

Sino-Thailand Bilateral Trade in Agricultural Products Competition and Complement

Yin Xiaobo, Zhou Xinying

College of Economics and Finance, Huaqiao University, Quanzhou, Fujian, 362021, China

Corresponding author is Yin Xiaobo

Abstract

China and Thailand are traditional agricultural countries, geographically near to each other, large differences in natural conditions and climates, agricultural trade between the two countries is pretty developed. In recent years, with a higher productivity and a more sophisticated opening-up policy, Sino-Thailand bilateral trade in agricultural products has kept steadily growing. However, there are still many problems such as a great similarity in exports, concentration of export market, low price competition and so on. Based on the international market position, trade structure of agricultural products, trade geography direction and others, using the latest product similarity index, market similarity index, trade complement index to analyze the competition and complement of agricultural products between China and Thailand in the international agricultural trade, also analyze the bilateral relations between the two countries in agricultural trade. Conclusions show that the trade complement does exist in agricultural product trade between China and Thailand, the market similarity is greater than the product similarity in agricultural product trade between China and Thailand. In the world agricultural product market, Thailand maintains its competitive advantage over China in general terms. However, Thai agricultural products much differ from those of China which lead to a low competition of farm products between China and Thailand in the global market. Conversely, in Sino-Thailand bilateral agricultural trade, competition plays the major role while complement, a minor one. This paper gives out some suggestions based on the analysis of several factors affecting the Sino-Thai trade in agricultural products. For example, make full use of comparative advantages; carry on strategic adjustment and others. This promotion of stable development of Sino-Thai trade in agricultural products is of great practical significance.

Keywords: AGRICULTURAL PRODUCT TRADE, CHINA AND THAILAND, COMPETITION, COMPLEMENT

1. Introduction

Since 2006, China has become Thailand's third largest export market of agricultural products and Thailand, China's fifth largest (export market). In June 2003, Thailand and China signed an early harvest agreement on agricultural products within the Framework Agreement on China-ASEAN Comprehensive Co-operation, for the purposes to promote the bilateral agricultural trade between those two

countries and to increase the welfare of those people. In consequence, on October 1, 2003, vegetables and fruits got to be traded at no tariff between Thailand and China, earlier than scheduled. As Sino-Thailand trade develops, questions arise. For example, what are Chinese and Thai agricultural products like in the global agricultural trade and what is the agricultural trade relationship between China and Thailand? How competitive are those products, and what are their re-

spective comparative advantages, etc.? Those questions worth attention and need to be worked out.

2. Sino-Thailand Bilateral Trade in Agricultural Products. General Information and Its Main Features

2.1. General information

China and Thailand are traditional agricultural countries, geographically near to each other. Sino-Thailand bilateral trade has a long history. On July 1, 1975 the day on which China and Thailand established diplomatic relations, Sino-Thailand bilateral trade got to be normalized. Since then both agricultural production of those two countries and bilateral trade in agricultural products between them have got increasingly active. In recent years, particularly with the establishment of China - ASEAN Free Trade Area, Sino-Thailand agricultural trade has been growing with leaps and bounds. From 2005 to 2013, Sino-Thailand bilateral agricultural trade turnover had kept steadily increasing. The sharpest increases appeared in the years of 2006 and 2013, reaching at 36% and 27.5% respectively (Table 1).

Table 1. Sino-Thailand agricultural trade turnover (in USDs million)

Year	Import	Export	Total	Increase (%)
2005	1426.4	249.3	1675.7	--
2006	1998.7	274.5	2273.2	36
2007	2060.3	337.2	2397.6	5
2008	2842.0	402.1	3244.0	35
2009	3296.3	568.8	3865.1	19
2010	3410.7	376.2	3786.9	-2
2011	3960.3	443.5	4403.8	16.29
2012	4103.6	477.2	4580.8	4.02
2013	4528.1	494.9	5023.0	9.65

Source The data in Table 1 come from Foreign Trade Division of the Ministry of Commerce of the People's Republic of China.

2.2. Main features

2.2.1. Area structures of Chinese and Thai agricultural products

According to Chinese authority's monthly statistics of Chinese agricultural trade, Thailand has become China's 9th largest exporter of agricultural products and 10th largest export market. In 2012, Sino-Thailand agricultural trade turnover amounted to 3.68 billion USDs, 4.8 times more than that of 10 years ago and the average annual increase within those ten years reached at 21.5%. The fact that Thai rice and fruits are very popular in China has strengthened the Sino-Thailand agricultural trade. China is the largest agricultural exporter in Asia and Thailand, the sec-

ond largest. The statistics show that thanks to the free trade agreements (FTAs) and a wide range of export channels, the turnover of Thai fruit export to China in 2013 amounted to 465 million USDs, increased by 117% compared to that of the preceding year. In the year of 2011, Sino-Thailand bilateral trade turnover amounted to 58.635 billion USDs. The products exported by Thailand to China mainly include agricultural products and agro-industrial products. Recently in order to help Thai fruit sellers market their products in China, Thai Ministry of Agriculture has developed a website purposed for promoting Thai fruit trading in China offering information (for free) of the fruits that may be exported to China in Thai, Chinese and English.

2.2.2. Market structures of Chinese and Thai agricultural products

China is Asian largest exporter of agricultural products but Thailand shows a strong ability to export both in terms of total amount and per capita. In terms of export markets, the export markets of Chinese agricultural products and those of Thailand are similar. According to the FAO Statistical Yearbook 2013, China is Thailand's 3rd largest agricultural export market and the rest of Thailand's top five export markets is the same as those of China, including Japan, the US, Korea and Malaysia. In terms of structure of the agricultural products exported, China and Thailand are also alike. In Sino-Thailand bilateral agricultural trade in 2011, 10 of the top 15 categories of products exported by China to Thailand are the same as those exported by Thailand to China.

Table 2. Sino-Thailand agricultural trade turnover 2003-2013(in USDs 100 million)

Country	Import Turnover			Export Turnover		
	2009	2011	2013	2009	2011	2013
China	153.6	334.7	378.5	130.8	205.2	224.4
Thailand	26.9	42.4	43.3	72.8	122.8	150.7

Source United Nations Food and Agriculture Organization database, quoted from the International Statistical Yearbook 2014.

As Sino-Thailand bilateral agricultural trade grows, the competition of agricultural products between China and Thailand in the global market growth, due to the similarities in production traditions, technological level, infrastructure, export markets, etc. between them. Nevertheless, it's worthwhile to note that agricultural production much depends upon climate and China much differs from Thailand in climate as well as natural resources so

Sino-Thailand agricultural trade is somewhat mutually complementary.

3. Agricultural trade competition between China and Thailand

3.1. Analytic methods

This article mainly employs export similarity index (ESI) to analyze the agricultural trade competition between China and Thailand. The ESI includes

$$S^p(j, k) = \left\{ \sum_i \left[\left(\frac{(X_k^i / X_k) + (X_j^i / X_j)}{2} \right) \times \left(1 - \left| \frac{(X_k^i / X_k) - (X_j^i / X_j)}{(X_k^i / X_k) + (X_j^i / X_j)} \right| \right) \right] \right\} \times 100 \quad (1)$$

$S^p(ij, k)$ represents the PSI of the products exported by country i and country j to market k , i and j represents any two countries to be compared, k represents a third market or the global market, X represents export, and X_{ik}^l / X_{ik} represents the share of product l in country i 's total export to market k . $S^p(ij, k)$ varies between 0-100. If it reaches 100, the structure of export commodities of those two exporters will be identical; on the contrary, if it comes to 0, those structures concerned will be totally different.

$$S^m(j, l) = \sum_k \left[\left(\frac{X_k + X_j}{X_i + X_j} \right) \times \left(1 - \left| \frac{(X_k^l / X_k) - (X_j^l / X_j)}{(X_k^l / X_k) + (X_j^l / X_j)} \right| \right) \right] \times 100 \quad (2)$$

$S^m(ij)$ represents the MSI, i and j represent any two countries to be compared. X_{ik}^l / X_{ik} represents the share covered by product l in the total export of country i to market k . X_{jk}^l / X_{jk} represents the share covered by product l in the total export of country j to market k .

The MSI varies between 0-100. If it reaches 100, the export market structures of those countries concerned will be identical; on the contrary, if it comes to 0, those structures will be totally different.

The higher the MSI is, the more similar the export markets of those countries are, leading to more competition between them in export markets. Combing the MSI with the PSI, we can further describe what such that competition ought to be like in the global market. In case that both the PSI and MSI are high, those two countries will fiercely fight with each other for export markets.

3.2. Agricultural trade competition between China and Thailand

China is Asian largest agricultural exporter and Thailand ranks the second. According to the FAO statistical data, China and Thailand respectively account for 0.23% and 0.13% of the total world agricultural export. They are similar in development level, production traditions, technological level, infrastruc-

product similarity index (PSI) and market similarity index (MSI) based upon which the analysis is to be made from the perspectives of product and market.

3.1.1. Product similarity index (PSI)

The PSI is a measure of similarity in products exported by two or two groups of countries to a foreign market or the global market. It is calculated as follows.

The lower the ESI is, the higher the export specialization gets, leading to smaller overlap of exported products as well as less competition of those products between the exporters concerned in a foreign market.

3.1.2. Market similarity index

Like the PSI, market similarity index (MSI) is a measure of similarity in export markets of any two or groups of countries. In order to overcome the problems caused by the great difference in country size, Glick and Rose use export share instead of export turnover. MSI is calculated as follows.

ture, export markets, etc., which results in a possible higher PSI and MSI which ultimately leads to more competition of export markets between them. Here we will analyze the agricultural trade competition between China and Thailand in quantitative terms based upon ESI, from both perspectives of product and market structures.

3.2.1. Similarity in agricultural exports to the global market between China and Thailand

As reflected in Table 3, China and Thailand fight each other for agricultural export markets due to a higher PSI. The PSI was the highest in 2009 (71.08), higher in 2010 (62.67), 2012 (67.21) and 2013 (67.28) but the lowest in 2011 (32.09). The agricultural trade competition between China and Thailand fluctuated from 2005 to 2013 but kept level since 2006. From 2005 to 2013, the proportion of growth of the PSI turned out to be a minus.

Table 3. The PSI of agricultural products exported by China and Thailand to the global market

year	2009	2010	2011	2012	2013	Changes ratio (%) 2005-2013
Sp	71.08	62.67	32.09	67.21	67.28	-5

Source The statistics are calculated based upon the data collected by UN Commodity Statistic Database.

In terms of product category, Sino-Thailand competition gets concentrated on categories 03 (fish, crustaceans, mollusk and other aquatic invertebrates), 16 (products made of meat, fish, crustaceans, mollusk and other aquatic invertebrates) and 20 (vegetables, fruits, nuts and other products made of plants).

3.2.2. Similarity in agricultural export markets between China and Thailand

Similarities in geographical features, natural resources and labor force decide to a possible similarity in agricultural export markets between China and Thailand, which leads to potential more competition between them. Because the MSI and the PSI are calculated alike, in order to avoid confusion in cognition, we focus upon vegetables and fruits that account for major shares of Sino-Thailand bilateral agricultural trade, and from the perspective of market distribution, analyze how similar Chinese and Thai agricultural export markets are.

(1) The MSI of fruits between China and Thailand

As shown in Table 4 shows, the MSI of fruits had kept rising from 2005 to 2013. But its rate of change is bigger than that of the PSI, which means that the fruit markets of those two countries had converged more than the products. Four of China's top five export markets are the same as those of Thailand, showing that their export markets are much concentrated but there still exists a striking difference in agricultural species between China and Thailand due to a big discrepancy in climate and other natural conditions.

Table 4. The MSI of fruits between China and Thailand

Year	2009	2010	2011	2012	2013	Change ratio (%) 2005-2013
Sm	48.42	53.95	55.33	58.47	56.30	16

Source the statistics are calculated based upon the data collected by UN Commodity Statistic Database.

(2) The MSI of vegetables between China and Thailand

According to Table 5, in recent years, the MSI of vegetables between China and Thailand had kept rising so that the agricultural export competition between China and Thailand got worse and worse. This is mainly because both China and Thailand are most concerned about vegetable export. Vegetable is one of the major agricultural commodities exported by Thailand, accounting for a big share of Thai's foreign exchange so Thailand has always attached much significance to vegetable export. Similarly, vegetable export is important to China, too. Vegetable is a labor-intensive product. For such a country like China,

abundant in a workforce, vegetable export is of much significance for China's agricultural development. Both China and Thailand take much importance upon vegetable export, expect to produce featured vegetables and fight for overseas markets, which lead to a higher PSI.

Table 5. The MSI of vegetables between China and Thailand

Year	2009	2010	2011	2012	2013	Change ratio (%) 2005-2013
Sm	56.29	56.27	63.95	67.69	57.74	3

Source the statistics are calculated based upon the data collected by UN Commodity Statistic Database.

3.3. Complement of the bilateral agricultural trade between China and Thailand

3.3.1. Analytic methods

Share of either import or export market shows the real competitive advantage of a country's export. That advantage comes from the comparative advantage of exported products or resources, especially in case of agricultural products, the typical resource-based products. Here we use trade complement index (TCI) to measure the relevance of the exporter's exporting structure and the importing structure of the target market. The TCI is calculated as follows.

$$C_{ijk} = RXS_i^k \times RMS_j^k \quad (3)$$

$$C_{ij} = \sum (W^k \times RXS_i^k \times RMS_j^k) \quad (4)$$

$$RXS_i^k = (X_{iw}^k / X_w^k) / (X_w^k / X_w^k) \quad (5)$$

$$RMS_j^k = (M_{jw}^k / M_w^k) / (M_w^k / M_w^k) \quad (6)$$

$$W^k = X_w^k / X_w^k \quad (7)$$

RXS_j^k is Balassa's comparative advantage index (CAI), showing the comparative advantage of a country's export; X_{iw}^k represents the turnover of product k exported by country i ; X_w^k represents the turnover of all the products exported by country i ; RMS_j^k represents the comparative disadvantage of the relevant products made by the importing country; M_{jw}^k represents the turnover of product k imported by country j . M_w^k represents the turnover of all the products imported by country j . W^k represents the share covered by product k in the total world trade. C_{ijk} represents trade complement index (TCI) of product k between countries i and j . C_{ij} represents trade complement index (TCI) of comprehensive trade between countries i and j . When the TCI is greater than 1, the trade between the exporter and the target export market will be more complementary than that between the exporter and any other foreign market.

3.3.2. Complement of the bilateral agricultural trade between China and Thailand

(1) Trade complement index

Table 6 shows that the TCI of China's export and Thailand's import of agricultural products went downward from 2011 to 2013, indicating a weaker complement of Sino-Thailand agricultural trade and China then experienced pressure on its agricultural export to Thailand. On the contrary, the TCI of China's import and Thailand's export went upward during that period, showing a stronger and stronger complementary relationship between China's agricultural import and Thai agricultural export. It means that in Sino-Thailand bilateral agricultural trade, China depends upon Thailand more than Thailand does upon China. Table 6 also shows that China's comparative advantage over Thailand is decreasing. Conversely, Thailand's comparative advantage over China has become twice as much as China has over Thailand. China has been under a greater pressure to export from Thailand and increasingly depended upon agricultural import from Thailand. There is evidence that in Sino-Thailand bilateral agricultural trade, China's account has always been in deficit and the deficit keeps increasing year by year, marking a stronger and stronger relies on Thailand. It's safe to say that Thailand, as one of China's major agricultural export markets, is very important to China but the opposite is not true. Because

of its rapid economic growth, China demands more and more agricultural raw materials. As Southeast Asian economic integration goes deeper and deeper, it would be a better choice for China to import from Thailand something that it does not make or is less efficient in producing like palm oil, natural rubber, logs, sawn timber, pulp and so on. It helps deal with China's critical shortage of agricultural resources in its economic development.

Table 6. Trade Complement Index of Sino-Thailand Agricultural Trade

Year	2011	2012	2013
The TCI of China's export and Thailand's import	0.0634	0.0225	0.0220
The TCI of China's import and Thailand's export	0.1458	0.1751	0.1780

Source The statistics are calculated based upon the data collected by UN Commodity Statistic Database.

(2) Categories of complementary products in Sino-Thailand bilateral agricultural trade

By employing the analytic methods introduced in the beginning, we find 64 categories of products in Sino-Thailand agricultural trade listed in Table 7.

It's found that there 29 categories of agricultural products which either China or Thailand is more efficient in producing, accounting for 45% of the total

Table 7. Categories of complementary products in Sino-Thailand bilateral agricultural trade

Agricultural products	
Mutually Complementary agricultural products	036. edible crustaceans, mollusks, aquatic invertebrates powder and pellets
	042. Rice
	046. Wheat and fine and coarse powders of mixed wheat
	047. Fine and coarse powders of other grains
	061. Sugar, syrup and honey
	075. Spices
	081. Animal feed (excluding milled cereals)
	098. Other food stuff not on the list
	121. Unprocessed tobacco; tobacco waste
	222. Oil seeds, soft oils used to extract qualitative
	231. Natural rubber, balata rubber, gutta-percha in primary forms
	232. Synthetic and renewable rubber; waste, scrap of hard rubber
	246. Wood in chips or particles; wood waste
	247. Logs, sawn timber
	248. Wooden sticks, roughly trimmed; railway and tramway sleepers
	251. Pulp and waste paper
	261. Silk
	265. Plant textile fibers (excluding cotton and jute) not spun; plant textile fiber waste
	266. Synthetic fibers suitable for spinning
	267. Other man-made fibers, suitable for spinning; man-made fiber wastes
	291. Other unprocessed animal material not on the list
	422. Qualitative plant oil, raw, refined or decomposed, non-soft
	431. Processed animal or plant oil; animal or plant waxes, not edible

Source The statistics are calculated based upon the data collected by UN Commodity Statistic Database.

number of the categories involved. Among those 29 categories, 23 (79%) are mutually complementary while 6 (21%) are mutually competitive. Therefore, Sino-Thailand bilateral trade in a vast majority of agricultural products is mutually complementary.

Table 8. Agricultural complement and competition between China and Thailand (Rough statistics)

Total		64
Categories of products that either of the both is more efficient in producing		29
Categories of mutually complementary products	Quantity	23
	%	79%
Categories of mutually competitive products	Quantity	6
	%	21%

Source The statistics are calculated based upon the data collected by UN Commodity Statistic Database.

4. The analysis of factors of Sino-Thai agricultural trade

The factors that affect Chinese agricultural products export to Thai market contain not only the internal factors in the agricultural industry, but also the external factors. The main factors in the industry refer directly related to the quality, variety prenatal structure, delivery and postnatal aspects of factors, and external factors mainly include market demand, marketing channels, brand management, export order, geographical location and other relevant factors.

4.1. Intra-industry factors

(1) Quality

Quality is the lifeline of the product to market. Poor product quality not only affect the sales market, but may also cause great distress to the target market by the impact of characteristics of agricultural food. The biggest problem of the quality of China's agricultural products is the high proportion of pesticide residues. Our long-term single application or the surfeit use of fertilizers destroy the soil structure, grow crops in the soil fertilized with hyper-toxic and highly residual pesticides, industrial "three wastes" and other pollution sources has increased, causing harmful substances continue to accumulate in the soil, which is transferred through plant uptake to agricultural products, aggravate the problems of agricultural products quality and safety.

Since there are no uniform standard import and export inspection and quarantine between China and Thailand, leading the inspection and quarantine technical issues of both countries have their differences, particularly chemical residues in agricultural products. Therefore China's exports of agricultural products could face a variety of non-tariff trade barriers;

both sides may produce a series of friction on trade in agricultural products. So, some departments of China and Thailand must establish mechanisms for cooperation establish and improve a unified system of import and export inspection and quarantine standards as soon as possible to ensure the smooth development of Sino-Thai trade in agricultural products.

(2) Product breeds structure

Our country is known as a large country of agriculture and the agricultural products is numerous, but members of ASEAN are mostly agricultural country, their agricultural resources are abundant, especially Thai's fruit and rice, can be said to be world-famous, which will make China's agriculture suffer some degree of shock. Therefore, in order to expand exports of agricultural products to ASEAN, we must give full play to comparative advantages, expand the exports of products which can strengthen our comparative advantage and competitive advantage. Through the above analysis, we are told that China and ASEAN countries are complementary in trade in agricultural products due to geopolitical location, climate, natural resources and so on, agricultural products have differences. ASEAN countries have a strong requirement on apples in northern China, snow peers and other temperate fruits and citrus. Therefore, we should be aimed at target market, develop characteristic agriculture and increase export potential. In addition, we should take advantage of differences in seasonal agricultural products to carry out effective supply supervision. Due to the lack of effective macro-control measures, domestic farming enterprises have appeared "banana hot", "mango hot", "lychee hot", "longan hot" and other planting boom, the result caused not only a lot of excess supply of some fruit, but also making a number of other varieties of inadequate supply of agricultural markets, supply and demand imbalance.

(3) Deep processing of proportion

At present, most of our country's exported agricultural products are primary products with poor packaging, low-grade and low profits margins. By contrast, agricultural products in developed countries enter into circulation and consumption are on longer in the form of original products, but after processing and intensive processing, while the proportion of deep processing of agricultural products in China is not high. For example, China's capacity of fruit processing is only about 10%, while in developed countries, the processing ratio is usually 60% to 70%, finishing in Brazil and the United States can reach 80%. Moreover, agricultural products processing of enterprises in our country is mostly early processing, single spe-

cies and structure, which restricts the exports of agricultural products in China at a great extent.

4.2. External factors

(1) The change in the target market demand

From the total imports of agricultural products in Thailand and the changes of the trade in agricultural products in China, we can see that the two are basically the same trend. This shows that China's exports of agricultural products have a high degree of association with market demand in Thailand .

(2) Brand Management

A good brand is the guarantee of product quality. With the development of market economy, the role of the brand is not only to distinguish (the origin and quality), but also the market access cards and the hinge between consumers and producers. Few famous brand of agricultural products in China, and the situation that lots of brands named after the origin have been stolen and apocryphal can be found everywhere, such as the more well known domestic Longkou vermicelli, Tianjin pear, Shanxi Whitewater Red Fuji and other brands are stolen and apocryphal more serious, export varieties cohabitation stolen, greatly affecting the overall competitiveness of China's exports of agricultural products.

(3) Marketing channels

Farm out the production and processing sectors into circulation, the construction of marketing channels plays a vital role to the marketing company. How to use the marketing network to establish a strategic alliance relationship is one of a required courses for China's agricultural production enterprises and trading companies. At present, China's agricultural marketing and processing enterprises generally did not establish the international market research agency, few have their own sales channels overseas and are not good at promotional events over the overseas markets. Business ability to develop new technologies and new products is weak, trade channels are limited by institutional factors, leading to the lack of capacity to react to the changes and improvement in overseas demand.

(4) Export order

China's exports of agricultural products management are confusion, lack of coordination mechanisms for agricultural exports. A number of production and business entities can not be directly involved in the export trade and understanding the information of the international market without an export operation rights, while enterprises with foreign trade operation licenses are lack of guidance and information communication to production and management, leading to the large blindness of production and management,

appearing vicious internecine competition. The situation that loses the opportunity because of the shortage of goods and is crowded in a single export market competing prices down coexist because of excess supply often occurs. And when foreign businessmen trade with us, they have realized information sharing, such as Japan has offices in China's major cities to gather information and exchange information, take the initiative. Therefore, we should learn from the practice in developed countries, and by regulating the country's export order to suppress the vicious competition, to boost the overall rise in agricultural foreign trade in China.

(5) Climatic differences between China and Thailand

Thailand is located in the tropics, in a tropical monsoon climate with high temperature, humid climate, abundant rainfall, numerous rivers, the central plains, fertile land and suitable for a large number of tropical crop growth. Thailand's climate type is single, and significant monsoon climate characteristics, significant continental climate and diverse climate types are the three characteristics of China's climate. China has four distinct seasons with hot rainy season. There is generally lower temperature in winter, hot and rainy summers in most parts of the regions China can be divided into equatorial, tropical, subtropical, warm-temperate, temperate, cold-temperate zones from North to South, can be divided into humid, semi-humid, semi-arid and arid regions four categories from the southeast to the northwest. Different growths of agricultural crops distribute across different temperature zones and different degrees of humid areas.

China and Thailand, the presence of large differences in climate, which directly affect the agricultural production structure in both countries and lead to the formation of the difference of agricultural production advantages of China and Thailand. Such as fruit and vegetable products, Thai's tropical fruits and vegetables have very strong competition ability in the international markets, then Chinese temperate fruits and vegetables have a greater international competitiveness; Thai's natural rubber, palm oil, cassava and other products have a big producer, while China is limited by the hydro-thermal conditions and has a big need for Thai's imports. Resource endowments theory can make a better explanation for primary agricultural products. The difference between China and Thailand on climate resource endowments can explain the differences of agricultural products comparative advantage to some extent. It is also the complementary external

conditions of agricultural trade between the two countries.

(6) Agricultural production resources endowment difference between China and Thailand

Table 9 compares the agricultural production resource endowment in China and Thailand. We can see that the proportion of the agricultural population in China and Thailand was higher, respectively 63.7% and 45.0%. China is 18.7 percentage points higher than Thailand and both countries were higher than the world's average level; looking from the per-capita arable land, China and Thailand were 0.2 hectares per person and 0.5 hectares per person, including arable land per-capita of Thailand is higher than the Asian average level, is more than twice the areas of China; Looking from the level of agricultural production mechanization, per thousand hectares of arable land ownership of the tractors were 10.4 and 24.4 units, ownership of harvesters were 2.9 and 13.0 respectively. The level of Thailand is higher than Asia and the world level, while the Chinese levels were lower than Asia or nearly equivalent to the world average. Thus, in the production of agricultural products, in spite of China's low level of mechanization and the limited land resources, China still has a certain competitive advantage in the labor-intensive agriculture products because of abundant labor resources and low labor costs. Land resources and the level of agricultural mechanization in Thailand are relatively high, are conducive to the promotion of the production of land-intensive primary agricultural products and capital-intensive and technology-intensive agricultural products. China and Thailand may have some complementary relationships in the category of produce of agricultural products.

5. Conclusions and suggestions

Sino-Thailand bilateral agriculture trade is perfectly complementary. It has a good potential and will necessarily keep increasing. China and Thailand are similar in market structure but less in varieties of agricultural products, which helps mitigate the agri-

cultural trade competition between them. China's agricultural comparative advantage over Thailand has kept decreasing while Thai agricultural comparative advantage over China has got to be remarkably higher. The TCI of the agricultural products exported by China and imported by Thailand has been decreasing whereas that of those exported by Thailand and imported by China has kept rising. In Sino-Thailand bilateral agricultural trade, China's account has always been in deficit and China has increasingly depended upon Thailand. Our calculation shows among all the agricultural products traded between China and Thailand, 79% are mutually complementary but only 21%, mutually competitive, which to some extent speaks for a complement of Sino-Thailand agricultural trade. Agricultural products are resource-based and that complementary relationship may be attributed to the difference in natural conditions between China and Thailand. Thailand abounds in land resources and thus it excels in exporting land intensive agricultural products. Unlike Thailand, China is rich in workforce so it has an advantage in exporting labor intensive agricultural products. It is the difference in climate between those two countries that primarily contributes to that complementary relationship.

Having drawn the conclusions above, we raise a few pieces of suggestions below which may help promote Sino-Thailand bilateral agricultural trade.

(1) Speed up adjustment of the trade structure of agricultural products, in accordance with the principle of comparative advantage. China has a remarkable advantage of a workforce, suitable for exporting labor-intensive agricultural products. Thailand has a strong comparative advantage in producing and exporting land intensive agricultural products. China is advised to focus upon labor-intensive agricultural products including fruits, vegetables, and economic animals. Moreover, it's also suggested that more significance is taken upon scale effect, moderate and intensive management (of agriculture and agricultural industry) and superiority agricultural areas; and

Table 9. The comparison of agricultural production resources endowment between China and Thailand (2013)

country	Agricultural economically-active population (Unit 10,000)	Proportion of the agricultural population (%)	Agricultural economically-active population percapita arable land area (ha / person)	Per thousand hectares of arable land ownership of the tractors (unit / 1000 ha)	Per thousand hectares of arable land to harvest - Offline ownership (unit / 1000 ha)
China	83291.6	63.7	0.2	10.4	2.9
Thailand	2890.5	45.0	0.5	24.4	13.0
Asia	194301.1	50.2	0.3	18.6	4.7
World	259442.5	40.3	0.5	20.2	2.9

Source National Bureau of Statistics, FAO database

more government support be given to the leading agricultural enterprises committed to developing most competitive agricultural products. In addition, China ought to make a deeper processing of agricultural products, increasing their added value and expanding its export of processed agricultural products.

(2) Keep making the best use the complementary relationship between China and Thailand, helping them complement each other. Thailand does very well in exporting cereals, tropical fruits and vegetables whereas China, good at exporting temperate fruits and vegetables. China's provinces where those fruits and vegetables are grow ought to play a more active role in Sino-Thailand bilateral agricultural trade and expand China's export of temperate fruits and vegetables to Thailand.

(3) Increase labor specialization and expand difference in products common to both China and Thailand. In order to avoid a fierce competition possibly harmful to both the countries, we suggest a higher labor specialization accompanied by a bigger difference in the common products which may ultimately help change that original competition between China and Thailand into complement.

Acknowledgements

The project is supported by National Social Science Foundation of China (15BJY062), and Social Foundation of Fujian Province China (2014B086).

References

1. Michael Potter, *Competitive Advantage of Nations*. Beijing, Huaxia Publishing House, 2008.
2. Paul Krugman, *New International Trade Theory*. Beijing, China Social Sciences Press, 2008.
3. Jiadong Tong, *National Trade, Theory and Policy*. Beijing, Higher Education Press, 2010.
4. Xiaozhong Li, *From Comparative Advantage to Competitive Advantage*. Hangzhou, Zhejiang University Press, 2008.
5. Wen Hai, *International Trade, Theory, Policy and Practice*. Shanghai, Shanghai People's Publishing House, 2009.
6. Chongguang Li, *Contributors to China's Agricultural Products' Comparative Advantage and Comparative Advantage Model*. *The Journal of Huazhong Agricultural University (Social Sciences Edition)*, 2010 (1), 1-4
7. Ministry of Commerce of People's Republic of China, *International Statistical Yearbook 2010*.
8. National Bureau of Statistics of China, *China Statistical Yearbook 2010*.
9. Jianxiong Guo, *China's Agricultural Development in the Open Conditions*. Beijing, China Social Sciences Press, 2011.
10. Lifeng Liu, *China-ASEAN Fruit Trade and Its Prospects*, *China's Rural Economy*. 2009 (6), 61-66.
11. Baojun Niu, *The Rule of Variable International Agricultural Comparative Advantage and China's Policy*. *International Trade Exploration*, 2011 (4), 11-14.
12. Weiguang Pan. *Economic Globalization and Overseas Expansion of Chinese Business*. Beijing, China Agriculture Press, 2012.

