

Research on the Competitiveness of Foreign Trade in South

East and South Asia under B&R Initiative

Zhang Na-na*
school of management
Shanghai University of Engineering Science
Shanghai, China
15037825230@163.com

Hu Bin
school of management
Shanghai University of Engineering Science
Shanghai, China
hubinlyj@163.com

Abstract—First we construct the index system of foreign trade competitiveness evaluation, research the competitiveness of foreign trade in South-East and South Asia under the background of “the Belt and Road Initiative” by principal component analysis. Then we calculate the scores of foreign trade competitiveness of each country by comprehensive evaluation model. The rank is Malaysia, Thailand, Vietnam, Philippines, India, Indonesia, Pakistan, Nepal. Finally, we put forward suggestions on how to improve the competitiveness of foreign trade from three aspects.

Keywords—*B&R initiative; South-East and South Asia; principal component analysis; the competitiveness of foreign trade*

I. INTRODUCTION

The global financial crisis and the European debt crisis in 2008 make the world economic imbalanced, affecting the level of economic development of many countries. On September and October, 2013, president Xi Jinping visited to Central Asia and Southeast Asia respectively, proposed the strategic conception of “the Silk Road Economic Belt” and “the 21st-Century Maritime Silk Road”. “the Belt and Road Initiative” from Central Asia to Europe, Southeast Asia to South Asia and Africa -- ranging from infrastructure construction to trade and investment, the initiative covers more than 60% of the world's population. Countries along “B&R Initiative” can cooperate with neighboring countries to build a harmonious and win-win new surroundings. It not only can form a new economic growth point, but also promote the consumption and investment, create demand and employment, lay a solid foundation for the future development of all countries in the region.

The logical starting point of the initiative is China and the surrounding areas, therefore, South-East and South Asia which have a stable economic development has become an important region to promote the initiative. This paper researches on the competitiveness of foreign trade in South-East and South Asia under B&R initiative. Firstly we establish the evaluation index system of foreign trade competitiveness, then calculate the scores of foreign trade competitiveness of each country, finally according to the results of the analysis, put forward some

suggestions.

II. RELATED LITERATURE REVIEW

About the study of foreign trade competitiveness, the early literature is concerned with the impact of import, export, foreign trade dependence, trade competitiveness index and other factors on the trade competitiveness. Elgazar Hegazy divided the influence factors of trade competitiveness into three aspects: import, export and productivity. Yin Xiaobo from the growth rate of imports and exports, foreign trade dependence degree, trade competitiveness index and display comparative advantage index, analyzed the foreign trade competitiveness of the Corps. Ding Yumei think that the foreign trade competitiveness of a country is related to its technological innovation, and the scientific and technological factors play an important role in the foreign trade.

In recent years, domestic and foreign scholars on foreign trade competitiveness of the research has been deepening, mainly concerned with the environmental regulation, service trade, economic structure, foreign investment and other factors. Cui Yuanmiao and Xie shiyu think that the loose of environmental regulation and pollution intensity led to the decline in regional trade competitiveness. Song Malin think trade in services can enhance the competitiveness of foreign trade and it is a significant role. Wang Yuhong and Ding Zhenhui studied the impact of foreign investment and trade conditions on Japan's foreign trade competitiveness.

III. MEASURES AND ANALYSIS

A. Evaluation Index System of Foreign Trade Competitiveness

1) Construction of Index System

According to the scientific and operational principles, this article builds the evaluation index system of foreign trade competitiveness in South-East and South Asia. The index system includes 13 indicators (Table 2).

* Corresponding author

TABLE I. EVALUATION INDEX SYSTEM OF FOREIGN TRADE COMPETITIVENESS

	<i>Indicators (unit)</i>	<i>computing method</i>
X1	state owned market share (%)	export volume/world export volume
X2	export dependence (%)	export volume /GDP
X3	net exports volume (dollar)	export volume-import volume
X4	export advantage index (%)	product export growth rate-total export growth rate
X5	trade structure (%)	export volume of trade in services / total trade export volume
X6	per capita export volume (dollar)	total import and export volume/total population
X7	export commodity structure conversion rate (%)	exports of high technology products/exports of manufactured products
X8	net inflow of foreign direct investment (dollar)	an investor's investment to get the permanent management of an enterprise in another economy
X9	trade competitiveness index (%)	(export volume – import volume)/(export volume + import volume)
X10	total labor productivity (%)	GDP/the number of labors
X11	total import and export growth rate (%)	the gap of total imports and exports in two years/total import and export volume in the first year
X12	export turnover time (day)	the total amount of time from start to the end for export
X13	import turnover time (day)	the total amount of time from start to the end for import

TABLE II. INTERPRETATION OF THE TOTAL VARIANCE OF PRINCIPAL COMPONENT ANALYSIS

	<i>Initial eigenvalue</i>			<i>Extracted square and manned</i>		
	<i>total</i>	<i>Variance %</i>	<i>accumulation %</i>	<i>total</i>	<i>Variance %</i>	<i>Accumulation %</i>
1	6.370	49.002	49.002	6.370	49.002	49.002
2	2.992	23.019	72.021	2.992	23.019	72.021
3	1.526	11.742	83.763	1.526	11.742	83.763
4	0.829	6.379	90.142			
5	0.732	5.631	95.773			
6	0.430	3.309	99.081			
7	0.119	0.919	100.000			
8	2.159E-16	1.660E-15	100.000			
9	1.379E-16	1.061E-15	100.000			
10	1.264E-16	9.719E-16	100.000			
11	-4.445E-17	-3.419E-16	100.000			
12	-1.554E-16	-1.195E-15	100.000			
13	-2.768E-16	-2.129E-15	100.000			

B. Empirical Analysis of Foreign Trade Competitiveness

Principal Components Analysis is based on the original variables correlation coefficient matrix structure, to form the principal component variables by reducing the dimension of

linear transformation of the original variables and make the principal component variables include the vast majority information of the original variables as in [7].

1) Selection of data

There are 19 countries in South-East and South Asia along B&R Initiative. In some countries, the amount of foreign trade is very low, the World Bank statistics and the internet don't have their information about foreign trade competitiveness. According to the availability of data, the selected countries in South-East and South Asia along B&R Initiative are Vietnam, Thailand, Malaysia, Indonesia, Philippines, Pakistan, India, Nepal. The data used are mainly from the World Bank statistics. And we made data standardization using SPSS software. There are two reverse indexes in the 13 indicators, so we calculated the reciprocal.

2) Model Analysis

Table 1 is a list of the total variance of the original variables in the component analysis. From the table, we can see that there are 3 principal components are extracted after the principal component analysis, their cumulative variance contribution rate was 83.763%, the extracted principal components cover most information of the original variables as in [8].

$$F1 = 0.377 X1 + 0.694 X7 + 0.906 X2 + 0.746X3 - 0.765X5 + 0.799X9 + 0.891X6 + 0.801X10 - 0.034X8 - 0.214X11 + 0.895X13 + 0.915X12 - 0.157X4 \quad (1)$$

$$F2 = -0.554 X1 + 0.249 X7 + 0.211 X2 + 0.412 X3 + 0.331X5 - 0.477X9 + 0.077X6 - 0.098X10 - 0.843X8 + 0.751X11 + 0.279X13 + 0.236X12 + 0.526X4 \quad (2)$$

$$F3 = 0.564 X1 + 0.138 X7 + 0.197 X2 - 0.427 X3 + 0.169X5 + 0.149X9 - 0.199X6 - 0.299X10 + 0.431X8 + 0.382X11 + 0.257X13 + 0.234X12 + 0.579X4 \quad (3)$$

The composite score (IFI) was calculated by the method of

TABLE III. COMPONENT SCORE COEFFICIENT MATRIX

	<i>principal component</i>		
X1	0.377	-0.554	0.564
X7	0.694	0.249	0.138
X2	0.906	0.211	0.197
X3	0.746	0.412	-0.427
X5	-0.765	0.331	0.169
X9	0.799	-0.477	0.149
X6	0.891	0.077	-0.199
X10	0.801	-0.098	-0.299
X8	-0.034	-0.843	0.431
X11	-0.214	0.751	0.382
X12	0.895	0.279	0.257
X13	0.915	0.236	0.234
X4	-0.157	0.526	0.579

Sum of Indicator as in [9], its formula is:

$$IFI = \lambda_1 F1 + \lambda_2 F2 + \dots + \lambda_m Fm \quad (4)$$

In (4), F represents a single principal component's score, λ represents the contribution rate of the corresponding principal components.

The model of foreign trade competitiveness can be got from Table 2 and (4) :

TABLE IV. EVALUATION INDEX VALUE AND RANKING OF THE COMPETITIVENESS OF FOREIGN TRADE IN SOUTH-EAST AND SOUTH ASIA

	<i>F1Trade quality factor</i>	<i>F1Trade potential factor</i>	<i>F3Trade scale factor</i>	<i>IFI</i>	<i>rank</i>
Malaysia	10.45	0.20	-0.99	65.65	1
Vietnam	4.23	2.20	1.45	35.70	3
Philippines	-1.10	1.80	0.43	-0.99	4
Thailand	5.92	0.49	-0.06	39.10	2
Pakistan	-4.86	-0.66	-1.96	-35.92	7
Nepal	-8.97	4.33	-0.17	-44.41	8
Indonesia	-2.26	-4.46	-1.39	-29.89	6
India	-3.40	-3.90	2.69	-29.25	5

$$IFI = 6.370 F_1 + 2.992 F_2 + 1.526 F_3 \quad (5)$$

From Table 3, we can see that X2, X3, X5, X6, X7, X9, X10, X12, X13 have greater impact on the first principal component index, these indicators can be named as trade quality factors. X8 and X11 have greater impact on the second principal component index, these indicators can be named as trade potential factors. X1 and X4 have greater impact on the third principal component index, these indicators can be named as trade scale factors.

C. Result Analysis

Bring standardized indexes into (1)--(5), we can get evaluation index value and ranking of foreign trade competitiveness of South-East and South Asia (table 4). Some indicators are negative numbers because the index have standardized as in [10]. The positive and negative only indicate the relative competitive advantage of the countries.

From table IV, we can see that foreign trade competitiveness in Malaysia is the strongest, followed by Thailand, Vietnam. Nepal is the weakest. From the point of view of trade quality factor, Malaysia is in the first place, scoring about two times as much as Thailand which is the second, and Malaysia has a strong competitiveness in the export of foreign trade. From the point of view of trade potential factor, Nepal is in the first place, because foreign direct investment in Nepal is the highest in all countries. It can promote the development of national economy, expand the production of goods and increase the volume of foreign trade. From the point of view of trade scale factor, India is the first. Its merchandise trade export is as high as 32 million dollars in 2014, which is ranked first in the 8 countries. But India scored lower on trade quality and trade potential, so the overall ranking is relatively backward.

IV. CONCLUSIONS AND RECOMMENDATIONS

In the rank of foreign trade competitiveness of South-East and South Asia under B&R Initiative, Malaysia is the most competitive, followed by Thailand, Vietnam, and the weakest is Nepal. Malaysia and Thailand have the highest score for trade quality factors, and the gap in various countries is larger. Nepal and Vietnam have the highest score for trade potential factors, and for trade scale factors, India and Vietnam have higher scores. In the comprehensive score of IFI, the scores of the 8 countries have larger difference. Unbalanced development of foreign trade competitiveness seriously hindered the promotion of B&R initiative. According to current situation of foreign trade competitiveness in these regions, here are some suggestions:

Intensify cooperation and promote the coordinated development of international trade. The development of foreign trade in Southeast Asia and South Asian countries is not balanced, B&R initiative can enhance the level of economic and trade cooperation of all relative countries. All countries have different strengths, different levels of development, and have strong complementarity. For example, the country can build factories and investment in another country, this will not only reduce costs, increase trade exports, but also promote the

development of the other country's economy, create more jobs and improve the employment rate.

Improve the port situation, and improve the efficiency of customs clearance. According to the analysis, it can be known that the biggest influence on foreign trade competitiveness is the turnover time, and the efficiency of customs clearance directly affects the development of border trade between countries. Customs should make effective use of existing management resources, to make the import and export goods quickly split, to ease the backlog of goods in the port. At the same time, we can make full use of the Internet system, real-time monitoring of the customs clearance efficiency, maintaining the normal trade order.

Improve the investment environment to attract foreign investment. According to the analysis, the biggest impact on the second principal components is the amount of foreign direct investment. Various countries can implement some preferential policies to attract foreign enterprises to establish enterprises in their countries, this will not only learn from the advanced technology and management concepts of Multi-National Corporation, but also to improve the competitiveness of foreign trade.

ACKNOWLEDGMENT

First, I want to thank Yunnan University of Finance and Economics for giving me the opportunity to contribute to the international academic conference. Then I would like to stress that the achievement of this thesis thanks to my tutor, Hu Bin, and my classmates. Thank Hu for his guidance and advice for the paper, without his consistent and illuminating instruction, this thesis could not have reached its present form. Thank classmates for helping me translate literature and find data. Thank you again for your help.

REFERENCES

- [1] H. Elgazar, "Sources of Japanese Competitiveness and Growth," *International Advances in Economic Research*, 2002, pp. 65-78.
- [2] X.B. Yin, "Research on the Competitiveness of Foreign Export Trade in Xinjiang," *Economist*, 2009, pp. 285-286.
- [3] Y.M. Ding, "How to Improve the Competitiveness of China's Foreign Trade by Scientific and Technological Innovation," *Commercial Age*, 2009, pp. 25-28.
- [4] Y.M. Cui, "Research on the Impact of Environmental Regulation on China's Foreign Trade Competitiveness," *Commercial Age*, 2014, pp. 5-14.
- [5] M.L. Song, "The strategic Choice of China's Foreign Trade Competitiveness and Post Crisis Era," *International Trade Issues*, 2011, pp. 170-176.
- [6] Y.H. Wang, "Analysis of Japan's Foreign Trade Competitiveness," *Modern Japanese Economy*, 2010, pp. 22-27.
- [7] Y. Shu and L.X. Lin, "Research on the Factors Influencing the Competitiveness of China's Service Trade Based on the Analysis of the Components," *Hubei Social Sciences*, 2011, pp. 78-81.
- [8] Y.X. Li and Y.H. Guo, "A Research of the Level of Facilitation of Frontier Trade of Xinjiang China and the Surrounding Countries," *International Business Studies*, 2014, pp. 24-33.
- [9] A. Huang and L.A. Yang, "Comprehensive Assessment of Soil Nutrients Based on PCA," *Arid Zone Research*, 2014, pp. 819-825.

- [10] Q.Y. Mao, "Analysis on Indicator System of Trade Competitiveness and Related Evaluation," *Method Economic Management*, 2008, pp. 11-15.