

Analysis of Economic, Trade Cooperations and Prospects between China and Latina American Countries

--Based on the Comparative Analysis of China's Trade with Brazil and Mexico

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Abstract

For years, China and Latin America have maintained a good trade partnership. The “Belt and Road” Initiative has greatly promoted the development and upgrading of trade between China and Latin America. This paper analyzes the trade complementarity between the two sides by calculating the Revealed Comparative Advantage Index, Trade Intensity Index, and Intra-industry Trade Index between China and Latin American countries, taking Brazil and Mexico as examples. Based on this, the paper puts forward specific countermeasures and suggestions on how to deepen the Belt and Road trade cooperation and promote the further development of trade between China and Latin America while giving full play to their own trade characteristics.

Keywords

China-Latin America trade, the Belt and Road, trade intensity, trade complementarity.

1. Introduction

In recent years, the significance of China as a regional export market has been continuously increasing, while Latin America has also ceased to rely heavily on the US and European markets, leading to remarkable progress in the economic and trade relations between China and Latin America. China has become the second largest trade partner of Latin America, while Latin America is China's largest trade partner among developing countries. Both sides have conducted extensive cooperation in fields such as energy, infrastructure construction, agriculture, and manufacturing.

Brazil and Mexico are not only the first and second largest economies in Latin America, respectively, but also China's first and second largest trading partners in Latin America. Their trade cooperation with China covers a wide range of areas including manufacturing, energy and minerals, agriculture, and infrastructure. Through the analysis of the trade complementarity between China and these two countries, this paper can help to understand the differences in factor endowment, technology level, market demand and other aspects, so as to provide favorable information for improving and promoting trade between China and Latin America. Sequentially, to promote the further development of trade between China and Latin America.

2. Overview of Trade Development between China and Latin America

2.1. The Scale of China-Latin America Trade Shows a Growing Trend

As shown in Figure 1, over the past 20 years, the total import and export volume between China and Latin America has increased from US\$26.806 billion in 2003 to US\$451.406 billion in 2022, achieving leapfrog growth.

From the perspective of trade growth rate, after the financial crisis in 2008, the world economy gradually came out of the trough. Global trade began to resume growth, and trade between China and Latin America increased significantly from the year 2009 to the year 2010. Since then, due to the lagged effect of the global financial crisis and the impact of monetary tightening, the growth rate of China-Latin America trade has continued to be low [1]. In May 2017, Latin America was officially included in the “Belt and Road” Cooperation Framework, greatly promoting the development of trade between the two sides. Despite the impact of COVID-19 pandemic, the growth rate of China-Latin America trade still showed a positive trend from the year 2020 to the year 2021.

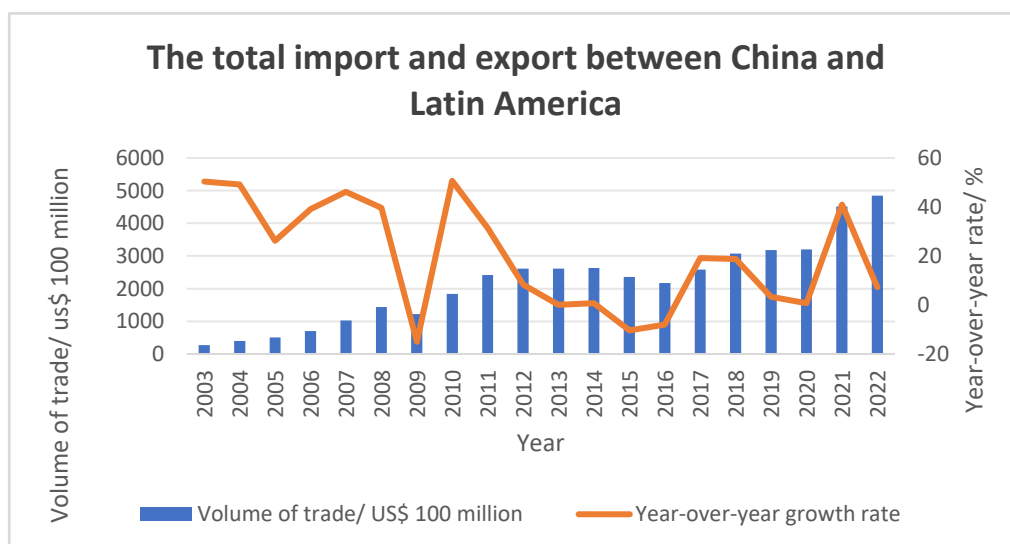


Figure 1

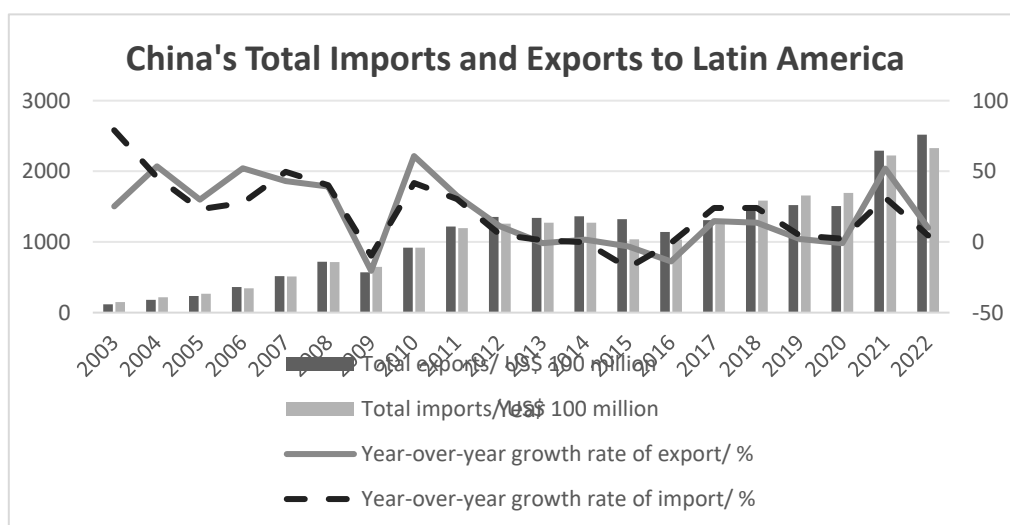


Figure 2

From the perspective of trade balance, according to Figure 2, from the year 2003 to the year 2022, China's total exports to Latin America increased from US\$11.877 billion to US\$251.806 billion, showing a rapid and stable growth trend. The total import value increased from 14.929 billion US dollars to 222.417 billion US dollars, which also grew steadily. Before the "Belt and Road" Initiative between China and Latin America was launched in 2017, China's trade with Latin America was characterized by a surplus. From 2018 to 2020, with the deepening of the "Belt and Road" Initiative, China expanded its imports of goods from Latin America, showing the characteristics of a trade deficit. In 2021 and 2022, China's exports to Latin America were greater than China's imports from Latin America, resulting in the trade surplus maintained for two consecutive years.

2.2. The "Belt and Road" Initiative Promotes China-Latin America Trade

The "Belt and Road", proposed by President Xi Jinping in 2013, is the short for the "New Silk Road Economic Belt" and the "21st Century Maritime Silk Road". It aims to develop economic cooperation relations with partners actively and peacefully, and jointly build a community with mutual interests, destiny and responsibility [2].

From 2013 to 2016, the President Xi Jinping and the Prime Minister Li Keqiang visited Latin America for many times. This has not only laid the foundation for the further development of China-Latin America relations, but also widened the way for further deepening China-Latin America cooperation. The two countries proposed to jointly build the "1+3+6" cooperation framework and "3×3" production capacity cooperation model, signed cooperation documents in production capacity, infrastructure construction, finance, aviation, agriculture, new energy, communications, science and technology [3].

Owing to the joint efforts of China and Latin America, Latin American countries and regions began to formally join the "Belt and Road" Initiative in 2017. By 2023, 19 countries in Latin America had signed the agreement, accounting for 56 percent of the 34 countries in Latin America [4].

Driven by the "Belt and Road" platform, trade between China and Latin America has become increasingly close and the volume of trade has grown rapidly. China's infrastructure construction in Latin America has become one of the key parts of cooperation between the two sides, and it is also one of the areas where the two sides are highly complementary and mutually beneficial. With the help of China, a total of 138 infrastructure projects in Latin America have been put into use or under construction from 2005 to 2020, focusing on ports, electricity, transportation, energy, communications, housing and urban construction. [5] China's infrastructure construction in Latin America has accelerated the internationalization of Chinese industries, promoted the integrated development of Latin America and created more jobs. Latin America has become the region where Chinese enterprises invest the largest scale and invest the most industries along the path of "Belt and Road".

2.3. Overview of China's Trade with Brazil and Mexico

Among Latin American countries, Chile, Peru and Brazil have large trade surpluses with China, while Mexico, Colombia and Argentina have trade deficits.

During China's export trade with Latin America from 2003 to 2022, Brazil and Mexico stood out with particularly significant growth rates, increasing by approximately 27.8 times and 22.6 times, respectively. In terms of China's import trade from Latin America, Brazil exhibited the most prominent growth rate, increasing by approximately 17.7 times.

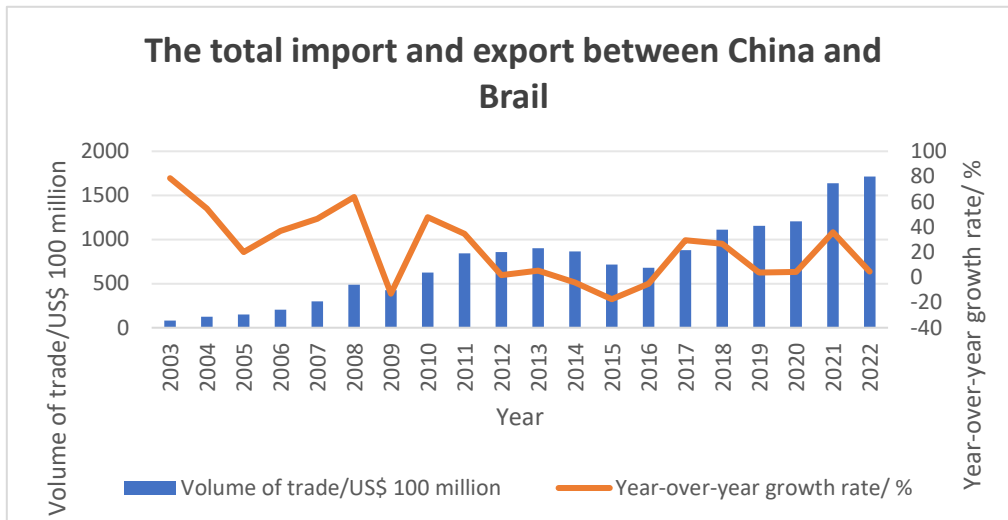


Figure 3

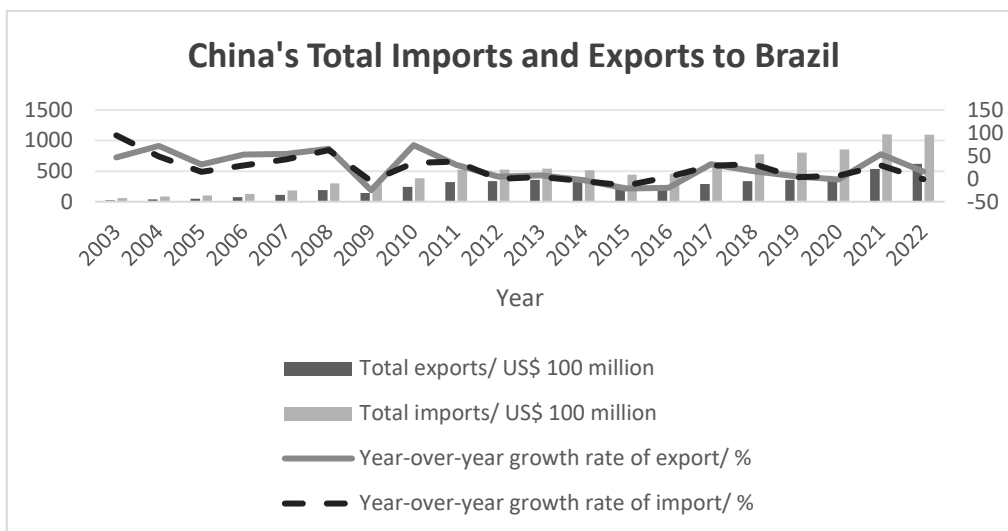


Figure 4

According to Figure 3 and Figure 4, China has shown a significant trade deficit in its goods trade with Brazil. China is Brazil's largest exporter. In 2022, Brazil produced about US\$89,178.8 million in goods to China, accounting for 26.82% of the country's total exports.



Figure 5

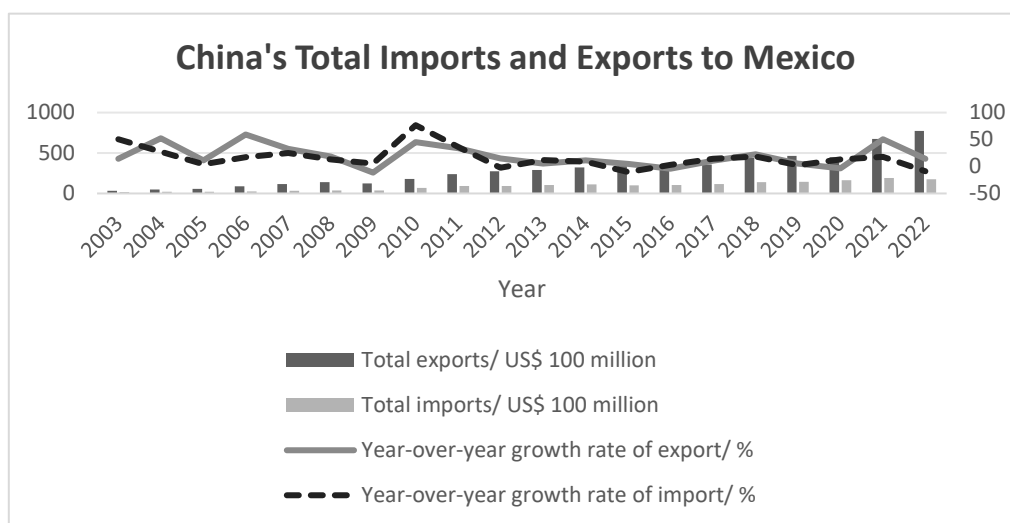


Figure 6

According to Figure 5 and Figure 6, a significant trade surplus was shown in China's goods trade with Mexico. China is Mexico's second-largest exporter [6]. In 2022, Mexico produced about \$10,804.7 million in goods to China, accounting for 1.8% of the region's total exports.

3. Index Construction

3.1. Revealed Comparative Advantage Index

The Revealed Comparative Advantage Index (RCA) was proposed by the American economist Balassa in 1965 and is an important indicator utilized to measure the competitiveness of a country's products or industries in the international market. It is calculated as $RCA_{ij} = \frac{X_{ij}/X_{tj}}{X_{jw}/X_{tw}}$

Among them, RCA_{ij} denotes the international export competitiveness of good j in the country i , X_{ij} denotes the export value of good j in the country i , X_{tj} denotes the export value of all goods in country i , X_{jw} denotes the total export value of the good j in the world, and X_{tw} denotes the total export value of all goods in the world. The value range of RCA index is generally divided into four ranges: $RCA_{ij} < 0.8$, $0.8 < RCA_{ij} < 1.25$, $1.25 \leq RCA_{ij} \leq 2.5$ and $RCA_{ij} > 2.5$, which represent four levels of international competitiveness: weak, moderate, strong and extremely strong.

3.2. Trade Intensity Index

The Trade Intensity Index (TII) was proposed by economist A.J. Brown in 1947 to measure the close interconnection between two countries (regions) in economic and trade exchanges. It is calculated as $TII_{uv} = \left(\frac{X_{uv}}{X_u}\right) / \left(\frac{M_v}{M_w}\right)$.

Among them, u , v and w represent country (region) u , country (region) v and the world market, respectively; X_{uv} denotes the export value of country u to country v , and X_u denotes the total export value of country u . M_v represents the total import value of country v , and M_w represents the total world imports. TII_{uv} represents the trade cohesion index of the two countries (regions) of u and v . If $TII_{uv} > 1$, it indicates that u and v have close trade ties. If $TII_{uv} < 1$, it indicates that the trade links between u and v are loose. This indicator is an outcome indicator, so it can also be considered that the larger the TII_{uv} , the stronger the complementarity of the two countries (regions) in terms of goods trade. On the contrary, the smaller the TII_{uv} , the more competitive the two countries will be in goods trade.

3.3. Intra-industry Trade Index

The Intra-industry Trade Index is an indicator utilized to measure the degree of intra-industry trade within a specific industry. When the two commodities are shown as intra-industry trade, the trade flow between the two countries (regions) is bidirectional, indicating that the complementarity is weak.

The Grubel-Lloyds Intra-Industry Trade Index (G-L Index) can be utilized to reflect changes in the level of intra-industry trade. It is calculated as $GL_i = 1 - |x_i - m_i| / (x_i + m_i)$.

Among them, x_i represents the export value of category i goods, m_i represents the import value of category i goods. GL_i represents the Grubel-Lloyd index, and its value range is between $[0,1]$. The closer the average value of GL_i is to 1, the more inclined the trade pattern of the two countries (regions) is to intra-industry trade, and the complementarity of the two countries (regions) is weaker. The closer it is to 0, it indicates that the trade between the two countries (regions) is more inclined to inter-industry trade, and the two countries (regions) are more complementary. If $GL_i > 0.5$, indicating the dominance of intra-industry trade patterns. If $GL_i < 0.5$, indicating the dominance of inter-industry trade patterns.

4. Trade Characteristics between China and Brazil and between China and Mexico literature References

4.1. Structure and Comparative Advantage of Imports and Exports between China and Brazil

Table 1. Brazil's main export to China

Product code(HS 4)	Product label	Brazil's exports to China/ US \$100 million			RCA Index		
		Value in 2020	Value in 2021	Value in 2022	2020	2021	2022
TOTAL	All products	677.88	879.07	897.18			
12	Oil seeds and oleaginous fruits; miscellaneous grains, seeds and fruit; industrial or medicinal ...	209.03	272.08	318.48	49.13	52.44	57.27
26	Ores, slag and ash	192.35	295.65	187.90	19.55	19.60	16.13
27	Mineral fuels, mineral oils and products of their distillation; bituminous substances; mineral ...	113.79	143.20	168.92	1.82	1.41	1.15
2	Meat and edible meat offal	65.66	65.17	104.17	12.58	10.69	17.31
47	Pulp of wood or of other fibrous cellulosic material; recovered (waste	28.71	27.82	33.33	18.29	13.41	15.66

	and scrap) paper or ...						
17	Sugars and sugar confectionery	12.91	14.14	16.93	7.70	7.26	7.98
72	Iron and steel	21.21	13.03	14.52	1.66	0.58	0.69
52	Cotton	10.16	9.83	10.82	5.51	3.11	4.65
15	Animal, vegetable or microbial fats and oils and their cleavage products; prepared edible fats; ...	2.87	7.32	6.87	0.72	1.23	1.07
25	Salt; sulphur; earths and stone; plastering materials, lime and cement	1.47	2.29	4.98	1.27	1.10	2.07

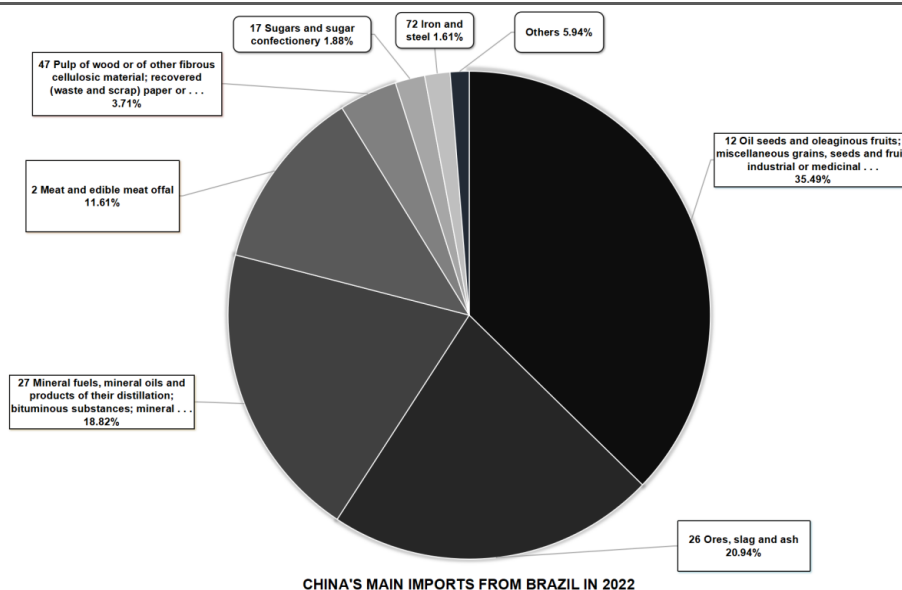


Figure 7

As shown in Table 1 and Figure 7, the main goods exported from Brazil to China include olea kernels in plant products, mineral products, meat in animal products, wood pulp, sugar, steel in base metals, Cotton in textiles, as well as animal and vegetable oils. These products account for approximately 94% of Brazil's total exports to China.

Among them, the oil kernels, which accounts for approximately 35.49%, possess a strong competitive advantage in the international market. Other commodities also generally exhibit moderate or strong competitive advantages.

Table2. China’s main exports to Brazil

Product code(HS 4)	Product label	China's exports to Brazil/ US \$ 100 million			RCA Index		
		Value in 2020	Value in 2021	Value in 2022	2020	2021	2022
TOTAL	All products	349.53	536.12	619.69			
85	Electrical machinery and equipment and parts thereof; sound recorders and reproducers, television ...	100.52	141.48	176.90	1.81	1.72	1.99
84	Nuclear reactors, boilers, machinery and mechanical appliances; parts thereof	52.41	78.51	81.89	1.25	1.30	1.28
29	Organic chemicals	26.91	41.79	63.25	3.50	3.54	4.62
38	Miscellaneous chemical products	7.21	12.52	30.21	1.60	1.82	3.65
87	Vehicles other than railway or tramway rolling stock, and parts and accessories thereof	13.01	20.86	23.53	0.50	0.56	0.57
39	Plastics and articles thereof	12.40	19.95	21.62	1.01	1.02	1.04
31	Fertilisers	5.85	22.26	20.22	5.30	10.94	5.91
72	Iron and steel	6.56	25.09	19.00	1.00	1.85	1.31
99	Commodities not elsewhere specified	0.70	8.95	14.52	0.11	0.86	1.16
73	Articles of iron or steel	7.63	12.44	14.03	1.54	1.41	1.39
95	Toys, games and sports requisites; parts and accessories thereof	7.66	11.03	11.73	2.92	2.60	2.69
54	Man-made filaments; strip and the like of man-made textile materials	6.49	9.18	11.59	7.92	6.92	7.79
90	Optical, photographic, cinematographic, measuring, checking, precision, medical or surgical ...	19.18	23.31	11.17	1.62	1.41	0.68
94	Furniture; bedding, mattresses, mattress supports, cushions and similar stuffed furnishings; ...	7.92	10.09	8.93	1.50	1.28	1.15

According to Table 2, China mainly exports labor-intensive products to Brazil, including machinery equipments, electrical appliances, nuclear, chemical products, miscellaneous

chemicals, fertilizers, vehicles, plastics, steel, toys, and furniture. Although the Revealed Comparative Advantage Index (RCA) is not as high as some products in Brazil, it mostly above the middle level.

4.2. Structure and Comparative Advantage of Imports and Exports between China and Mexico

Table 3. Mexico’s main exports to China

Product code (HS4)	Product label	Mexico's exports to China/ US \$ 100 million			RCA Index		
		Value in 2020	Value in 2021	Value in 2022	2020	2021	2022
TOTAL	All products	77.87	90.78	108.04			
26	Ores, slag and ash	34.38	46.30	38.32	30.42	29.72	26.73
87	Vehicles other than railway or tramway rolling stock, and parts and accessories thereof	11.78	12.59	30.83	2.06	2.03	4.33
85	Electrical machinery and equipment and parts thereof; sound recorders and reproducers, television . . .	8.37	8.26	15.79	0.67	0.59	1.02
84	Nuclear reactors, boilers, machinery and mechanical appliances; parts thereof	4.87	5.24	4.85	0.52	0.51	0.43
74	Copper and articles thereof	2.28	4.24	4.35	3.44	4.70	4.54
90	Optical, photographic, cinematographic, measuring, checking, precision, medical or surgical . . .	2.19	3.04	2.73	0.83	1.08	0.95
39	Plastics and articles thereof	1.40	0.80	1.44	0.51	0.24	0.39
3	Fish and crustaceans, molluscs and other aquatic invertebrates	0.99	0.75	1.08	2.00	1.37	1.69
23	Residues and waste from the food industries; prepared animal fodder	0.69	0.91	1.03	1.93	2.23	2.17
40	Rubber and articles thereof	0.32	0.43	0.98	0.40	0.46	1.02

8	Edible fruit and nuts; peel of citrus fruit or melons	0.76	0.78	0.67	1.27	1.30	1.10
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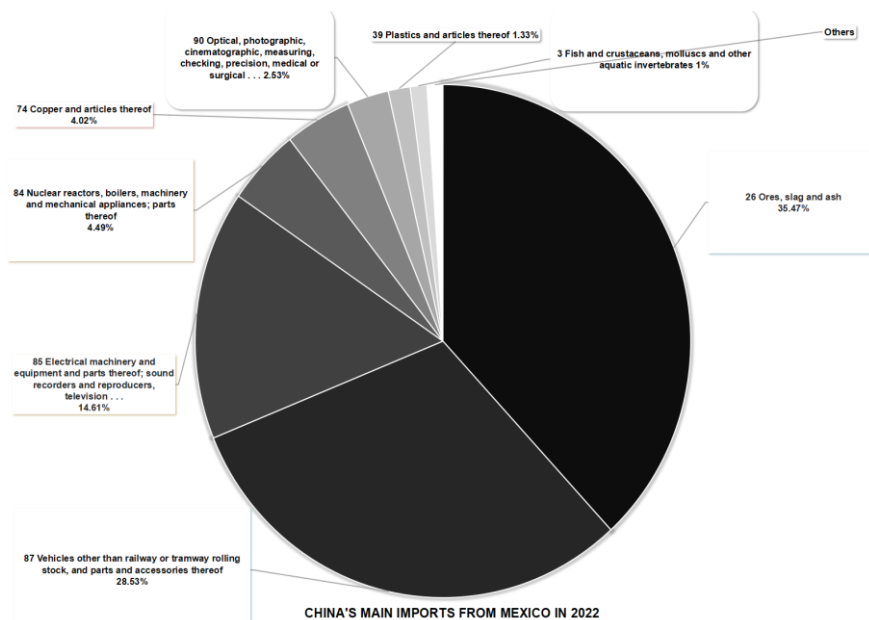


Figure 8

As shown in Table 3 and Figure 8, the main products exported from Mexico to China including mineral products, vehicles, machinery equipments, nuclear, electrical appliances, copper in base metals, optics, instruments, plastics, rubber, fish, feed, and fruits.

Table 4. China's main exports to Mexico

Product code (HS4)	Product label	China's exports to Mexico/ US \$ 100 million			RCA Index		
		Value in 2020	Value in 2021	Value in 2022	2020	2021	2022
TOTAL	All products	448.27	674.40	775.34			
85	Electrical machinery and equipment and parts thereof; sound recorders and reproducers, television ...	121.13	176.57	222.78	1.70	1.70	2.01
84	Nuclear reactors, boilers, machinery and mechanical appliances; parts thereof	89.25	117.11	130.76	1.66	1.54	1.63
87	Vehicles other than railway or tramway rolling stock, and parts and accessories thereof	30.74	50.97	73.68	0.93	1.10	1.44
39	Plastics and articles thereof	13.84	23.43	30.70	0.88	0.95	1.18
76	Aluminium and articles thereof	10.67	18.62	27.13	2.51	2.55	3.07

95	Toys, games and sports requisites; parts and accessories thereof	12.40	22.61	26.85	3.68	4.25	4.93
94	Furniture; bedding, mattresses, mattress supports, cushions and similar stuffed furnishings; . . .	11.25	19.05	20.57	1.66	1.92	2.11
29	Organic chemicals	9.95	14.99	19.61	1.01	1.01	1.14
73	Articles of iron or steel	8.16	14.06	17.30	1.11	1.27	1.37
72	Iron and steel	2.90	9.15	13.12	0.34	0.53	0.72
61	Articles of apparel and clothing accessories, knitted or crocheted	4.59	9.36	13.11	0.84	1.12	1.40
40	Rubber and articles thereof	7.66	11.11	13.10	1.69	1.61	1.90
90	Optical, photographic, cinematographic, measuring, checking, precision, medical or surgical . . .	43.02	65.12	12.92	2.84	3.13	0.63
62	Articles of apparel and clothing accessories, not knitted or crocheted	4.52	6.48	9.59	0.85	0.91	1.19

According to Table 4, the main products exported from China to Mexico including machinery equipments, nuclear, electrical appliances, vehicles, plastics, rubber, aluminum, steel, toys, furniture, textiles, optics and instruments.

The export trade between China and Mexico exhibits a strong similarity, with many similar products appearing in their respective major exports, such as machines, vehicles, plastics, and optical instruments. Through the comparative analysis of their respective RCA indexes, it is found that China shows a greater comparative advantage in other similar export products except for vehicles, optics and instruments.

4.3. Analysis of Trade Complementarity between China and Brazil and between China and Mexico

Table 5. China's trade intensity index with Brazil and Mexico

Country/Year	Brazil	Mexico
2020	2.79	0.16
2021	2.63	0.15
2022	2.51	0.17

As shown in Table 5, China has a stronger trade integration and trade complementarity with Brazil than with Mexico. While Mexico has the similar export products to China, and the trade integration between two countries is relatively low, indicating that the two sides have a lower complementarity in commodity trade.

Table 6. Intra-industry trade Index of major goods (with Brazil as exporter)

Product code (HS4)	Product label	Year		
		2020	2021	2022
12	Oil seeds and oleaginous fruits; miscellaneous grains, seeds and fruit; industrial or medicinal . . .	0.0005	0.0005	0.0003
26	Ores, slag and ash	0.0001	0.0001	0.0002
27	Mineral fuels, mineral oils and products of their distillation; bituminous substances; mineral . . .	0.0170	0.0359	0.0794
47	Pulp of wood or of other fibrous cellulosic material; recovered (waste and scrap) paper or . . .	0.0032	0.0038	0.0040
17	Sugars and sugar confectionery	0.0103	0.0160	0.0274
72	Iron and steel	0.4725	0.6838	0.8665
52	Cotton	0.0800	0.1146	0.1001

Table7. Intra-industry trade Index of major goods (with China as exporter)

Product code (HS4)	Product label	Year		
		2020	2021	2022
85	Electrical machinery and equipment and parts thereof; sound recorders and reproducers, television . . .	0.0168	0.0151	0.0166
84	Nuclear reactors, boilers, machinery and mechanical appliances; parts thereof	0.0504	0.1079	0.0653
29	Organic chemicals	0.0757	0.0762	0.0444
38	Miscellaneous chemical products	0.1052	0.0431	0.0146
87	Vehicles other than railway or tramway rolling stock, and parts and accessories thereof	0.0148	0.0176	0.0136
39	Plastics and articles thereof	0.2586	0.0595	0.0849
31	Fertilisers	0.0004	0.0000	0.0001

As shown in Table 6 and Table 7, it is found that the G-L index of most products is less than 0.5, indicating that China and Brazil are mainly engaged in inter-industry trade and have strong trade complementarity. Among them, the G-L index of iron and steel an tends to be close to 1, indicating that the trade of this kind of product is intra-industry trade.

Table 8. Intra-industry trade Index of major goods (with Mexico as exporter)

Product code (HS4)	Product label	Year		
		2020	2021	2022
26	Ores, slag and ash	0.0014	0.0003	0.0006
87	Vehicles other than railway or tramway rolling stock, and parts and accessories thereof	0.5543	0.3964	0.5900
85	Electrical machinery and equipment and parts thereof; sound recorders and reproducers, television . . .	0.1293	0.0894	0.1324
84	Nuclear reactors, boilers, machinery and mechanical appliances; parts thereof	0.1037	0.0857	0.0716
74	Copper and articles thereof	0.4259	0.4246	0.4830
90	Optical, cinematographic, measuring, checking, precision, medical or surgical . . .	0.0972	0.0893	0.3498
39	Plastics and articles thereof	0.1848	0.0663	0.0898

Table 9. Intra-industry trade Index of major goods (with China as exporter)

Product code (HS4)	Product label	Year		
		2020	2021	2022
85	Electrical machinery and equipment and parts thereof; sound recorders and reproducers, television . . .	0.1293	0.0894	0.1324
84	Nuclear reactors, boilers, machinery and mechanical appliances; parts thereof	0.1037	0.0857	0.0716
87	Vehicles other than railway or tramway rolling stock, and parts and accessories thereof	0.5543	0.3964	0.5900
39	Plastics and articles thereof	0.1848	0.0663	0.0898
76	Aluminium and articles thereof	0.0272	0.0200	0.0121
95	Toys, games and sports requisites; parts and accessories thereof	0.0208	0.0199	0.0114
94	Furniture; bedding, mattresses, mattress supports, cushions and similar stuffed furnishings; . . .	0.0308	0.0263	0.0271

According to Table 8 and Table 9, it is found that the G-L index of most products tends to be close to 0, indicating that the bilateral trade between China and Mexico is also dominated by inter-industry trade, which means the trade between the two sides is complementary. Among them, copper, which is a base metal, has a tendency to change from inter-industry trade to intra-

industry trade, and the trade potential is huge. The G-L index of vehicles is greater than 0.5, which is intra-industry trade.

5. Conclusion and Suggetion

5.1. Conclusion

This paper analyzes the product trade between China and Brazil, as well as China and Mexico, by calculating the Revealed Comparative Advantage Index, Trade Intensity Index and Intra-industry Trade Index. The main conclusions are as follows:

First, from the perspective of export trade volume and RCA Index of major products, Brazil's competitive advantage in the international market is more obvious than China. In China's trade with Mexico, China's competitive advantage in the international market is more obvious.

Second, considering the trade structure and Trade Integration Index, China's trade ties with Brazil are closer and more complementary. Since the export products of China and Mexico are relatively similar, they have a certain degree of competitiveness in commodity trade. Moreover, China's exports are primarily raw material-intensive products [7].

Third, based on the Intra-industry Trade Index, most of China's product trade with Brazil and Mexico is inter-industry trade, which represents the trade between the two sides has complementarity. However, there is relatively weak trade complementarity between China and Brazil in steel and iron, and between China and Mexico in vehicles. Mexican exports of copper products have considerable trade potential.

5.2. Suggestion

Based on the conclusions, the following suggestions are proposed:

5.2.1. Improving the Trade Structure and Promoting Product Innovation

China's trade with Brazil and Mexico is mainly complementary, and Brazil and Mexico have obvious advantages in natural resources. China should also give full play to its own advantages, provide more diversified products, upgrade its industrial structure, and export more high-tech products. Since the export products of China and Mexico are similar. China can increase the added value of products and expand the degree of differentiation of products by strengthening product innovation, so as to enhance the competitive advantage of products in the international market and reduce the competitiveness of products trade with Mexico. Take the automobile industry as an example, Mexico has rich lithium resources reserves, lithium is the basic material of electric vehicle batteries, China can provide high-tech, cooperation between the two sides can promote the transformation and upgrading of the automobile industry.

5.2.2. Continuing to Strengthen China's Infrastructure Construction in Latin America

Given the strong trade complementarity between China and Latin American and limited bilateral trade development, China should leverage its corporate strengths and the "Belt and Road" platform to increase support for new infrastructure fields such as new energy, rail transit and communications in Latin America. This effort aims to establish a new paradigm combining traditional infrastructure and new infrastructure. Additionally, China should continue to focus on key cooperation programs such as roads, railways, and hydropower, assisting Latin American countries in breaking through bottlenecks in the process of modernization and urbanization.

5.2.3. Developing and Utilizing Marine Economic Resources

The "Belt and Road" Initiative includes the construction of the "21st Century Maritime Silk Road". Latin America has a unique geographical location, most of which are maritime countries, such as the famous Gulf of Mexico, the Caribbean Sea, the Pacific Ocean, and the Atlantic Ocean, possess unique marine economic resources. However, there is a lack of funds and technology

for marine economic development. Relying on the “Belt and Road” Initiative, China can deepen its cooperation with Latin American countries like Mexico to tap into the potential of the marine economy, strengthen the exploration and utilization of marine resources [8].

5.2.4. Promoting Green Cooperation between China and Latin America under the “Belt and Road” Initiative

Green and low-carbon is one of the themes of the development. The cooperation between China and Latin America and the Caribbean should not only realize complementary resource advantages, but also consider how to build a green and low-carbon high-quality development area. For instance, in the strategic cooperation agreement signed between CNOOC and Petrobras, in addition to oil and gas exploration and development, refining and chemical industry, engineering construction and oilfield services, crude oil trade, etc., the two sides also strengthened deepening cooperation in green and low-carbon fields. In addition, as a country at the forefront of developing countries in the development and utilization of clean energy and green energy, Brazil has advanced bioethanol technology and rich refining experience. It is the first country in the world to utilize ethanol gasoline, and is currently building the world's first ethanol hydrogen production plant [9]. There are broad opportunities and platforms for China and Brazil to carry out green energy cooperation in the future.

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