.0	4.2	1.6	

Source: Elaborated by the authors.

TABLE A.2
List of Russian Export Opportunities to Brazil, by HS4 code

HS4	Description	Imports Brazil	Exports Russia	Exports Rus to Bra	RCA Russia	RCD Brazil	M-S Russia
0303	Fish, frozen, excluding fish fillets and other fish meat of heading 0304	211.9	-	0.0	6.5	1.0	0.01
0304	Fish fillets and other fish meat (whether or not minced), fresh, chilled or frozen	315.3	633.0	0.0	1.2	1.3	0.01
0509	Natural sponges of animal origin	41.6	23.7	-	3.4	13.6	-
0713	Dried leguminous vegetables, shelled, whether or not skinned or split	115.3	342.8	-	1.8	1.4	-
0909	Seeds of anise, badian, fennel, coriander, cumin or caraway; juniper berries	20.0	20.0	-	1.4	3.2	-
1001	Wheat and meslin	1,381.0	3,827.3	8.0	5.8	4.7	0.58
1003	Barley	157.7	325.7	-	2.6	2.8	-
1008	Buckwheat, millet and canary seed; other cereals	21.0	27.3	0.1	1.5	2.5	0.30
1109	Wheat gluten, even dried	30.5	37.6	-	1.0	1.9	-
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 or their fractions of heading No 1516	89.4	117.7	-	1.2	2.1	-
2102	Yeasts (active or inactive); other single-cell micro-organisms, dead (but not including vaccines of heading No 3002); prepared baking powders	59.0	51.9	-	1.1	2.8	-
2510	Natural calcium phosphates, natural aluminium calcium phosphates and phosphatic chalk	156.6	302.2	-	5.1	6.0	-
2608	Zinc ores and concentrates	254.0	263.0	-	1.0	2.1	-
2701	Coal; briquettes, ovoids and similar solid fuels manufactured from coal	3,220.4	19,005.9	304.5	6.4	2.5	9.46
2704	Coke etc of coal, lignite or peat, retort carbon	501.5	554.0	-	3.3	6.8	-
2710	Petroleum oils and oils obtained from bituminous minerals, other than crude; preparations not elsewhere specified or included, containing by weight 70 % or more of petroleum oils or of oils obtained from bituminous minerals, these oils being the basic con	12,576.2	56,704.5	275.4	4.6	2.3	2.19
2711	Petroleum gases and other gaseous hydrocarbons	2,912.9	27,439.5	-	4.1	1.0	-
2712	Petroleum jelly; paraffin wax, microcrystalline petroleum wax, slack wax, ozokerite, lignite wax, peat wax, other mineral waxes, and similar products obtained by synthesis or by other processes, whether or not coloured	35.3	128.1	0.0	1.9	1.2	0.13
2803	Carbon,(including carbon black)	46.5	831.0	0.3	7.8	1.0	0.63
2810	Oxides of boron, boric acids	25.0	44.2	-	4.0	5.1	-
2813	Sulphides of non-metals; commercial phosphorus trisulphide	10.6	14.6	0.6	3.4	5.5	5.39
2814	Ammonia, anhydrous or in aqueous solution	68.4	714.7	-	5.8	1.3	-
2815	Sodium hydroxide (caustic soda); potassium hydroxide (caustic potash); peroxides of sodium or potassium	550.9	121.8	1.1	1.0	10.7	0.20
2817	Zinc oxide and zinc peroxide	23.2	29.9	0.0	1.0	1.7	0.04
2819	Chromium oxides and hydroxides	20.9	27.6	1.3	3.0	5.1	6.36

TABLE A.2 (cont.)
List of Russian Export Opportunities to Brazil, by HS4 code

HS4	Description	Imports Brazil	Exports Russia	Exports Rus to Bra	RCA Russia	RCD Brazil	M-S Russia
2833	Sulphates; alums; peroxosulphates (persulphates)	165.2	98.3	2.6	1.2	4.6	1.60
2835	Phosphinates (hypophosphites), phosphonates (phosphites) and phosphates; polyphosphates, whether or not chemically defined	114.1	177.7	0.5	2.6	3.8	0.42
2836	Carbonates; peroxocarbonates (percarbonates); commercial ammonium carbonate containing ammonium carbamate	307.0	193.4	6.1	1.2	4.4	1.97
2837	Cyanides, cyanide oxides and complex cyanides	8.6	35.1	-	2.1	1.2	-
2926	Nitrile-function compounds	218.9	121.6	-	1.0	4.2	-
3804	Residual lyes from wood pulp manufacture (except tall oil)	10.0	22.6	0.2	2.8	2.8	1.58
3807	Wood tar, wood tar oils, wood creosote, etc	2.2	2.1	0.0	1.1	2.6	0.01
4814	Wallpaper and similar wall coverings; window transparencies of paper	13.1	68.6	-	2.5	1.1	-
6812	Fabricated asbestos fibres; mixtures with a basis of asbestos or with a basis of asbestos and magnesium carbonate; articles of such mixtures or of asbestos (for example, thread, woven fabric, clothing, headgear, footwear, gaskets), whether or not reinforced	1.1	6.4	-	2.9	1.1	-
6814	Worked mica and articles of mica, including agglomerated or reconstituted mica, whether or not on a support of paper, paperboard or other materials	3.6	6.5	-	1.1	1.4	-
7217	Wire of iron or non-alloy steel	130.4	169.0	-	1.2	2.2	-
7302	Railway or tramway track construction material of iron or steel, the following: rails, check-rails and rack rails, switch blades, crossing frogs, point rods and other crossing pieces, sleepers (cross-ties), fish-plates, chairs, chair wedges, sole plates (94.7	101.8	7.7	1.5	3.1	8.16
7403	Refined copper and copper alloys, unwrought	1,184.6	3,621.4	-	2.8	2.1	-
7603	Aluminium powders and flakes	4.5	56.6	-	5.9	1.1	-
7605	Aluminium wire	65.4	290.2	0.0	4.2	2.1	0.04
7801	Unwrought lead	153.3	256.8	5.2	1.6	2.2	3.40
8402	Steam or other vapour generating boilers (other than central heating hot water boilers capable also of producing low pressure steam); super-heated water boilers	70.7	89.6	-	1.0	1.8	-
8540	Thermionic, cold cathode or photocathode valves and tubes (for example, vacuum or vapour or gas filled valves and tubes, mercury arc rectifying valves and tubes, cathode-ray tubes, television camera tubes)	25.5	35.6	0.0	1.1	1.8	0.11
8602	Other rail locomotives; locomotive tenders	39.7	17.7	-	1.1	5.7	-
8605	Railway, tramway pass etc coaches not self-propelled	9.7	75.9	-	3.8	1.1	-
8608	Railway fixtures, mechanized signaling, safety, etc	26.9	31.9	-	1.7	3.3	-

Source: Elaborated by the authors.

APPENDIX B: METHODOLOGICAL NOTES, NTM NOMECLATURE AND INCIDENCE BY REPORTER AND HS2 CODE

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.

Chart B.1 presents the organization of the Non-Tariff Measure international classification developed by UNCTAD in a tree structure and provide a description to each chapter in the nomenclature.

CHART B.1
Classification of Non-Tariff Measures, 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: Prepared by the authors based on UNCTAD (2017).

Table B.1
NTM Incidence on Russia and Brazil - Frequency Index, Cover Ratio and
Prevalence Score.
 HS2 code

HS2	Description	Russia			Brazil		
		FI (%)	CR (%)	PV	FI (%)	CR (%)	PV
01	Animals; live	100.00	100.00	5.82	100.00	100.00	12.21
02	Meat and edible meat offal	100.00	100.00	19.67	100.00	100.00	17.30
03	Fish and crustaceans, molluscs and other aquatic invertebrates	100.00	100.00	20.01	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	18.09	100.00	100.00	12.97
05	Animal originated products; not elsewhere specified or included	86.67	99.64	4.40	100.00	100.00	9.47
06	Trees and other plants, live; bulbs, roots and the like; cut flowers and ornamental foliage	81.25	63.68	6.25	100.00	100.00	9.38
07	Vegetables and certain roots and tubers; edible	100.00	100.00	14.10	100.00	100.00	11.61
08	Fruit and nuts, edible; peel of citrus fruit or melons	100.00	100.00	16.00	100.00	100.00	14.55
09	Coffee, tea, mate and spices	100.00	100.00	13.05	100.00	100.00	15.90
10	Cereals	100.00	100.00	15.04	100.00	100.00	13.58
11	Products of the milling industry; malt, starches, inulin, wheat gluten	100.00	100.00	14.33	100.00	100.00	14.04
12	Oil seeds and oleaginous fruits; miscellaneous grains, seeds and fruit, industrial or medicinal plants; straw and fodder	95.83	97.92	9.83	100.00	100.00	13.69
13	Lac; gums, resins and other vegetable saps and extracts	90.00	97.71	8.80	100.00	100.00	12.30
14	Vegetable plaiting materials; vegetable products not elsewhere specified or included	100.00	100.00	8.00	100.00	100.00	9.00
15	Animal or vegetable fats and oils and their cleavage products; prepared animal fats; animal or vegetable waxes	97.92	100.00	9.54	100.00	100.00	16.35
16	Meat, fish or crustaceans, molluscs or other aquatic invertebrates; preparations thereof	100.00	100.00	16.63	100.00	100.00	14.29
17	Sugars and sugar confectionery	100.00	100.00	11.47	100.00	100.00	15.94
18	Cocoa and cocoa preparations	100.00	100.00	11.00	100.00	100.00	13.09
19	Preparations of cereals, flour, starch or milk; pastrycooks' products	100.00	100.00	11.26	100.00	100.00	14.58
20	Preparations of vegetables, fruit, nuts or other parts of plants	100.00	100.00	11.62	100.00	100.00	15.69
21	Miscellaneous edible preparations	100.00	100.00	11.44	100.00	100.00	14.88
22	Beverages, spirits and vinegar	100.00	100.00	18.95	100.00	100.00	12.00
23	Food industries, residues and wastes thereof; prepared animal fodder	82.61	96.45	5.74	100.00	100.00	12.13
24	Tobacco and manufactured tobacco substitutes	100.00	100.00	5.90	100.00	100.00	7.40
25	Salt; sulphur; earths, stone; plastering materials, lime and cement	100.00	100.00	2.69	45.59	83.56	3.12
26	Ores, slag and ash	100.00	100.00	3.81	32.43	96.72	1.05
27	Mineral fuels, mineral oils and products of their distillation; bituminous substances; mineral waxes	100.00	100.00	2.51	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	3.49	100.00	100.00	12.11
29	Organic chemicals	92.86	96.41	3.59	100.00	100.00	13.24
30	Pharmaceutical products	100.00	100.00	9.55	100.00	100.00	14.26
31	Fertilizers	100.00	100.00	5.87	100.00	100.00	13.04
32	Tanning or dyeing extracts; tannins and their derivatives; dyes, pigments and other colouring matter; paints, varnishes; putty, other mastics; inks	100.00	100.00	4.36	100.00	100.00	11.66
33	Essential oils and resinoids; perfumery, cosmetic or toilet preparations	100.00	100.00	6.90	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	7.26	100.00	100.00	12.00
35	Albuminoidal substances; modified starches; glues; enzymes	100.00	100.00	12.53	100.00	100.00	13.13
36	Explosives; pyrotechnic products; matches; pyrophoric alloys; certain combustible preparations	100.00	100.00	9.63	87.50	99.43	1.63
37	Photographic or cinematographic goods	100.00	100.00	1.00	12.90	40.29	0.26
38	Chemical products n.e.c.	100.00	100.00	4.06	55.56	93.71	3.11
39	Plastics and articles thereof	100.00	100.00	5.40	19.05	14.56	0.45
40	Rubber and articles thereof	100.00	100.00	3.85	42.35	63.81	1.02
41	Raw hides and skins (other than furskins) and leather	100.00	100.00	6.05	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)	100.00	100.00	6.75	95.00	100.00	1.50
43	Furskins and artificial fur; manufactures thereof	100.00	100.00	6.58	100.00	100.00	5.92
44	Wood and articles of wood; wood charcoal	100.00	100.00	4.74	100.00	100.00	8.09
45	Cork and articles of cork	100.00	100.00	2.71	100.00	100.00	4.71
46	Manufactures of straw, esparto or other plaiting materials; basketware and wickerwork	100.00	100.00	4.00	100.00	100.00	8.00
47	Pulp of wood or other fibrous cellulosic material; recovered (waste and scrap) paper or paperboard	100.00	100.00	1.00	0.00	0.00	0.00
48	Paper and paperboard; articles of paper pulp, of paper or paperboard	100.00	100.00	2.02	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	1.21	0.00	0.00	0.00
50	Silk	88.89	99.87	1.67	88.89	99.86	1.22
51	Wool, fine or coarse animal hair; horsehair yarn and woven fabric	100.00	100.00	2.66	100.00	100.00	4.00
52	Cotton	99.19	98.09	1.62	100.00	100.00	3.08
53	Vegetable textile fibres; paper yarn and woven fabrics of paper yarn	100.00	100.00	2.52	100.00	100.00	3.48
54	Man-made filaments; strip and the like of man-made textile materials	100.00	100.00	3.17	82.86	82.56	0.83
55	Man-made staple fibres	100.00	100.00	2.17	90.65	84.89	0.92
56	Wadding, felt and nonwovens, special yarns; twine, cordage, ropes and cables and articles thereof	100.00	100.00	4.67	96.67	98.26	1.13
57	Carpets and other textile floor coverings	100.00	100.00	3.71	95.24	81.63	0.95
58	Fabrics; special woven fabrics, tufted textile fabrics, lace, tapestries, trimmings, embroidery	100.00	100.00	1.87	86.84	92.95	0.87
59	Textile fabrics; impregnated, coated, covered or laminated; textile articles of a kind suitable for industrial use	100.00	100.00	2.17	91.67	98.80	1.08
60	Fabrics; knitted or crocheted	100.00	100.00	2.00	95.35	99.89	0.95
61	Apparel and clothing accessories; knitted or crocheted	100.00	100.00	7.31	87.74	98.77	0.98
62	Apparel and clothing accessories; not knitted or crocheted	100.00	100.00	7.92	95.54	99.52	1.14
63	Textiles, made up articles; sets; worn clothing and worn textile articles; rags	100.00	100.00	5.75	68.63	87.28	0.71
64	Footwear; gaiters and the like; parts of such articles	100.00	100.00	3.08	68.00	72.43	1.12
65	Headgear and parts thereof	100.00	100.00	5.88	37.50	81.13	0.75
66	Umbrellas, sun umbrellas, walking-sticks, seat sticks, whips, riding crops; and parts thereof	100.00	100.00	1.00	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	100.00	100.00	1.00	12.50	0.56	0.13
68	Stone, plaster, cement, asbestos, mica or similar materials; articles thereof	100.00	100.00	3.02	2.04	0.00	0.02
69	Ceramic products	100.00	100.00	3.03	37.93	46.14	0.38
70	Glass and glassware	100.00	100.00	2.88	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 jewellery; coin	100.00	100.00	3.92	7.55	0.01	0.19
72	Iron and steel	100.00	100.00	2.54	4.19	3.63	0.08
73	Iron or steel articles	100.00	100.00	4.88	42.74	30.25	0.68
74	Copper and articles thereof	100.00	100.00	1.58	18.00	6.52	0.20
75	Nickel and articles thereof	100.00	100.00	3.06	5.88	0.00	0.06
76	Aluminium and articles thereof	100.00	100.00	3.51	25.71	15.73	0.43
78	Lead and articles thereof	100.00	100.00	1.25	0.00	0.00	0.00
79	Zinc and articles thereof	100.00	100.00	1.67	22.22	6.75	0.22
80	Tin; articles thereof	100.00	100.00	1.00	20.00	0.00	0.20
81	Metals; n.e.c., cermets and articles thereof	100.00	100.00	4.29	27.08	5.93	0.27
82	Tools, implements, cutlery, spoons and forks, of base metal; parts thereof, of base metal	100.00	100.00	2.97	100.00	100.00	8.36
83	Metal; miscellaneous products of base metal	100.00	100.00	2.31	0.00	0.00	0.00
84	Nuclear reactors, boilers, machinery and mechanical appliances; parts thereof	100.00	100.00	7.41	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	100.00	100.00	5.93	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 signalling equipment of all kinds	100.00	100.00	4.43	8.70	16.87	0.13
87	Vehicles; other than railway or tramway rolling stock, and parts and accessories thereof	100.00	100.00	8.16	100.00	100.00	10.84
88	Aircraft, spacecraft and parts thereof	100.00	100.00	4.40	60.00	97.55	4.80
89	Ships, boats and floating structures	100.00	100.00	5.17	5.56	0.00	0.06
90	Optical, photographic, cinematographic, measuring, checking, medical or surgical instruments and apparatus; parts and accessories	100.00	100.00	5.14	100.00	100.00	10.31
91	Clocks and watches and parts thereof	100.00	100.00	1.78	2.04	0.56	0.06
92	Musical instruments; parts and accessories of such articles	100.00	100.00	1.59	0.00	0.00	0.00
93	Arms and ammunition; parts and accessories thereof	100.00	100.00	7.00	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 name-plates and the like; prefabricated buildings	100.00	100.00	4.72	69.23	71.07	4.67
95	Toys, games and sports requisites; parts and accessories thereof	100.00	100.00	2.48	100.00	100.00	8.35
96	Miscellaneous manufactured articles	100.00	100.00	1.33	25.00	47.66	2.06
97	Works of art; collectors' pieces and antiques	100.00	100.00	2.00	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

Note: Indexes are based on the number and imported values of unique 6-digit level codes included in the HS2 sections of the Harmonized System.

Source: Prepared by the authors based on UNCTAD TRAINS and COMTRADE.