

Study on the Trade Potential of Chinese Electromechanical Products Export to RCEP Countries

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Abstract. This paper provides a detailed analysis of the complementarity and competitiveness of Chinese electromechanical product trade with the 14 other RCEP member countries through the G-L index and the ESI index. Our study found that China is highly competitive in electromechanical products with Japan, Malaysia, South Korea, Philippines and New Zealand. China's mechanical and electrical products trade with Australia, Brunei, Cambodia, Laos, New Zealand, Myanmar and Indonesia is highly complementary. Subsequently, this paper made an empirical analysis of the influencing factors of China's RCEP export countries from 2005 to 2019. The article found that the GDP of RCEP, Chinese GDP, the population size of RCEP, and the trade openness of RCEP have different effects on China's export of mechanical and electrical products. China's mechanical and electrical products export to RCEP countries are in the "potential development type". In view of this, suggestions are made on how to improve China's export of mechanical and electrical products to RCEP countries.

Key words: electromechanical export; trade potential; RCEP

1. Introduction

In 2020, the RCEP agreement was officially signed, marking the birth of the regional free trade zone with the largest economic scale and most development potential in the world. RCEP is of great significance in promoting regional integration in East Asia and improving regional supply chain and value chain. RCEP is an important partner of China. In 2020, China's export to RCEP members was 4.830 billion yuan, an increase of 5% over last year, among which mechanical and electrical products accounted for 53.8%, reaching 2.60 billion yuan, an increase of 7.3% over last year. Thus, mechanical and electrical products play an important position in China's exports to RCEP countries. With the implementation of the measures signed by RCEP in the future, the import and export demand of mechanical and electrical products will continue to expand, and the related trade cooperation will be further strengthened. Although the RCEP covers a wide range of areas, the countries included vary in terms of their economic base, logistics performance, and political system. Therefore, it is very important to understand which countries have great potential for Chinese mechanical and electrical products and which countries have little potential in this context.

At present, the researches on the trade of mechanical and electrical products mainly focuses on the export influencing factors and export structure of mechanical and electrical products, and there is little researches on the trade potential of Chinese mechanical and electrical products exported to RCEP countries. Gravitation model is one of the common tools to measure the trade potential between countries or economies. UzZaman and Kalirajan (2019) calculated the energy trade efficiency of Southeast Asian countries through the gravity model, indicating that regional cooperation can improve the trade potential of renewable energy commodities^[1]. Huang (2019) used the gravity model to predict China's export trade potential to Central Asian countries^[2]. Zhe Ru and Wang Chuying (2020) calculated the trade potential of mechanical and electrical products exported to ASEAN members through the gravity model^[3]. Wan Hongxian, Pan Wendi (2021), based on the expanded gravity model, measured the trade potential between China and RCEP members, and found that China still has room for RCEP countries^[4]. In terms of research on the influencing factors of electromechanical trade, Cai Yuqiu and Wang Xinyao (2019) found that China's GDP, India's GDP and India's total population all have a positive effect on exports, while China's total population and

the distance between China and India have a negative impact on exports ^[5]. Feng Xiaoling, Zhao Pengpeng (2021) studied the impact of trade friction and exchange rate fluctuations on the export of Chinese electromechanical products to the United States based on the VAR model ^[6]. Yin Hua and Deng Yani (2021) adopted the method of ternary margin to decompose the export of The mechanical and electrical products in China. The study found that the economic scale, per capita income and geographical distance between the two countries have significant differential effects on the export of mechanical and electrical products ^[7].

Based on the above literature, it can be found that there are many unexplored fields for the foreign trade situation of RCEP countries, and there are few studies on mechanical and electrical products. And mainly use the trade gravity model to analyze the factors affecting the export. However, the trade potential and gravity model are less combined to study the export RCEP of Chinese mechanical and electrical products. Therefore, this paper has theoretical and practical significance to study the export of Chinese mechanical and electrical products to RCEP by constructing a trade gravity model.

2. Analysis of Export of Electromechanical Products to RCEP countries

2.1 Analysis of the overall trade scale

From the perspective of total trade value from 2005 to 2019, except for the export decline of mechanical and electrical products in 2009 and 2016, the other years were in a growth trend. In terms of growth rate, the growth was rapid from 2005 to 2008, both over 20%. Hacked by the 2008 financial crisis, the growth rate fell off a cliff, up by -9.71% in 2009. Due to the sluggish world economic recovery, sluggish external demand and other factors, the export growth rate has shown a downward trend from 2010 to 2016. From 2017 to 2019, with the improvement of international market demand and the implementation of various domestic policies to promote economic and trade growth, China's overall export of electromechanical products to RCEP countries showed a good trend. In the future, with the implementation of various policies signed by RCEP, China's export of mechanical and electrical products to RCEP countries will have greater growth potential.

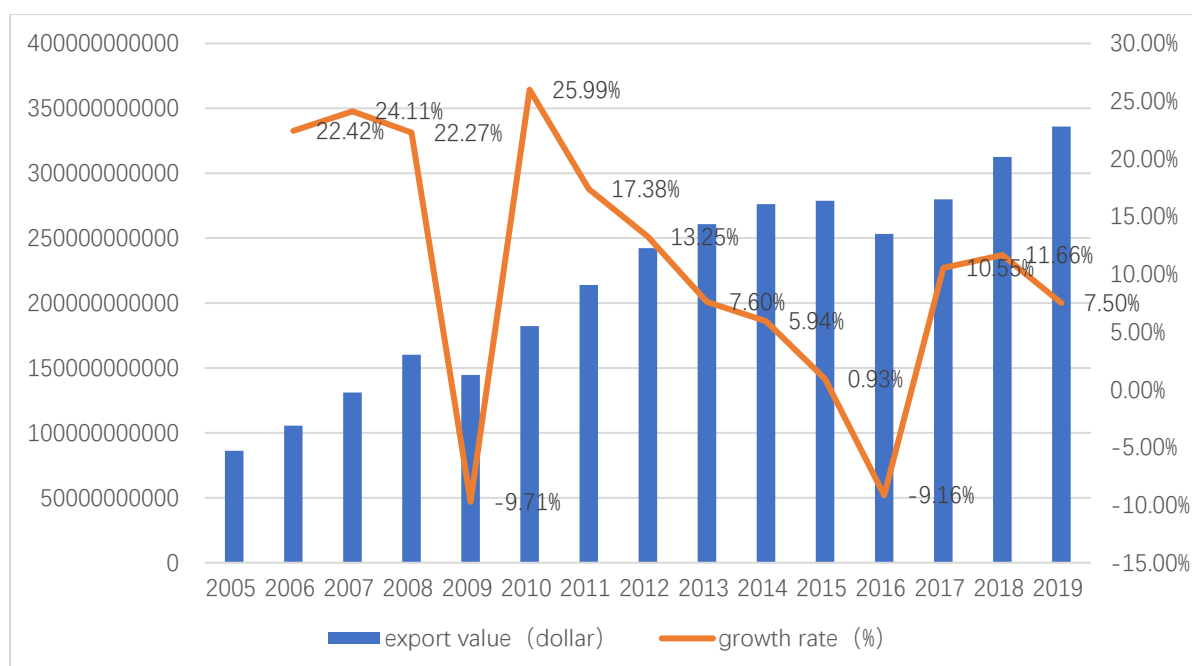


Figure 1. China's total mechanical and electrical exports to RCEP countries

2.2 Analysis of export trade structure

According to the 2013 edition of the Import and Export Statistical Work Manual and the United Nations Classification of International Trade Standards, this paper classifies 12 categories. According to the SITC (Rev4) commodity category: category 69 is metal products; 71 is power generation machinery and equipment; 72 is individual industrial machinery; 73 is metal processing machinery; 74 is general industrial machinery, equipment and machine parts; 75 is office machines and automatic data processing instruments; 76 is telecommunications and recording and audio equipment and instruments; 77 is power machinery, instruments and appliances; 78 is road vehicles; 79 is other transportation equipment; 87 is professional scientific and control instruments and instruments, 88 is photographic instruments, optical products, and clocks.

Table 1. Export value of various mechanical and electrical products in 2019 (1)

Country	69	71	72	73	74	75
Australia	3046.1	1049.5	1176.2	116.4	2421.6	4084.4
Brunei	48.9	13.7	14.0	1.2	86.7	5.8
Cambodia	458.9	135.8	408.6	32.5	307.5	39.4
Malaysia	2625.1	521.0	1406.9	266.3	2539.3	2593.4
Myanmar	428.5	321.5	523.9	39.8	489.8	117.2
Laos	187.3	83.4	139.4	6.7	163.6	114.5
Philippine	1849.6	415.4	789.2	124.2	1507.7	1643.5
Japan	5628.2	2331.5	3195.4	461.7	7740.8	14732.4
South Korea	3270.8	1452.9	1592.0	283.9	4373.0	11148.9
New Zealand	398.3	27.4	119.4	18.6	266.0	340.1
Vietnam	3448.3	1438.9	4275.1	776.2	3806.4	8598.7
Singapore	2149.9	518.0	1241.0	79.9	1806.1	6218.3
Thailand	2054.8	874.3	1592.4	340.8	3448.7	3358.1
Indonesia	2489.0	1333.4	1911.4	328.9	4411.9	3406.0
Total	28083.7	10516.8	18384.6	2877.1	33369.2	56400.7

Table 2. Export value of various mechanical and electrical products in 2019 (2)

Country	76	77	78	79	87	88	Total
Australia	3818.8	4706.4	1421.4	460.2	410.8	253.0	11070.6
Brunei	10.4	20.2	19.3	83.3	10.7	0.5	144.3
Cambodia	389.4	328.7	202.2	11.3	23.0	6.1	960.7
Malaysia	2384.0	10940.5	1459.3	233.9	1393.9	218.7	16630.3
Myanmar	1064.0	515.6	617.1	22.5	58.7	33.5	2311.3
Laos	49.7	167.5	97.0	2.4	15.6	0.6	332.9
Philippine	2482.2	4688.1	1745.2	253.8	375.0	231.4	9775.7
Japan	12561.8	17956.2	4499.1	186.2	3262.8	1206.3	39672.6
South Korea	6606.4	25724.1	1969.3	676.0	3511.7	706.7	39194.1
New Zealand	253.7	424.5	198.9	43.5	60.0	25.2	1005.8
Vietnam	3439.4	19411.2	1453.7	110.5	1898.6	1022.9	27336.3
Singapore	3846.6	8508.9	448.5	4932.7	754.0	336.7	18827.4
Thailand	3358.8	4060.3	1443.2	188.2	841.5	298.2	10190.2
Indonesia	2750.2	3465.5	1200.3	260.8	1037.0	203.2	8917.1
Total	43015.3	100917.6	16774.5	7465.3	13653.5	4543.0	186369.2

In terms of export product categories, China's most exported electromechanical products to RCEP in 2019 were 77, 75, 76, 74 and 69 categories, respectively, the least exported products were in categories 73 and 88. At the national level, Japan, South Korea, Vietnam, Singapore and Malaysia

have the most electromechanical exports. Among them, the exports to Japan, Vietnam, South Korea and Singapore mainly include 77, 75 and 76. From the perspective of the export of mechanical and electrical products, China's exports to RCEP countries are relatively concentrated and stable, mainly concentrated in the top five categories, and the export of precision instruments with high technology content is less. Once the supply problems occur in the categories of 75, 76 and 77, the export trade risk of mechanical and electrical products will be increased, which is not conducive to the improvement of the export trade potential of mechanical and electrical products. Therefore, China should carry out diversified reform in the export commodities of mechanical and electrical products to avoid the trade risks caused by the excessive concentration of export commodity types.

2.3 Complementary analysis of mechanical and electrical products

This paper uses the industrial trade index (G-L) to explore the trade complementarity of electromechanical products between China and RCEP countries. The G-L index can reflect the changes in the level of electromechanical product industry trade between China and RCEP countries. The specific calculation formula is as follows:

$$GL_{ij} = 1 - |X_{ij}^k - M_{ij}^k| / (X_{ij}^k + M_{ij}^k)$$

Among them, X_{ij}^k and M_{ij}^k indicate the trade export amount and trade import amount of China and "j" countries in category "k" products respectively. The index ranges from 0 to 1, when the values are closer to 0, they indicate strong complementarity and , the two countries' trade model on such products is closer to inter-industrial trade; on the contrary, the weaker the complementarity, the closer to the intra-industrial trade model.

Table 3. G-L Index of China and RCEP Countries

Country	2005	2007	2009	2011	2013	2015	2017	2018	2019
Australia	0.232	0.158	0.114	0.110	0.077	0.052	0.061	0.053	0.052
Brunei	-----	0.013	0.000	0.001	0.000	0.004	0.000	0.000	0.000
Cambodia	0.006	0.000	0.005	0.008	0.044	0.287	0.291	0.247	0.142
Malaysia	0.646	0.742	0.694	0.528	0.669	0.710	0.728	0.753	0.745
Myanmar	0.004	0.047	0.027	0.019	0.019	0.017	0.035	0.036	0.042
Laos	0.000	0.000	0.001	0.001	0.002	0.001	0.053	0.110	0.081
Philippine	0.333	0.301	0.555	0.570	0.667	0.820	0.858	0.904	0.975
Japan	0.712	0.688	0.682	0.672	0.826	0.841	0.763	0.756	0.768
South Korea	0.460	0.531	0.631	0.584	0.598	0.626	0.622	0.588	0.685
New Zealand	0.151	0.121	0.126	0.138	0.141	0.132	0.085	0.121	0.125
Vietnam	0.205	0.188	0.243	0.470	0.591	0.661	0.895	1.000	0.880
Singapore	0.940	0.673	0.610	0.699	0.712	0.603	0.716	0.746	0.690
Thailand	0.674	0.621	0.648	0.804	0.965	0.966	0.983	0.985	0.964
Indonesia	0.679	0.587	0.388	0.299	0.201	0.211	0.228	0.194	0.172

According to the G-L calculation results, the electromechanical product trade between China and RCEP countries has the coexistence of intra-industry trade mode and inter-industry trade mode. By country, the G-L value of China and Thailand, Vietnam, Japan, South Korea and Malaysia is greater than 0.5, respectively, so the complementarity is weak, and the degree of intra-industrial trade is higher than that of other countries. The G-L values of China and Brunei, New Zealand, Australia, Cambodia, Laos, Indonesia and Myanmar are all less than 0.2, which is highly complementary and tends to be in inter-industrial trade. In terms of time, the G-L values of Thailand, Vietnam, South Korea, the Philippines, Malaysia with China showed a growth trend, New Zealand and Indonesia showed a downward trend, while other countries were relatively stable.

2.4 Competitive analysis of electromechanical products

This paper uses the export similarity index (ESI) to describe the competition between China and RCEP countries. The export similarity index uses the similar degree of exports between the two countries to indicate the degree of competition between China and RCEP countries in the global market. The formula is as follows:

$$ESI_{ij} = 100 \times \sum_{k=0}^n \left(\frac{X_{iw}^k / X_{jw}^k + X_{jw}^k / X_{iw}^k}{2} \right) \left(1 - \left| \frac{X_{iw}^k / X_{iw} - X_{jw}^k / X_{jw}}{X_{iw}^k / X_{iw} + X_{jw}^k / X_{jw}} \right| \right)$$

The ESI_{ij} indicates the trade similarity index of countries "i" and "j", "n" indicates the type of exported products, "a" indicates the product category. X_{iw}^k indicates the value of the "k" products exported by China to the global market, and X_{iw} indicates the value of all the products exported by China to the global market; X_{jw}^k indicates the value of "k" products exported by the country "j" to the global market. The X_{jw} indicates The value of all the products that "j" country exports to the global market. The ESI index ranges from 0 to 100, and the closer the ESI is to 100, the more similar the export markets in the two countries, the stronger the competition, and vice versa.

Table 4. ESI Index of China and RCEP Countries

Country	2005	2007	2009	2011	2013	2015	2017	2018	2019
Australia	11.40	10.09	7.86	6.07	6.45	7.98	6.21	5.85	5.94
Brunei	----	1.77	2.78	2.44	1.69	3.73	3.12	3.50	4.00
Cambodia	0.56	2.10	2.53	5.00	9.66	8.20	8.41	8.52	8.13
Malaysia	52.93	52.59	50.36	42.88	42.34	46.83	48.63	50.23	50.48
Myanmar	----	----	----	0.30	0.65	0.62	6.25	5.23	3.89
Laos	----	----	----	1.35	2.27	12.54	10.02	9.63	8.10
Philippine	52.93	54.33	56.08	43.32	54.13	53.96	54.95	55.36	55.06
Japan	52.93	54.33	56.08	54.34	54.13	53.96	54.95	55.36	55.06
South Korea	52.93	54.33	56.08	54.34	54.13	53.96	54.95	55.36	55.06
New Zealand	14.16	12.98	11.81	9.94	8.77	9.68	8.63	8.43	8.31
Vietnam	11.20	13.42	15.50	21.85	35.66	40.84	46.57	46.60	46.76
Singapore	32.88	57.78	55.53	48.86	49.87	53.96	54.21	53.26	54.77
Thailand	48.62	48.90	45.92	41.62	46.57	50.53	49.85	49.24	46.05
Indonesia	16.90	14.48	14.95	11.68	13.31	14.30	13.66	13.40	14.88

On the whole, the export similarity index of mechanical and electrical products between China and RCEP countries is between 0 and 60. By countries, the countries with a low level of competition with China for mechanical and electrical products are Myanmar, Brunei, Laos and New Zealand. Countries with a high level of competition with Chinese mechanical and electrical products are Japan, South Korea, Malaysia, Philippines and New Zealand. Among them, the ESI index of electromechanical products in South Korea, Japan, Philippines has been in a stable state for a long time, showing solidification. Over time, the ESI index of Australia and New Zealand is gradually shrinking, and the convergence of export commodity structure decreases; China's ESI indexes with Brunei, Cambodia and Vietnam are on the rise and facing competition.

3. Empirical analysis of the trade potential of electromechanical products between China and RCEP countries

3.1 Variables selection and variables description

This part draws on the empirical model summarized by scholars and selects the following factors as variables: (1) China's GDP represents China's economic scale and China's export supply capacity of mechanical and electrical products to RCEP countries. (2) RCEP 's GDP reflects the demand capacity of RCEP countries to import mechanical and electrical products. (3) The population size of RCEP countries reflects the domestic market demand for mechanical and electrical products in the imported countries. At the same time, the large population size of the importing countries will also lead to the reduction of domestic per capita GDP and consumption level, and weaken the import capacity of the importing countries to mechanical and electrical products. (4) Geographical distance between China and RCEP countries. The geographical distance between China and the capital of the RCEP trading country is selected to measure, and the geographical distance of the trading country directly affects the transportation cost. (5) Trade dependence of RCEP countries, the higher the dependence of RCEP countries on foreign trade, the greater the trade flow (6) whether there is a common boundary between the trading countries, if there is a common boundary, the relevant logistics and transportation will be more convenient and trade costs will be reduced. (7) Whether the trading countries have a common language. If there is a common language, it will be conducive to trade communication and will have a positive impact on China's export of mechanical and electrical products.

The explained variable is China's export value of mechanical and electrical products to RCEP countries, data from UN Comtrade Database from 2005 to 2019. There are 7 explanatory variables: the GDP data of China and RCEP countries and the population size of RCEP countries are obtained from the World Bank Development Index database; the geographical distance between China and RCEP, the existence of common boundary and the existence of common language are all obtained from the CEPII database. Trade dependence of RCEP countries is calculated by UN Comtrade Database

3.2 Model construction and regression results analysis

3.2.1 Model establishment

Based on the trade gravity model and the variables selected in this paper, the model of Chinese electromechanical products export to RCEP countries is constructed, specifically as follows:

$$\ln T_{ijt} = \alpha_0 + \beta_1 \ln GDP_{it} + \beta_2 \ln GDP_{jt} + \beta_3 \ln Pop_{jt} + \beta_4 \ln Open_{jt} + \beta_5 \ln Dist_{ij} + \beta_6 Land_{ij} + \beta_7 Language_{ij} + \varepsilon_{ijt}$$

Among them, "*i*" means China, "*j*" means other RCEP countries, "*t*" means *t* year, "*lnT*" is the explained variable, and the remaining variables are the factors that control China's export of mechanical and electrical products to RCEP countries.

3.2.2 Model regression results

This paper uses the use of stata16.0 software to regree the data of mechanical and electrical products to China and 14 members of RCEP. Prior to the regression, the natural log was taken for all variables to mitigate heteroscedasticity. Subsequently, according to the Hausman test and the LM test, the random effect model should be more reasonable according to the test results.

(1) Benchmark regression results

As can be seen in Table 5, among the explanatory variables, except the geographical distance between China and RCEP countries passed the p-test at the 5% significance level, all the rest passed the p-test at the 1% significance level, and the model is highly interpreted and, with R^2 of 0.97 and adjusted R^2 of 0.992. Through the specific empirical results of this model, it can be seen that: (1) China's GDP and RCEP 's GDP will have a positive impact on the export trade value of China's mechanical and electrical products to RCEP. For 1% increase in China's GDP, China's export to

RCEP mechanical and electrical products will increase by 0.575%. For every 1% increase in GDP of RCEP countries, the export increased by 0.856%. The increase in the economic aggregate of RCEP countries played a more significant effect on the export. (2) The population size and trade opening of RCEP countries will have a positive impact on the export of Chinese mechanical and electrical products. For every 1% growth of the population of RCEP countries, the export will increase by 0.243%. For every 1% increase in trade openness among RCEP countries, China's exports of mechanical and electrical products increased by 0.644%. The impact of trade openness among RCEP countries is even more significant, The more dependent the partner country is on trade, The more conducive to the export of China's mechanical and electrical products to RCEP countries, (3) The geographical distance between China and RCEP countries shows a significant negative effect on China's export of mechanical and electrical products, For each 1% increase, exporting RCEP countries will lose 0.220%, which means that the farther the distance, the higher the trade cost of transportation and the less trade. (4) Whether China has a common boundary with RCEP countries and has a common language passes significance tests at the 1% level, It shows that the two sides have common language and common boundaries will promote the export of Chinese electromechanical products to RCEP .

Table 5. Benchmark regression results

LnTijt	Coef.	St.Err.	z-value	p-value	[95% Conf	Interval]	Sig
LnGDPit	.575	.146	3.95	0	.29	.86	***
LnGDPjt	.856	.091	9.40	0	.678	1.035	***
LnPopjt	.243	.084	2.89	.004	.079	.408	***
LnOpenjt	.644	.132	4.90	0	.386	.902	***
LnDistij	-.22	.1	-2.20	.028	-.415	-.024	**
Landij	.716	.188	3.80	0	.347	1.086	***
Languageij	.806	.245	3.29	.001	.325	1.286	***
Constant	-19.344	3.545	-5.46	0	-26.292	-12.395	***
Mean dependent var		22.369			SD dependent var		1.897
Overall r-squared		0.970			Number of obs		210.000
Chi-square		4570.569			Prob > chi2		0.000
R-squared within		0.832			R-squared between		0.992
*** p<.01,** p<.05,* p<.1							

(2)Endogenous problem

The existence of reverse causality between the variables will produce serious endogenous problems, which will affect the accuracy and consistency of the regression results. To further eliminate the effect of reverse causality on the estimated results in this paper, the seven explanatory variables will lag behind one period before the random effect regression. Generally speaking, the current economic size, population size, trade openness, geographical distance, common boundaries and common language will not affect the past trade value. The estimated results are shown in Table 6. It can be seen that the regression results of the lag phase are close to the benchmark regression model, indicating that the equation still explains the model well.

Table 6. The endogeneity test

LnTijt	Coef.	St.Err.	z-value	p-value	[95% Conf	Interval]	Sig
L.LnGDPit	.455	.131	3.46	.001	.197	.712	***
L.LnGDPjt	.82	.075	10.86	0	.672	.968	***
L.LnPopjt	.25	.073	3.43	.001	.107	.392	***
L.LnOpenjt	.55	.133	4.12	0	.288	.811	***
L.LnDistij	-.258	.108	-2.38	.017	-.47	-.045	**
L.Landij	.713	.141	5.05	0	.436	.99	***
L.Languageij	.895	.263	3.40	.001	.379	1.411	***
Constant	-14.523	3.406	-4.26	0	-21.198	-7.847	***
Mean dependent var		22.461		SD dependent var		1.842	
Overall r-squared		0.969		Number of obs		196.000	
Chi-square		7610.643		Prob > chi2		0.000	
R-squared within		0.783		R-squared between		0.992	
*** p<.01,** p<.05,* p<.1							

(3) stability test

To ensure the accuracy of the sample regression results, this paper uses the robustness test of Chinese per capita GDP and RCEP countries replacing Chinese GDP and RCEP GDP. The regression results after the substitution variables are basically consistent with the benchmark regression results, indicating that the setting of the trade gravity model for RCEP national electromechanical export is reasonable and the regression results are robust.

Table 7. The alternative indicator regression results

LnTijt	Coef.	St.Err.	z-value	p-value	[95% Conf	Interval]	Sig
LnPergdpi	.598	.151	3.95	0	.302	.894	***
LnPergdpj	.855	.091	9.36	0	.676	1.034	***
LnPopjt	1.099	.028	38.67	0	1.044	1.155	***
LnOpenjt	.645	.131	4.91	0	.388	.902	***
LnDistij	-.22	.1	-2.19	.029	-.416	-.023	**
Landij	.714	.189	3.78	0	.344	1.085	***
Languageij	.805	.245	3.29	.001	.325	1.286	***
Constant	-7.438	1.339	-5.56	0	-10.062	-4.814	***
Mean dependent var		22.369		SD dependent var		1.897	
Overall r-squared		0.970		Number of obs		210.000	
Chi-square		4513.917		Prob > chi2		0.000	
R-squared within		0.832		R-squared between		0.992	
*** p<.01,** p<.05,* p<.1							

Through the above regression, the trade gravity model can be obtained:

$$\ln T_{ijt} = 119.344 + 0.575 \ln GDP_{it} + 0.856 \ln GDP_{jt} + 0.243 \ln Pop_{jt} + 0.644 \ln Open_{jt} - 0.22 \ln Dist_{ij} + 0.7166 \ln Land_{ij} + 0.806 \ln Language_{ij}$$

3.3 The Calculation of the trade potential

The trade gravity model can not only be used to study the influencing factors of China's export to RCEP countries, but also estimate the theoretical forecast value of export. Combined with the actual trade value, the potential value can be calculated. The calculation formula is as follows:

$$TP_{ij} = \frac{\ln Trade_{ij}}{\ln Trade_{ij}^*}$$

Among them, "TP_{ij}" represents the trade potential between China and "j" country in RCEP; "lnTrade_{ij}" is the actual trade value of electromechanical products exported to "j" country; "lnTrade_{ij}^{*}" is the theoretical estimate. According to the trade potential formula, the theoretical estimate of the export trade value can be obtained by substituting the relevant data into the extended trade gravity model. This paper refers to the classification standards of Liu Qingfeng and Jiang Shuzhu (2002) for classification, When the TP_{ij} value is above 1.2, China's export to RCEP electromechanical products is "potential remodeling", It indicates close trade relations, trade potential has been fully exploited; when the TP_{ij} value is located between 0.8 and 1.2, China's export of electromechanical products to RCEP countries is a "potential pioneering type", there is still room for further growth in the electromechanical trade; when the TP_{ij} values are less than 0.8, China's export of electromechanical products to RCEP countries is "great potential", There is a huge room between the two countries .

According to the above content, this paper measures the export trade potential index of RCEP countries from 2005 to 2019. It can be concluded from the table that from 2005 to 2019, China's trade potential of mechanical and electrical products to RCEP countries remained between 0.95 and 1.07, which is in the potential development stage. It shows that China still has room for improvement in the export trade scale of mechanical and electrical products, and the export trade potential of mechanical and electrical products has not been fully released. China's electromechanical products to RCEP partner countries remain between 0.95 and 1.07, fluctuating around 1, which indicate that China's trade potential of electromechanical products to RCEP countries is relatively stable.

Table 8. Trade Potential (1)

year	Australia	Brunei	Cambodia	Malaysia	Myanmar	Laos	Philippine
2005	1.020	0.929	0.963	1.004	0.999	1.008	1.021
2006	1.023	0.943	0.977	1.006	0.995	1.020	1.017
2007	1.025	0.957	1.000	1.004	1.006	1.005	1.016
2008	1.017	0.938	1.003	0.998	1.008	1.013	1.012
2009	1.018	0.961	0.991	0.998	1.009	1.020	1.008
2010	1.018	0.966	0.997	0.993	1.017	0.988	1.006
2011	1.014	0.970	1.019	0.985	1.011	0.995	1.001
2012	1.012	0.986	1.017	0.989	1.013	1.017	0.999
2013	1.010	1.017	1.020	0.993	1.011	1.049	1.000
2014	1.009	1.027	0.992	0.991	1.010	1.034	1.004
2015	1.013	1.052	0.998	0.994	1.017	1.002	1.008
2016	1.009	1.002	0.995	0.988	1.003	0.989	1.006
2017	1.009	1.012	0.997	0.989	0.999	0.996	1.004
2018	1.009	1.075	0.997	0.989	0.994	0.985	1.005
2019	1.009	1.007	1.016	0.994	0.995	0.990	1.012
Mean	1.014	0.989	0.999	0.994	1.006	1.007	1.008

Table 9. Trade Potential (2)

year	Japan	South Korea	New Zealand	Vietnam	Singapore	Thailand	Indonesia
2005	1.013	1.009	0.999	0.965	1.028	1.003	0.992
2006	1.011	1.009	1.006	0.971	1.032	1.004	0.991
2007	1.008	1.009	1.004	0.985	1.028	0.998	0.994
2008	1.002	1.013	1.000	0.986	1.022	0.996	0.999
2009	1.000	1.014	0.997	0.990	1.022	0.996	0.994
2010	1.000	1.010	0.995	0.992	1.011	0.997	0.993
2011	0.997	1.004	0.994	0.988	1.003	0.998	0.991
2012	0.997	1.006	0.992	0.988	1.002	1.004	0.993
2013	0.999	1.005	0.992	0.997	0.998	0.999	0.993
2014	0.997	1.004	0.992	1.004	0.998	0.998	0.992
2015	0.997	1.009	0.996	1.000	1.004	1.005	0.992
2016	0.994	1.005	0.997	0.994	0.996	1.003	0.989
2017	0.992	1.002	0.994	0.997	0.991	0.999	0.985
2018	0.990	0.999	0.995	0.996	0.986	0.996	0.990
2019	0.989	1.002	0.991	1.004	0.991	0.997	0.994
Mean	0.999	1.007	0.996	0.991	1.008	1.000	0.992

4. Conclusions and policy recommendations

This paper calculates the electromechanical product trade between China and RCEP through the G-L index and ESI index, the article found that China and New Zealand, Australia, Brunei, Cambodia, Myanmar, Indonesia, Laos are highly complementary, China is highly competitive with Japan, South Korea, Philippine, Singapore, Canada and Malaysia. Through the construction of gravity model research found that China's GDP, RCEP 's GDP, RCEP 's population, RCEP 's trade openness, the common boundary and common language have a significant positive impact, the geographical distance between the two countries has negative impact. In terms of overall trade potential, trade potential of mechanical and electrical products to RCEP countries remains between 0.95 and 1.07, which means that China's export trade of mechanical and electrical products to RCEP countries has not reached the saturation state, and there is room for further expansion.

Based on the above research conclusions, the following suggestions are proposed:

First, combine the development of mechanical and electrical processing trade with the upgrading of industrial structure. In the short term, China and RCEP countries have different competitiveness and complementarity. Therefore, China should choose countries with strong complementarity and weak competitiveness to strengthen communication, expand exports and carry out inter-industrial trade. At the same time, China carries out intra-industrial trade to export differentiated mechanical and electrical products with weak complementarity and similar export indexes countries. In the long run, China's electromechanical exports to RCEP countries are mainly concentrated in 75, 76 and 77, with low added value of labor. China should change the export growth model of electromechanical products, encourage the transformation and upgrading of processing trade, improve the technology intensity of electromechanical products. Promote the upgrading of the mechanical and electrical industrial structure, and turn to the high value-added links of the value chain.

Second, optimize the infrastructure construction between China and the RCEP. Through the empirical results, it can be found that geographical distance has a significant negative effect on China's export of electromechanical products to RCEP countries. Therefore, strengthening the transportation cooperation between China and RCEP countries and reducing logistics costs will play a positive role in promoting China's export of mechanical and electrical products to RCEP. On the basis of strengthening the construction of its own modern logistics and trade channel, China can provide technical and financial support to less developed countries in RCEP to help the construction

of transportation infrastructure, promote the connectivity between China and RCEP and facilitate inter-regional trade.

Third, explore new trade growth points with the RCEP members. Through the empirical results, it can be found that China's export trade potential of mechanical and electrical products to RCEP countries is a "potential pioneering type". To further expand the trade space, the two sides need to tap the potential of cooperation in other trade areas. The empirical study in this paper shows that the higher the trade openness of RCEP partner countries, the more favorable the export of electromechanical products. Therefore, China can expand the scale of electromechanical trade with RCEP members through the RCEP trade agreement, and enhance the cooperation potential in the field of electromechanical trade.

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