The Influential Factors and Development Potential of Chinese Aquatic Products Export: Study on an Expansible Trade Gravity Model

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Abstract: As we all know that China is one of the biggest countries to export a lot of aquatic products. What factors have influenced its expert of aquatic products and what is the potential? In order to explain this problem, this article has analyzed the current status of Chinese aquatic products export. And then, an expansible trade gravity model is built up. By using the panel data and making use of Eviews 7.0, this article then analyzed the multiple linear regressions of the top 40 countries which have the big trading amount of aquatic products with China from year 1992 till 2010. The basic conclusion drawn is that Chinese fishery product, GDP of importing partners, the per capita income difference, Chinese population of importing partners and APEC are the main positive factors while trade distance is the dominated negative factor. From the empirical study, we also know that China has exported too much aquatic products to those 15 countries such as Poland, Portugal, Ukraine, and Mexico. Therefore, these countries are undoubtedly recession markets to China. Those exporting markets of Philippines, Vietnam, Germany, Australia and the other 6 countries are already full enough. But there is still much room for Chinese aquatic products to such countries as Singapore, Russia, France and Algeria.

Index Terms: Influential factors; Expansible trade gravity model; Multiple regression analysis; Aquatic products

INTRODUCTION

Since the reform and opening up, China’s export of aquatic products has developed rapidly. From 2000, the export of aquatic products ranks first of the exports of bulk agricultural products in China, and the export amount of aquatic products accounts for more than 30% of the total export amount of all the agricultural products. China’s export amount of aquatic products in 2010 amounted to 13.209 billion U.S. dollars, an increase of 29.21% over the previous year.

It is worth noting that although there are more than 130 trade partners of the export of Chinese aquatic products, the export market is mainly concentrated in Japan, America, Korea and Hong Kong, China. From 2010, the Japanese market accounted for 23.68% of the export share of Chinese aquatic products, the top three export markets accounted for 53.03% of the export share, and the top ten export markets accounted for 75.18% of the export share (please see Table 1).

<table>
<thead>
<tr>
<th>Export Market</th>
<th>Export Amount</th>
<th>Proportion of total export of aquatic products</th>
</tr>
</thead>
<tbody>
<tr>
<td>Japan</td>
<td>3128.29</td>
<td>23.68</td>
</tr>
<tr>
<td>America</td>
<td>2554.60</td>
<td>19.34</td>
</tr>
<tr>
<td>Korea</td>
<td>1321.62</td>
<td>10.01</td>
</tr>
<tr>
<td>Hong Kong, China</td>
<td>723.04</td>
<td>5.47</td>
</tr>
<tr>
<td>Germany</td>
<td>508.28</td>
<td>3.85</td>
</tr>
</tbody>
</table>
The over-reliance of China’s export of aquatic products on individual markets not only cause the increase of trade barriers of aquatic products in recent year, but also limit the export potential of Chinese aquatic products in the future. Therefore, the export market diversification of aquatic products is urgently needed in China. How to adjust the structure of export markets of Chinese aquatic products? Which markets’ export capacity is already saturated? Which markets’ export potential needs to be further tapped? The article will use the extended trade gravity model to measure the export potential of Chinese aquatic products, answer the above questions and provide a realistic basis for the export market structure optimization of Chinese aquatic products.

LITERATURE REVIEW

The gravity model is derived from the Law of Universal Gravitation, which believes that the gravitational force between two objects is directly proportional to the product of their masses and inversely proportional to the square of the distance between them. Isard & Peck (1954) and Beckerman (1956) find by intuition that geographically close countries are more prone to have large-scale trade. Tinbergen (1962) and Poyhonen (1963) put forward the trade gravity model, and further verify that the trade scale between two countries is directly proportional to their economies of scale and inversely proportional to their space distance. Linnemann (1966) makes pioneering contribution to add the variables of population and trade policy into the trade gravity model. Helpman & Krugman (1985), Bergstrand (1985), Chen & Wall (1999) and Egger (2005) improve the measurement method of trade gravity model, and effectively promote the development of trade gravity model.

Moghaddam, Masoud, Ratha and Artatrina (2011) analyze the trade potential between Turkey and its 11 EU members by using the gravity model and panel data from 1980 to 2006. Esmaeili and Abdoullkarim (2011) analyze the trade potential of agricultural products in Iran by using the gravity model, and Nuroglu and Elif (2011) analyze the trade flows in Bosnia and Herzegovina.

On the basis of foreign research, Liu Qingfeng (2002) makes a research to the factors that influence China’s bilateral trade flows by using the gravity model. Sheng Bin (2004) studies the factors that influence the export trade of various emerging markets by using the gravity model. Lin Ling (2004), Cao Hongcheng (2007) and Wang Ke (2008) study the influence of APEC on China’s import and export trade, believing that APEC, GDP per capita, distance and GDP exert the greatest impact on China’s export trade.

The research of Jiang Shuzhu (2003), Hou Tieshan (2006), Shan Wenting (2006), Wu Dan (2008) and Chen Wen (2009) verify the role of China—ASEAN Free Trade Area in promoting the trade between the members. Tian Hui and Jiang Chenchun (2012) build China’s foreign trade gravity model and study that the impact of national cultural distance on China’s foreign trade by introducing Hofstede national cultural dimensions. Chen Wen and Li Jialu (2012) investigate the local market effects of exports of China’s manufacturing industry as a whole as well as 26 sub-industries by using the gravity model. Zhang Huiqing and Tang Haiyan (2012) estimate China’s export potential in post-crisis period and reveal the regional distribution of China’s export potential and its characteristics of historical evolution based on the measuring method of extended gravity model panel data. This shows that the trade gravity model has been widely recognized. However, the study of the existing relevant results is mainly concentrated in the comprehensive trade between countries, but very limited in the application of China’s aquatic products. Therefore, based on China’s actual export trade of aquatic products, the article will include the total economy of the importing country (region), China’s gross value of fisheries output, trade distance, whether being the APEC member or not, per capita income differences in the importing and exporting countries and cultural differences into the analysis framework, build the extended trade gravity model, and give an empirical analysis of factors that influence the export of China’s aquatic products and estimate its export potential by using panel data from 1992 to 2010, and lay a solid foundation for the structure adjustment of China’s aquatic products export market.

CONSTRUCTION OF EXTENDED TRADE GRAVITY MODEL OF CHINA’S EXPORT OF AQUATIC PRODUCTS

The article divides the factors that influence China’s export of aquatic products into six factors: total economy of the importing country (region), total economy of the exporting country, per capita income differences, trade distance, cultural differences and whether being the APEC member or not, and build the extended trade gravity model in accordance with these six factors.

<table>
<thead>
<tr>
<th>Country</th>
<th>Value</th>
<th>Per</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Russian Federation</td>
<td>375.18</td>
<td>2.84</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spain</td>
<td>363.14</td>
<td>2.75</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Malaysia</td>
<td>353.68</td>
<td>2.68</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Canada</td>
<td>337.47</td>
<td>2.55</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UK</td>
<td>265.30</td>
<td>2.01</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: source of data: UN COMTRADE DATABASE; SITC Reversion 1.
A. Total economy of the importing country (region)
The greater the total economy of the importing country (region), the greater demand for the foreign products, thus the greater the ability to have the import trade.

Hypothesis 1 is proposed accordingly: the total economy of the importing country (region) is positively correlated to the export scale of China’s aquatic products.

B. Total economy of the exporting country
Many documents have proven that countries with greater economies of scale have more capacity to create wealth, thus the total economy of the exporting country can represent the supply capacity. Since aquatic products belong to a sub-industry of industry segments, the article will use the gross value of fisheries output to represent the total economy of the exporting country, which means the production and supply capacity of China’s aquatic products.

Hypothesis 2 is proposed accordingly: China’s gross value of fisheries output is positively correlated to the export scale of China’s aquatic products.

C. Per capita income differences between the importing country (region) and the exporting country
China is a developing country, the per capita income and cost of labor resources of which are relatively low. But the importers of China’s aquatic products are mostly developed countries (or regions) , the per capita income differences between China and its trade partners will promote the vertical aquatic trade.

Hypothesis 3 is proposed accordingly: the per capita income differences between China and the importing countries (or regions) are positively correlated to the export amount of China’s aquatic products.

D. Space distance between the importing country (region) and China
As previously mentioned, the space distance is negatively correlated to the trade scale. According to H. Sandberg (2006) , the transaction costs are positively correlated to space distance, thus the transaction costs are negatively correlated to trade scale.

\[
\text{Equation (1)} \quad \ln(\text{EXP}) = \alpha_1 \ln(\text{GDP}_i) + \alpha_2 \ln(\text{GDPY}_i) + \alpha_3 \ln(\text{GNI}_i) + \alpha_4 \ln(\text{DIS}_i) + \alpha_5 \ln(\text{Cult}_i) + \alpha_6 \text{APEC} + \mu
\]

Equation (1) is the extended trade gravity model of China’s export of aquatic products. Among of which: \(\text{EXP}_i\) is the explained variable, represented by the export amount of China’s aquatic products in \(t\) period in \(i\) country (or region). In the explaining variable, \(\text{GDP}_i\) is the GDP of the importing country (or region) \(i\) in \(t\) period, used to measure the total economy; \(\text{GDPY}_i\) means China’s gross value of fisheries output in \(t\) period, used to measure the total economy of China’s fisheries output; \(\text{GNI}_i\) means the per capita income differences between the importing country (or region) and China; \(\text{DIS}_i\) means the space distance between China and its trade partners; \(\text{Cult}_i\) means the population of ethnic Chinese in the importing country (or region); \(\text{APEC}\) is dummy variable, if the importing country (or region) is a member of APEC, then \(\text{APEC} = 1\), if the importing country (or region) is not a member of APEC, then \(\text{APEC} = 0\). \(\alpha_1\) and \(\alpha_6\) are regression coefficients, and \(\mu\) is the error term.

E. Ethnic Chinese population in the importing country (region)
In the area of trade, the number of overseas Chinese of trade partners is considered to be one of the important factors to promote China’s export trade, the more the ethnic Chinese in the importing country (or region), the higher the recognition of and demand for the aquatic products in China in this country (or region), and more favorable to the export of China’s aquatic products.

Hypothesis 4 is proposed accordingly: the space distance between the importing countries (or regions) and China is negatively correlated to the export scale of China’s aquatic products.

F. Whether being the APEC member or not

Relevant documents show that, compared to Hong Kong, Macao, and most members of APEC, Chinese mainland still belong to the economically backward regions. 15 out of the 42 trade partners of China’s aquatic products that included in the analysis are members of APEC.

Thus, hypothesis 6 is proposed in accordance with “Linder Effect”: being the APEC member is positively correlated to the export scale of China’s aquatic products. The extended trade gravity model of China’s export of aquatic products can be built based on the above factors. Thus, it is believed that the scale of China’s export of aquatic products are decided by the economics of scale of the importing country (or region), China’s gross value of fisheries output, per capita income differences between the importing country (or region) and China, distance between the importing country (or region) and China, population of ethnic Chinese in the importing country (or region) and the institutional arrangement of APEC, and the following equation is finally obtained:

\[
\text{Equation (2)} \quad \ln(\text{EXP}) = \alpha_1 \ln(\text{GDP}_i) + \alpha_2 \ln(\text{GDPY}_i) + \alpha_3 \ln(\text{GNI}_i) + \alpha_4 \ln(\text{DIS}_i) + \alpha_5 \ln(\text{Cult}_i) + \alpha_6 \text{APEC} + \mu
\]
Macau, China and Nigeria, New Zealand, Arab, Algeria, Norway, Lithuania, Turkey and White Russia. These trade partners are spread all over in Asia, North America, Europe, Africa, Oceania and South America, and the export amount of China’s aquatic products in 2010 in these 42 countries (regions) amounts to 12.398 billion U.S. dollars, accounting for 93.86% of the total export amount of China’s aquatic products. Thus, selecting these 42 trade partners can accurately reflect the export situation of China’s aquatic products.

In order to effectively avoid the contingency of cross-sectional data, the article employs the panel data from 1992 to 2010, and use Eviews 7.0 for the multiple linear regression analysis of the extended trade gravity model. The sources of the needed data in regression analysis are as below: variable \( \text{LnGDP}_i \) is from the United Nations trade data bank UN COMTRADE DATABASE, SITC Reversion 1; variable \( \text{GDP}_j \) and data of per capita income of various countries (or regions) over the years are from the World Bank Database www.worldbank.org.cn; variable \( \text{GDPY}_j \) is from China Statistical Yearbook; variable \( \text{DIS}_{ij} \) is from the latitude and longitude inquiry system of http://www.hijing.com/find/jingwei/; variable \( \text{Cult}_{ij} \) is from the latest census data of various countries (or regions).

**B Results of Empirical Analysis**

With the help of Eviews 7.0, the article will employ OLS method and use the panel data from 1992 to 2010 for the multiple regression analysis, please see Table 2 for the research results.

**TABLE II. STATISTICAL REGRESSION RESULTS OF EQUATION (1)**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Standard Deviation</th>
<th>T Value</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \text{LnGDP}_i ) &amp; 1.1178 &amp; 0.0336 &amp; 20.547 &amp; 0.0000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>( \text{LnGDPY}_j ) &amp; 1.4974 &amp; 0.0530 &amp; 18.554 &amp; 0.0000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>( \text{LnGNI}_i ) &amp; 0.4668 &amp; 0.0940 &amp; 4.9679 &amp; 0.0000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>( \text{LnDIS}_j ) &amp; -0.8321 &amp; 0.0321 &amp; -7.6450 &amp; 0.0000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>( \text{LnCult}_j ) &amp; -0.0629 &amp; 0.0137 &amp; -1.6089 &amp; 0.0723</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>APEC &amp; 0.3959 &amp; 0.1568 &amp; 2.6977 &amp; 0.0098</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

From Table 2, it is apparent that, variable “population of ethnic Chinese in the importing country (or region)” fails to pass the significant level test because 0.0723>0.05, and the coefficient is negative. The reason for this result is that Hong Kong, China and Macau, China are included in the research sample, and population of ethnic Chinese in Hong Kong and Macau is very large. On the other hand, the vast majority of trade in Hong Kong is often a kind of Entrepot Trade. Thus, Hong Kong and Macau will be excluded in the second empirical analysis. The new research sample is 40 countries’. The regression analysis is made again on the Equation (1), and the regression results are shown in Table 3.

**TABLE III. FINAL REGRESSION RESULTS OF EQUATION (1)**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Standard Deviation</th>
<th>T Value</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \text{LnGDP}_i ) &amp; 1.3299 &amp; 0.0835 &amp; 20.113 &amp; 0.0001</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>( \text{LnGDPY}_j ) &amp; 2.1705 &amp; 0.0562 &amp; 17.432 &amp; 0.0000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>( \text{LnGNI}_i ) &amp; 0.7901 &amp; 0.0761 &amp; 6.8171 &amp; 0.0000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>( \text{LnDIS}_j ) &amp; -0.7893 &amp; 0.0415 &amp; -16.230 &amp; 0.0000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>( \text{LnCult}_j ) &amp; 0.4728 &amp; 0.0256 &amp; 3.3189 &amp; 0.0012</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>APEC &amp; 0.4279 &amp; 0.0394 &amp; 4.9563 &amp; 0.0000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The goodness of fit in the revised equation is very satisfactory, the adjustment of the regression equation \( R^2 \) is 0.918687, and F value amounts to 479.26. The following conclusions can be drawn from Table 3.

1) The economics of scale of the importing country (\( \text{LnGDP}_i \)) passes the significant level test and the regression coefficient is positive, which is consistent with Hypothesis 1. The elasticity estimated value of the economics of scale of the importing country is 1.3299, being the second important factor that influences China’s export of aquatic products. It means that every 1% increase in the GDP of the importing country, there will be 1.33% increase in the import from China’s aquatic products. From which we can get an important message: we should try to choose the countries (or region) with large economics of scale and stable development to expand China’s export of aquatic products.

2) China’s gross value of fisheries output (\( \text{LnGDPY}_j \)) passes the significant level test and the regression coefficient is positive, which is consistent with Hypothesis 2. The elasticity estimated value of China’s gross value of fisheries output is 2.1705, being the first important factor that influence China’s export of aquatic products. It means that every 1% increase in China’s gross value of fisheries output, there will be 2.17% increase in the export of China’s aquatic products. From which we can get an important message: the increase proportion of China’s export of aquatic products exceeds the increase proportion of its output value, it means that aquatic products is the industry with export advantage in China, we should give more support to it in the future and continue to tap its export potential.

3) The per capita income differences between the importing country and China (\( \text{LnGNI}_i \)) passes the significant level test and the regression coefficient is greater than zero, which means that per capita income differences between China and its trade partners promote China’s export of aquatic products, is consistent with Hypothesis 3. The elasticity estimated value of per capita income differences between the importing country and the exporting country is 0.7901, being the third important factor that influences China’s export of aquatic products. It means that every 1% increase in the per capita income differences between the importing country and the exporting country, there will be 0.79% increase in the export of China’s aquatic products. It should be noted that: the conclusion suggests that trade of China’s aquatic products is mostly the inter-industry trade or vertical intra-industry trade, China shall
continue to improve the quality and added value of the exported aquatic products.

(4) Space distance between the importing country and the exporting country (LnDIS) is negatively correlated to the export amount of China’s aquatic products and passes the significant level test, which is consistent with Hypothesis 4. Aquatic products are special export products, the longer the trade distance, the worse for the preservation and storage of aquatic products. Therefore, the conclusion that the trade distance is negatively correlated to the export amount of aquatic products conforms to the actual situation.

(5) Population of ethnic Chinese (LnCult) passes the significant level test and the regression coefficient is positive, which means that the population of ethnic Chinese in the importing country is positively correlated to the export of China’s aquatic products and is consistent with Hypothesis 5. This conclusion is easy to understand: the more population of ethnic Chinese in the importing countries, the easier to form the similar consumer preferences, and the higher the recognition of China’s aquatic products, thus, they will import more aquatic product from China.

(6) The regression coefficient of APEC organization dummy variable is positive and passes the significant level test, which is consistent with Hypothesis 6. It means that APEC organization has played a positive role in promoting China’s trade of aquatic products, but more in the inter-industry trade or vertical intra-industry trade, this conclusion also confirms the correctness of Hypothesis 3 from another angle.

FORECAST OF CHINA’S EXPORT POTENTIAL OF AQUATIC PRODUCTS

When analyzing the export potential, the common way is to calculate the theoretical value of the export potential by using the trade gravity model, and then to determine the trade space by comparing the actual export value. In accordance with the final regression results (please see Table 3) of Equation (1), the equation to calculate the theoretical value of China’s export potential of aquatic products can be achieved:

$$\text{Ln EXP} = 1.3299 \text{Ln(GDP)} + 2.1705 \text{Ln(GDPY)} + 0.7901 \text{Ln(GNI)} - 0.7893 \text{Ln(DIS)} + 0.4728 \text{LnCult} + 0.4279 \text{APEC}$$

Equation (2)

The theoretical value of China’s export potential of aquatic products calculated by using Equation (2) divided by the actual export value of aquatic products is the export potential index of aquatic products (EXPPI):

$$\text{EXPPI} = \frac{\text{EXP}}{(\text{EXP})^\prime}$$

Equation (3)

In Equation (3), EXP$^\prime$ means the actual value of China’s export of aquatic products to the $i$ country (or region), and (EXP)$^\prime$ means the theoretical value of China’s export of aquatic products to the $i$ country (or region). If the export potential index EXPPI $\geq 1.3$, it means the “excessive export” of China’s aquatic products; if the export potential index 0.9 $\geq$ EXPPI $< 1.3$, it means the “saturated export” of China’s aquatic products; if the export potential index EXPPI $< 0.9$, it means the “insufficient export” of China’s aquatic products. The export potential index of China’s aquatic products to the 40 trade partners can be calculated in accordance with Equation (2) and Equation (3), the specific results are as shown in Table 4.

<table>
<thead>
<tr>
<th>Country</th>
<th>Poland</th>
<th>Portugal</th>
<th>Ukraine</th>
<th>Mexico</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXPPI</td>
<td>6.30</td>
<td>5.37</td>
<td>4.60</td>
<td>4.06</td>
</tr>
<tr>
<td>Country</td>
<td>Belgium</td>
<td>Denmark</td>
<td>North Korea</td>
<td>Spain</td>
</tr>
<tr>
<td>EXPPI</td>
<td>4.05</td>
<td>3.68</td>
<td>3.19</td>
<td>2.53</td>
</tr>
<tr>
<td>Country</td>
<td>Turkey</td>
<td>Norway</td>
<td>Holland</td>
<td>New Zealand</td>
</tr>
<tr>
<td>EXPPI</td>
<td>1.99</td>
<td>1.93</td>
<td>1.83</td>
<td>1.76</td>
</tr>
<tr>
<td>Country</td>
<td>South Africa</td>
<td>Sweden</td>
<td>Israel</td>
<td>Philippines</td>
</tr>
<tr>
<td>EXPPI</td>
<td>1.65</td>
<td>1.48</td>
<td>1.33</td>
<td>1.21</td>
</tr>
<tr>
<td>Country</td>
<td>Vietnam</td>
<td>Germany</td>
<td>Australia</td>
<td>Malaysia</td>
</tr>
<tr>
<td>EXPPI</td>
<td>1.18</td>
<td>1.17</td>
<td>1.09</td>
<td>1.02</td>
</tr>
<tr>
<td>Country</td>
<td>Korea</td>
<td>Japan</td>
<td>UK</td>
<td>America</td>
</tr>
<tr>
<td>EXPPI</td>
<td>0.95</td>
<td>0.94</td>
<td>0.93</td>
<td>0.92</td>
</tr>
<tr>
<td>Country</td>
<td>Indonesia</td>
<td>Singapore</td>
<td>Russia</td>
<td>France</td>
</tr>
<tr>
<td>EXPPI</td>
<td>0.91</td>
<td>0.80</td>
<td>0.69</td>
<td>0.58</td>
</tr>
<tr>
<td>Country</td>
<td>Algeria</td>
<td>White Russia</td>
<td>Canada</td>
<td>Lithuania</td>
</tr>
<tr>
<td>EXPPI</td>
<td>0.51</td>
<td>0.48</td>
<td>0.44</td>
<td>0.43</td>
</tr>
<tr>
<td>Country</td>
<td>Thailand</td>
<td>Greece</td>
<td>Dominica</td>
<td>Italy</td>
</tr>
<tr>
<td>EXPPI</td>
<td>0.41</td>
<td>0.39</td>
<td>0.38</td>
<td>0.37</td>
</tr>
<tr>
<td>Country</td>
<td>Brazil</td>
<td>United Arab Emirates</td>
<td>Nigeria</td>
<td>Egypt</td>
</tr>
</tbody>
</table>
The following conclusions can be drawn from Table 4.

(1) There are 15 countries of “excessive export”, i.e. Poland, Portugal, Ukraine, Mexico, Belgium, Denmark, North Korea, Spain, Turkey, Norway, Holland, New Zealand, South Africa, Sweden and Israel, the potential index of these countries’ aquatic products exports is greater than 1.3, and these markets are markets with declining trade potential. In particular, the market saturation rates of Poland, Portugal, Ukraine, Mexico, Belgium, Denmark and North Korea are the highest, the export potential index of Chinese aquatic products is greater than 3, which means that the space to expand the export of Chinese aquatic products to these trade partners is very small.

(2) There are 10 countries of “saturated export”, i.e. Philippines, Vietnam, Germany, Australia, Malaysia, Korea, Japan, UK, America and Indonesia, the potential index of these countries’ aquatic products exports is greater than 0.9 but less than 1.3, which means that the space to expand the export of Chinese aquatic products to these trade partners is relatively limited.

(3) There are 15 countries of “insufficient export”, i.e. Singapore, Russia, France, Algeria, White Russia, Canada, Lithuania, Thailand, Greece, Dominica, Italy, Brazil, United Arab Emirates, Nigeria and Egypt, the potential index of these countries’ aquatic products exports is less than 0.9. These countries are emerging markets with huge trade potential, and the space to expand the export of Chinese aquatic products to these economies is very large.

CONCLUSIONS AND SUGGESTIONS

According to the empirical analysis results concerning influences on the export of aquatic products and potential measurement by means of the expansible trade gravity model, it can be learned that the economic scale of aquatic products importing countries, the gross value of fishery output, per capita income difference between the importing country and China, Chinese population in these foreign countries and APEC trade system arrangement have positive effects on the export of aquatic products of China, while the spatial distance between the importing country and China has been the critical factor for impeding the export of aquatic products. Based on the further analysis of the expandable trade gravity model, we give some suggestions on the export of aquatic products of China:

(1) Since the economic scale of importing countries is one of key factors for the export of aquatic products, the market of large trade partners to which Chinese aquatic products are exported, such as Japan, USA, Korea and Germany, has been greatly explored and developed to be a “saturated export” market. To stably export aquatic products to these countries, we must improve the quality of aquatic products, realize the diversification of products, strengthen the processing of aquatic products to increase added value, and avoid large-scale expansion as much as possible to prevent strict trade barriers from these trade partners.

(2) Due to a short distance, the market of most Asian countries (North Korea, Turkey, Israel, Philippines, Vietnam, Malaysia and Indonesia) is being remarkably explored. For European countries (Poland, Portugal, Ukraine, Belgium, Denmark, Spain, Norway, Netherlands, Sweden) whose per capita income is much higher than China, the market is mostly “excessive” or “saturated”. There is limited space for China to export aquatic products to these countries and new growth factors have to be found if China tries to increase the export of aquatic products to these countries.

(3) For countries to which China exports only a few aquatic products: ① we shall especially focus on and give priorities to potential countries with large economic scale such as Brazil, Canada, France and Italy. Noticeably, since Canada and some countries also export a large quantity of aquatic products, we shall pay attention to the difference between their exports and our exports to avoid homogenous competition. ② Though Russian and Belarus are European countries, they are advantageous compared to American counties in terms of distance to China. Thus, we shall seize opportunities to explore these emerging markets. ③ Algeria, Lithuania, Greece, Dominicann, Arab Emirates, Nigeria and Egypt have great potentials for development, so we shall expand exports of aquatic products to these trade partners in some way.

(4) APEC promotes the export of aquatic products of China. Therefore, China shall further prefect the regional economic cooperation system, set up a complete regional economic cooperation strategy, actively join in global economic integration, and realize the sustainable development of aquatic products export of China by optimizing resources allocation.

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NOTES:

1. For regression analysis at the end, Hong Kong and Macau are excluded and only 40 trade partners are included.
2. According to the Standard International Trade Classification (SITC), the aquatic products are classified to be in the chapter 03, involving fish, shell and mollusk and related products.
3. For the position and application of the trade gravity model, Gu Kejian (2001) gives an excellent illustration.
4. APEC was established and 1989 and China joined APEC in 1991 as an early member. It can be said that China gradually showed regional integration from 1992 and this paper empirically analyzes panel data after 1992.

6. This hypothesis shows that the establishment of APEC advances the development of inter-industry trade or vertical intra-industry trade of aquatic products of China.

7. In 2010, the amount of aquatic exports to 40 sample countries reached USD 11.65 billion, accounting for 88.2% of the gross amount of aquatic exports. Therefore, these 40 sample countries relatively and comprehensively reflect the actual situation of aquatic exports of China.

REFERENCES


