Saint Petersburg State University

Department of World Economy

**Comparative study on international competitiveness of China and India’s Trade in Services**

Thesis submitted in partial fulfillment of the requirements   
for the degree of

Master of Arts 38.04.01 “Economics”  
International Trading System MA program

|  |  |
| --- | --- |
| I hereby certify that this is entirely my own work unless otherwise stated **√** | By Xu Shuhan  Xu Shuhan Signature |
|  | Supervisor Professor Popova L. Valerievna |

**Saint Petersburg**

**2022**

**CONTENTS**

[**INTRODUCTION** 4](#_Toc103267395)

[**1.** **Related Theories and Literature Reviews** 7](#_Toc103267396)

[**1.1** **Concept of trade in services** 7](#_Toc103267397)

[**1.1.1** **Definition of services trade** 7](#_Toc103267398)

[**1.1.2** **Service sector and tertiary industry** 8](#_Toc103267399)

[**1.1.3** **The meaning of international competitiveness of service trade** 9](#_Toc103267400)

[**1.2** **Brief of trade theories** 9](#_Toc103267401)

[**1.3** **Literature reviews** 11](#_Toc103267402)

[**1.3.1** **Different views on the development paths adopted by China and India** 11](#_Toc103267403)

[**1.3.2** **Research on the service trade** 12](#_Toc103267404)

[**1.3.3** **Research on the China’s and India’s trade in services** 14](#_Toc103267405)

[**1.4** **Summary** 15](#_Toc103267406)

[**2.** **Comparison of service sector development of China and India** 18](#_Toc103267407)

[**2.1** **China’ service sector development** 18](#_Toc103267408)

[**2.2** **India’ service sector development** 20](#_Toc103267409)

[**2.3** **Summary** 23](#_Toc103267410)

[**3.** **Comparison of the development status of trade in service between China and India** 26](#_Toc103267411)

[**3.1** **The overall imports and exports of China’s and India's trade in service** 26](#_Toc103267412)

[**3.2** **China’s and India's service trade import and export by main service-category** 29](#_Toc103267413)

[**3.3** **Summary** 33](#_Toc103267414)

[**4.** **Comparison of International Competitiveness of China’s and India’s Service Trade** 35](#_Toc103267415)

[**4.1** **Analysis of the International Market Share Index (IMS Index)** 35](#_Toc103267416)

[**4.2** **Analysis of the Revealed Comparative Advantage Index (RCA Index) and the Revealed "Symmetric" Comparative Advantage Index (RSCA Index)** 39](#_Toc103267417)

[**4.2.1** **The revealed comparative advantage index (RCA Index)** 39](#_Toc103267418)

[**4.2.2** **The revealed symmetrical comparative advantage index (RSCA Index)** 42](#_Toc103267419)

[**4.3** **Analysis of the Trade Competition Index (TC Index) and the Revealed Trade Competition Index (RTC Index)** 45](#_Toc103267420)

[**4.3.1** **The Trade Competition Index (TC Index)** 45](#_Toc103267421)

[**4.3.2** **The Revealed Trade Competition Index (RTC Index)** 48](#_Toc103267422)

[**4.4** **Summary** 51](#_Toc103267423)

[**CONCLUSION** 56](#_Toc103267424)

[**REFERENCE** 59](#_Toc103267425)

[**Appendix 1 India’s service trade situation from 2005 to 2020 (unit: billion US dollars)** 67](#_Toc103267426)

[**Appendix 2 China’s service trade situation from 2005 to 2020 (unit: billion US dollars)** 68](#_Toc103267427)

# **INTRODUCTION**

With the deepening of economic globalization, the focus of global economic development continues shifting from merchandise trade to service trade to measure the level of a country’s international competitiveness. According to “The Boao Forum for Asia Development of Emerging Economies Annual Report 2017”, emerging economies contributed 60% to world economic growth in 2016, ensuring stable growth of the world economy. Among them, the two largest developing economies – China and India, left the most impressive economic performance, leading the world's economic gradually shift to Asia at an increasing rate on the one hand. On the other hand, the rapid economic development has also activated the demand potential of two huge markets, and the economies around the world are increasingly relying on the sustained demand of the two Asian giants. From this perspective, the economic growth potential and development space of the two countries play a pivotal role in the world economic growth. And the economic growth of China and India deserves the world's attention. Moreover, the attention of the world paid to China and India is not only due to the similarity of the rapid economic growth of the two countries in recent years, but also the huge difference of the development model of them. The two countries with similar initial national conditions have different economic growth paths. China has achieved economic growth through rapid export-oriented industrialization and is known as the "factory of the world". In the meantime, being known as the "office of the world", India's bypassed the progress of developing industrilization and directly embarked on a growth path led by services.

Next, this paper will introduce the different development paths and policies implementing in service sector by the two countries first, and then compare the comparative advantages of India’s and China's overall service industry and the competitive advantages of each service industry through comparative and empirical analysis, hoping to have a clear understanding of the development status of service trade and the competitiveness level of each service industry of the two countries at this stage. And finally, the author hopes to show the dual nature of the government intervention in the development process of service industries.

This paper is divided into six parts and there will be separate summary at the end of each chapter. The first part is the Introduction, mainly introduces the reason and purpose of this paper and the structure of the paper, expecting giving a general impression of whole paper.

The second part is the First Chapter of this paper, which is divided into three sections, and there will be subdivisions in each section. In general, the first chapter mainly introduces the concept and definition of service trade and competitiveness of service industry and summarizes some of the existing trade theory and relevant literature.

The third part is the Second Chapter, which is divided into three sections. This chapter mainly summarizes the development of service industry in China and India, and introduces the relevant policies on development of service industry by Chinese and Indian governments.

The fourth part is the Third Chapter of this paper. This chapter has three sections. First section indicates the overall import and export situation of India’s and China's service trade from 2005 to 2019. Second section tease out the import and export situation of each service industry in 2005 and 2019 respectively, including the export value, import value and the proportion of the total import and export in that year. Third section is the summary of this chapter.

The fifth part is the Fourth Chapter of this paper, which is divided into four sections, and some sections will be subdivided further. In this chapter, the author uses the indexes of the international market share (IMS Index), revealed comparative advantage (RCA Index), revealed symmetric comparative advantages (RSCA Index), trade competition (TC Index) and revealed trade competition (RTC Index) respectively to calculate the numerical competitiveness level of the overall service industry and each service industry of India and China, in order to compare and analyze the relative advantages of the overall service industry and each service industry of India and China.

The sixth part is the last part of this paper, the author makes a Conclusion of the full text. In conclusion, the author will state what is found in this paper and explain the reasons for the results.

In addition, the paper also involves Reference and Appendixes. Appendixes are the supplementary part of this paper and placed in the end of the paper, which mainly shows the import and export situation of each service industry of India and China from 2005 to 2020.

# **Related Theories and Literature Reviews**

## **Concept of trade in services**

### **Definition of services trade**

Hill (1977, p. 318) pointed out the service is ‘a change in the condition of a person, or of a good belonging to some economic unit, which is brought about as the result of the activity of some other economic unit, with the prior agreement of the former person or economic unit’. In terms of “World Investment Report” (UNCTAD 2004 p. 145), Services are usually perceived as intangible, invisible, perishable and requiring simultaneous production and consumption, while goods are tangible, visible and storable and do not require interaction between producers and consumers”. The General Agreement on Trade in Services[[1]](#footnote-1) (GATS) distinguishes between four modes of supplying services: cross-border trade, consumption abroad, commercial presence, and presence of natural persons. Cross-border supply is defined as covering the movement of services from the territory of one member to that of another member (e.g., banking or architectural services transmitted via telecommunications or mail); Foreign consumption refers to a situation in which a service consumer (such as a tourist or a patient) enters the territory of another member in order to obtain services; A commercial presence means that a service provider of one member establishes a regional presence in the territory of another member, including through ownership or leasing of premises for the provision of services (e.g. domestic subsidiaries of foreign insurance companies or hotel chains); and The presence of a natural person is when a member enters the territory of another member to provide services (e.g. accountants, doctors or teachers).

The United Nations Conference on Trade and Development (UNCTAD) divides the services as the following 12 main categories: Manufacturing services on physical inputs owned by others, maintenance and repair services n.i.e, transport, travel, construction, insurance and pension, financial services, charges for the use of intellectual property, telecommunications, computer and information services, other business services, personal, cultural and recreational services, government goods and services n.i.e. According to the UNCTAD’s classification of services, this paper will focus on 10 of them, respectively, transport, travel, construction, insurance and pension services, financial services, telecommunications computer and information, charges for the use of intellectual property, other business, personal, cultural and recreational services, government goods and services n.i.e.

### **Service sector and tertiary industry**

Service industry refers to the industry that provides labor services or services with tangible resources such as equipment and places, emphasizing the creation and sale of service products (Zeng, 2021). Compared with other industrial products, it has the unique characteristics such as immateriality, inseparability and vulnerability. The tertiary industry mainly refers to the industry that produces non-material labor products, which has the characteristics of intangibility. In other words, it excludes all other industries of the primary and secondary industries. The tertiary industry and the service industry belong to a subordinate relationship, that is, the service industry is included in the tertiary industry, so the scope of the tertiary industry is larger than the service industry. With the continuous adjustment and upgrading of the economic development structure, the scope of the service industry has been expanded, which is almost as the same as the tertiary industry. China has implemented the “Dividing Basis of Three Industries” in 2012, in which the State Council clearly pointed out that the tertiary industry and the service industry were regarded as the same concept without any difference. Therefore, this paper didn’t make distinction between the service industry and the tertiary industry in the process of studying the service industry between China and India.

### **The meaning of international competitiveness of service trade**

Although the traditional economic theories such as Absolute Advantage Theory, Comparative Advantage Theory and Factor Endowment Theory don’t give clear explanation of international competitiveness, the topic of international competitiveness always runs through these classical thoughts. By Adam Smith, David Ricardo, Olin as the main representative of classical economists, think of a country's competitive advantage is owned by the country's labor resources such as capital and technology factors, and due to the high productivity of the product has high international competitiveness, and vice versa, which has constituted the basic idea of international competitiveness.

Currently the international competitiveness of services trade of a country or region is generally measured by the international market share (IMS Index), trade competition index (TC index), revealed comparative advantage index (RCA index) and etc., which show the level of international competitiveness of service trade from different angles. Therefore, this paper also adopts IMS index, TC index, RCA index to evaluate the international competitiveness of service trade between China and India. To ensure the accuracy of these indexes, the author uses two additional indexes, respectively, the revealed symmetric comparative advantage index (RSCA) and the revealed trade competition index (RTC).

## **Brief of trade theories**

Adam Smith put forward the Theory of Absolute Advantage in "An Inquiry into the Nature and Causes of the Wealth of Nations ". He believes that the absolute difference in labor productivity and production costs between countries is the basis for international trade. Countries should specialize in producing their own products with absolute advantages and exchange them to obtain greater benefits. This is the first attempt to explain why countries would like to participate in international trade (Krugman &Obstfeld 2003).

Adam Smith's theory of absolute advantage is too narrow to explain how a country can trade if it has an absolute advantage in producing everything, or none at all. Therefore, in 1817, David Ricardo proposed the Comparative Advantage Theory based on the absolute advantage theory. The theory of comparative advantage supplements this problem, believing that as long as both countries have relative cost advantages in producing a certain product, both sides can gain benefits through international trade. The theory of comparative advantage further explains the origin of international trade and promotes the progress and development of traditional international trade theory.

In 1919, the Swedish economist Heckscher put forward the basic point of the Factor Endowment Theory and pointed out the two necessary conditions for the difference of comparative advantage. In 1933, Olin further explained the Factor Endowment Theory in his book "Interregional Trade and International Trade", which is called the H-O theorem. Its core content is that under the premise of equal technological level in the two countries, there are two reasons for the difference in comparative cost: one is the difference in factor sufficiency between the two countries; the other is the difference in factor intensity of commodity production. Countries should concentrate on producing and exporting products that make full use of their own abundant factors in exchange for products that intensively use their scarce factors.

Based on the model of monopolistic competition, Spencer and Brand had made critical contributions to strategic trade theory. In 1983, they developed a three-stage game in which they introduced how R&D subsidy increase domestic welfare, motivate domestic firm to commit to a higher level of R&D and the foreign firm is motivated to reduce its R&D and exports.

Michael Porter published the "Competitive Trilogy" in the 1980s, namely "competitive strategy", "competitive advantage", and "competitive advantage of nations", forming the theory of competitive advantage. Its proposition: The competitive advantage of a country is the competitive advantage of the enterprise, and it is also the advantage of a country's productivity. The revitalization of a country's economy depends on whether it can gain a competitive advantage in the international market. The formation of competitive advantage depends on the advantages of a country's leading industries and the improvement of production efficiency. Porter believes that the formation of a country's competitive advantage lies in four basic elements and two auxiliary factors. Four basic elements: production factors, domestic demand, related and supporting industries, corporate organization strategy and competition. The two auxiliary factors refer to opportunity and government role. Porter’s “Diamond Framework” is regarded as a tool to analyze sources of national competitive advantage[[2]](#footnote-2).

## **Literature reviews**

### **Different views on the development paths adopted by China and India**

Hua (2006) believes that the reasons for the different economic development modes of China and India lie in the different institutional environments and initial conditions of the two countries, and the differences between the economic development modes of China and India are embodied in the marketization path, opening mode and growth path etc.[[3]](#footnote-3). Zhang and Gu (2008) made an empirical analysis of the factors of economic growth in China and India from the perspective of system reform and believed that system reform played a positive role in promoting the Chinese and Indian economies[[4]](#footnote-4). Zhou (2012) believes that China follows a top-down development path led by the Chinese government. Specifically, China develops its economy by developing manufacturing industries to expand exports and attract foreign direct investment. Chen believed that the change of India's industrial structure did not follow the traditional path of industrial structure change, but walked out of a unique path, that is, the tertiary industry as priority development of the "reverse industrialization" characteristics[[5]](#footnote-5). According to data from Morgan Stanley, Huang (2012) found that India's service sector accounted for 68.5% of GDP in 2011 (reaching the level of moderately developed countries), while the manufacturing industry has been stagnant at around 27%. Different from China's developing mode of "industrialization drives the economy”, India leapfrogged the industrialization stage and prioritized the development of the service industry to drive its economic growth[[6]](#footnote-6). After analyzing the data of India’s three industries’ proportions in GDP from 1950 to 2004, Wen (2015) pointed out that without significant development in the secondary industry, India formed the service mode of the industrial structure, and it appears that India’s economic growth was driven by its services industries[[7]](#footnote-7)[[8]](#footnote-8). Abhrajit Sinha (2019) analyzed the change of India's industrial structure using the endogenous structural mutation method and founded that India's service-led growth model is indeed an anomaly from the vertical comparison of the evolution path of the country's industrial structure. However, if the development of India is observed from the perspective of global technology diffusion and spillover, in a sense, India, like most other developing countries, is just following the modern form of development – the tertiarization, without showing any unique development path[[9]](#footnote-9).

### **Research on the service trade**

As for service industry, economist Shelp once pointed out that agricultural industry and manufacturing industry are the bricks of economic development, while the service industry is the mortar that sticks them together[[10]](#footnote-10). In the 1990s, the world service trade advanced by leaps and bounds. Many scholars shifted their research focus from the development status of the overall service trade to the development trend of a single service industry, paying more and more attention to some service industries with great development potential. Between 1970 and 1990, the knowledge- and capital-intensive service industries became the most popular sector in western economies and services such as financial services, communication services, telecommunications and computer services flourished in the global market. Hardwick and Dou (1998) analyzed the international competitiveness of the European insurance service industry and had an in-depth understanding of the development level of the service trade of European countries. They found that the insurance industry in Europe was the most prosperous[[11]](#footnote-11). As the role of a single service industry in promoting the overall service sector becomes more and more obvious, some scholars begin to discuss the opening of specific service industry for the development of a country's economy. Mattoo, Rathindran and Subramanian (2001) studies the financial and telecommunication service industries and find that promoting market opening of the financial and telecommunication industries can promote the growth of its service economy when other influencing conditions remain unchanged[[12]](#footnote-12). Buera and Kaboski (2009) explored the growth of service industry of the United States during from 1870 to 2000 and found that professional and highly skilled labor made significant contributions to economic growth, in other words, economic growth was driven by technology-intensive services rather than low-skilled jobs[[13]](#footnote-13). Jorgenson and Timmer (2011) found through the data of various countries from 1980 to 2005 that the service industry played a dominant role in the economy and became an important force to improve the total productivity[[14]](#footnote-14). Abhrajit Sinha (2015) pointed out that the growth of global trade and the global spread of technology created an opportunity for countries like India, enabling them to learn the latest technology and choose a computerized and capital-intensive industrialization development model rather than a typical development model of industrialization[[15]](#footnote-15).

### **Research on the China’s and India’s trade in services**

Yu et al. (2004) analyzed and compared the competitiveness of China and India, especially the future development potential, and pointed out that China's overall competitive strength was stronger than India's in the short term, but because of India's advantages in information industry and enterprise efficiency, India is likely to catch up with or even surpass China in the future[[16]](#footnote-16). Therefore, to maintain international competitive strength, Yu suggested that China must quickly realize its overall transition to market economy through deepening reform and opening up. Tang (2005) holds opinion that the potential and driving force of India's economic growth lies in the continuous growth of the service industry and business outsourcing industry, the high efficiency of India's economic growth model and the powerful private enterprises in India. Tang believes that India's economic growth has less investment, lower cost and higher efficiency than China's[[17]](#footnote-17).

Yin et al. (2012) compared China's and the other countries’ services from the aspects of MS index, RCA index and TC index based on panel data, and concluded that China's knowledge-intensive industries have serious shortcomings[[18]](#footnote-18). Zhou (2012) found that China's hardware facilities, business environment and education quality level are better than India's, while India's advantages lie in its relatively adequate financial and legal system, elite education model and population structure[[19]](#footnote-19). Through the comparison between China and India, Guo (2013) found that the quantity of China's service trade was definitely better than that of India, but the proportion of China's tertiary industry in domestic industrial structure was lower than that of India, and India's tertiary industry became the leading industry in its domestic economic development[[20]](#footnote-20). By using the competitiveness index to measure the overall competitiveness of services sector of China and India, Yao and Li (2014) found that compared with the developed countries, both China and India didn’t preserve advantages in trade in services, but they have different developing focus, China mainly focused on traditional labor-intensive service insdustries, and India mainly concentrated on knowledge- and technology-intensive services[[21]](#footnote-21). Purba Roy Choudhury and Biswajit Chatterjee (2016) also analyzed the growth of India's service industry by adopting the endogenous structural mutation method and divided the structural change of India's economic growth into four stages and stated that from the second stage onwards, the service sector began to become the primary driving force of economic growth in India. Among them transport, storage and communications as well as banking, insurance and financial services contributed the most[[22]](#footnote-22).

### **Summary**

First, China and India have many similarities, such as large geographical area, large population base and both emerging developing countries. However, there are also many differences between India and China. For example, China has a relatively stronger system of government[[23]](#footnote-23) and English is the second official language in India. Strong government systems make it easier to co-ordinate economic plans, and the strength of the English language makes it easier for Indian service workers to serve in the European and American markets.

Second, through studying different research, we could assure that service industry, especially technology- and knowledge-intensive services, plays essential role in one country’s economic development. Developing electronic information technology services is one of the top priorities for countries including China and India.

Third, opening market or reducing market access restrictions can promote the development of service industries to a certain extent. Although both countries are hit by big economic shocks, like the 2008-09 global crisis, they only experienced a small deceleration in their growth paths on the one hand and on the other hand, it is precisely the robust growth of China and India that has contained the first global impact of the crisis and that is now sustaining the recovery of the entire world economy[[24]](#footnote-24).

Fourth, the services market of India including financial, telecommunication and information services etc., is more open than that of China[[25]](#footnote-25). The difference in the degree of market opening is the consequence made by distinct priority development goals of the two countries, and also the reason why the development level of service industry in China and India is different.

Last but not the least, by using trade policy, the state government can play a guiding role in the development of specific service industry, and the state government sets developing goals based on its understanding of the current domestic situation and its judgment of the international development trend. At the beginning of the founding of new China, there was an urgent need to solve the employment problem of a large number of domestic people and improve the country's economic situation. Therefore, in combination with its own situation and the development experience of other countries, China has gradually reformed and opened up its domestic market and adopted a combination of export-oriented and import substitution policies to develop its secondary industry step by step[[26]](#footnote-26)[[27]](#footnote-27). In 1985, India’s prime minister Rajiv Gandhi put great emphasis on science and technology and industrialization and concentrated on scientific research. He thinks India didn’t manage to catch up the “industrial revolution”, nor jumped into the “electronic revolution”, for no matter how India can't miss the train of “information revolution”. Therefore, after Rajiv Gandhi came to power, he formulated the Indian science and technology policy, and increased the investment in scientific research and the cultivation of high-level talents. The software boom happened in the late 1990s and the Y2K[[28]](#footnote-28) problem appeared in new millennium promoted the IT service industry of India to a great extent.

# **Comparison of service sector development of China and India**

## **China’ service sector development**

In November 2013, the third Plenum of the 18th CPC Central Committee proposed structural reforms of trade, investment, finance, market, legal, political and social systems. Since then, China has embarked on reforms in three areas to boost service sector growth. The first is to abolish price controls and change tax breaks that favour industry. The second is to remove barriers to private investment in many services, such as finance and telecommunications. The third is to privatize a greater share of state assets, mostly in services.

The Five-Year Plans (formerly known as The Five-year Plan for National Economic and Social Development) are a series of social and economic development initiatives issued by the Chinese government. It mainly covers large-scale public construction projects, the distribution of productive forces in the country and the main proportions of the national economy and sets goals and directions for the long-term development of the national economy. Starting from the 11th (2006-2010) and including the current 14th Five-Year Plan, accelerating the development of the service sector has always been one of the priorities of China's economic policy. Policies to promote the development of the service sector include the elimination of regional and industry monopolies, the establishment of fair, standard and transparent market access, measures to stimulate increased investment and the expansion of the non-state economy in the sector, and the encouragement of logistics service agencies and institutions that accelerate its restructuring. At the local government level, an active tax, land and price policy should be pursued to support the service sector, raise service standards and promote standardization of services. Megacities should focus on the development of the service sector, and where conditions allow, make a gradual transition to a service economy.

In the five-year plans, it was repeatedly emphasized that special attention is being paid to producer services. In the 11th Five-Year Plan, producer services were divided into transport, modern logistics, financial, information and economic services[[29]](#footnote-29). This document stated that the success of the development of producer services is based on the development of information services, the improvement of postal and telecommunications services, the adjustment of the structure of the telecommunications business, and the development of the Internet industry. The 12th Five-Year Plan (2011-2015) stated that in order to improve producer services, China should develop and strengthen high-tech service industries[[30]](#footnote-30). Specific measures were to increase the level of software and application research, develop a number of key high-tech service enterprises and well-known brands. In the 13th Five-Year Plan (2016-2020), emphasis was placed on the importance of creating an exemplary producer service system that meets international standards[[31]](#footnote-31). The latest plan, namely the 14th Five-Year Plan, aims to promote the professionalization of producer services and the inclusion of such services at higher levels of the value chain[[32]](#footnote-32).

Compared with manufacturing sector, service sector remain relatively closed to private investment. Many private and foreign investors are prevented from investing in services because of barriers to entry, and removing these barriers will lead more private and foreign investment in services. In 2014, China's banking regulator began approving new private banking institutions for the first time, and as of July, five new banks had been established by private companies, including Alibaba, Tencent and Fosun group etc. Since then, the Ministry of Industry and Information Technology (MIIT) has granted licenses to Mobile Virtual Network Operators (MVNO), allowing an increasing number of private companies to provide mobile phone services.

China is also lowering some long-held barriers to foreign investment in services, experimenting with new free trade zones such as the Shanghai Free Trade Zone to try to reduce the number of services subject to trade barriers, such as value-added telecommunications[[33]](#footnote-33). However, in China, the state ownership of service assets is substantial in many sectors. Some state-owned enterprises monopolize certain service industries, such as transport and telecommunications, leaving little space for private companies or foreign entrants to compete. The influence of state ownership is significant in many service industries. Some state-owned enterprises monopolize certain service industries, such as transport and telecommunications, leaving little room for private companies or foreign entrants to compete.

## **India’ service sector development**

After independence, India started its five-year economic development plan to boost growth. In 1980, India began to enter a period of incremental reform[[34]](#footnote-34), including reducing state intervention to expand the role of the market. During this period, the Indian government began to allow the import of capital and advanced technology from abroad to ensure the country's economic growth, and other measures such as lifting licensing restrictions on a wide range of industries and opening up a number of productive industries to large conglomerates and enterprises, such as telecommunications, power generation, defense and other high-investment, high-technology projects. Since then, market and price mechanisms have come into play in India, and competition has improved economic performance. At the same time, under the background of information revolution and globalization, some famous IT enterprises were born in this era, which constituted favorable factors for the upgrading of India's economic structure.

In the 1980s, Prime Minister Rajiv Gandhi was in power in India. He saw the positive role of information industry in economic development and enriching the people, so he adjusted India's economic development strategy, vigorously promoted computer education. His reform program included steps to simplify the tax system and shift import controls from licensing requirements to tariff policy[[35]](#footnote-35). During this period, the New Computer Policy of 1984 and the 1986 Policy on Computer Software Export, Software Development and Education were announced. In addition, two other programs, the 1984 Computer Policy and the 1986 Computer Software Export, Development and Training Policy, were introduced to encourage the export of value-added IT products by facilitating their access to the latest technology abroad[[36]](#footnote-36).

Former Indian Prime Minister Vajpayee was particularly fond of the information industry and proposed that all resources should be pooled to make India an information technology power. On the other hand, India's emphasis on higher education after independence provided India with a group of elite talents, which helped India find highly competitive industries[[37]](#footnote-37). After Narasimha Rao took over as prime minister in 1991, the government adopted many preferential policies to support the IT industry and created software technology parks (STPs) for export-oriented software companies. STP is similar to the export processing zone for software. Firms in the STP can import all equipment without duties or import licenses, and 100 percent foreign ownership is allowed in exchange for significant export obligations and exemption from all income taxes on product exports[[38]](#footnote-38). The stage after the market-oriented liberalization reform in 1991 was regarded as the second revolution of Indian economy, which made India's economy move from a semi-closed and semi-regulated state to an open and free market economy. Except for 15 industries, the license system which had been strictly implemented before was basically cancelled. Except for six industries related to national economy and people's livelihood, all other industries are open to private and foreign investors. In 2015 the Modi government launched the Digital India Initiative[[39]](#footnote-39). The program aimed to transform India into a knowledge-based economy and a digitally empowered society. India will then develop its technology economy in an inclusive, accessible and sustainable society. As a result, the Indian government wants India's digital footprint to become one of the fastest growing in the world and become a trillion-dollar digital economy by 2025[[40]](#footnote-40).

At the same time, a number of regulatory measures have held back the Indian IT industry. Thus, the Monopoly and Restrictive Trade Policy Act (MRTP) of 1969 required government permission to expand production or create new facilities for any company with assets of more than 20 million rupees financially connected to a company of that size or selling more than 60% of any product or service in Indian market. The policy of preventing market monopolization has created a fragmented computer industry with over two hundred PC manufacturers, none of which achieve the economies of scale to match international prices[[41]](#footnote-41). In 1973, the Foreign Exchange Regulation Act (FERA) was amended to require foreign investors to reduce their equity stake to 40% in any enterprise except for "high priority industries", usually export-oriented or high-tech operations. FERA was also the impetus for IBM's exit from the Indian market. Moreover, the policies of 1984 and 1986 were mainly to relax existing regulations with minimal emphasis on improving the IT infrastructure or directly promoting the production or use of IT. For software companies, lack of access to programming hardware and limited domestic demand for IT services made it difficult to scale the economy.

## **Summary**

Krugman once said that under today’s situation of global economy, to maintain people’s standard of living, people must learn to compete in an ever-tougher world marketplace, and this is also the reason why higher productivity and product quality have become essential[[42]](#footnote-42). In order to move their economy into high-value sectors and generate jobs for the future, both China and India are striking for forging a closer partnership between government and business.

The Five-Year Plans of China highlighted the importance of developing producer services many times. According to the definition from OECD Glossary[[43]](#footnote-43), producer services are intermediate inputs to further production activities that are sold to other firms or households, and producer services can be divided into transport, modern logistics, financial, information and economic services[[44]](#footnote-44). Increasing import penetration of producer services has a positive effect on the skill and technology mix of exports and with greater openness in producer service industries implying better export performance by skill and technology intensive industries[[45]](#footnote-45). In other words, producer services play an essential role in promoting services moving at higher levels of the value chain which is consistent with the China’s prior goals of economic development. Porter (1990) developed his widespread analytic tool – the Diamond Framework, to analyze national competitive advantage. In the Diamond Framework, the government was listed as a significant external factor and its role can be seen from four aspects namely, to encourage companies to raise their performance, stimulate demand for advanced products, focus on specialized factor creation; and stimulate local rivalry.

Policies adopted by the Chinese and Indian governments to promote the development of the service sector share common points, including 1) increased investment in R&D and cultivation of talents; 2) establishing fair, standard and transparent market access to attract more enters; 3) an active tax, land and price policy were pursued to support the service industries; 4) eliminating regional and industry monopolies to stimulate rivalry.

Although India started to emphasize skill-intensive rather than labor-intensive manufacturing, and industries with typically higher average scale in recent years[[46]](#footnote-46), many years ago, India appeared to be more focusing on policies to boost its entire economy by developing specific industries, namely the IT service industry. The development of Indian IT services has been driven by national policies and the availability of highly skilled workers who are fluent in English. The country's advantage over offshore outsourcing centers was due to the high quality and competitive prices of Indian software and services, the presence of a large number of workers with the necessary computer and language skills, and the flexibility and adaptability of Indian specialists to offshore software development[[47]](#footnote-47).

The development of the IT industry in India proved that government intervention is a double-edged sword in the economy. On the one hand, preferential measures, including low taxes, investment in R&D and talents cultivation, for the Indian IT industry have indeed played an essential role in the development of the Indian IT industry. But, on the other hand, the state government lack a comprehensive and long-term plan which led to a serious imbalance in the development of information software and hardware, which ultimately leads to stagnation in the IT industry[[48]](#footnote-48). When the state proclaims a policy in favor of one industry, most of the human resources, capital and other resources of society flow into this industry, while in other, no less important industries, they begin to be scarce. This may result in some domestic nascent industries missing out on the best development opportunities. Moreover, the unfinished services reforms of India remain barriers to Indian domestic and foreign competition, and these barriers can not only hinder the further development of India’s service sector, but also impede the progress of manufacturing sector[[49]](#footnote-49).

Compared with India, China's service market is less open, especially in telecommunications and finance. Although China is also trying to bring more private and foreign capital into the service market by lowering barriers to entry, the proportion of state-owned enterprises in the service sector is still significant. In consistent with India, China is also actively developing software outsourcing services. The more developed areas of software outsourcing industry are Shanghai, Beijing, Dalian and Shenzhen.

# **Comparison of the development status of trade in service between China and India**

This chapter will compare and analyze the development of services trade between China and India by the whole trade service and main service-category, namely, through aspects of export value, import value, total export, and import value and its share in the world, etc.

## **The overall imports and exports of China’s and India's trade in service**

In 2005, the service’s export value of China was 78.47 billion dollars which accounted for 2.93% of the world’s exports. In 2019, the services’ export value of China had increased to 283.19 billion dollars, an increase of 2.6 time, which accounted for 4.61% of the world’s services exports (Tab 1.1). The average annual growth rate of China’s service’s export is 9.6%. During the same period, China's imports of services grew at an average annual rate of 13.6%. In 2005, the import value of China’s service trade was 83.97 billion dollars which accounted for 3.2% of world’s services imports. In 2019 the import value of China’s service trade had increased to 500.68 billion dollars, an increase of approximately 5 times, accounting for 8.59% of world’s services imports. Apparently, the growth rates of China’s services trade scale of import and export have not synchronized. And the unsynchronized growth led China’s services trade deficit continue to grow.

Table 1.1 shows that India’s services trade scale has increased likewise. The services’ imports of India grew at an average annual rate of 8%, from 60.64 billion dollars in 2005 to 179.18 billion dollars in 2019, an increase of approximately 2 times. India’s services’ exports grew at an average annual rate of 10.6%, from 52.18 billion dollars in 2005 to 214.36 billion dollars in 2019, an increase of 3 times. In 2005, India's share of world’s trade in services exports was 1.95%, while in 2019 India’s share of world’s trade in services exports increased to 3.49%. Noteworthy, the increase of India’s imports share of world’s trade in services was modest, from 2.31% in 2005 to 3.08% in 2019.

In recent years, due to the development of global economic digitalization, the demand of service products, especially of IT service products, has significantly increased. As the “world office”, India can not only meet its domestic demand for IT service products, but also export a large number of such products. Therefore, we can see that the proportion of India's service trade exports is higher than its service trade imports.

**Table 1.1 2005-2019 China-India service trade import and export situation** **(unit: billion US dollars; percentage: %)**

 (Source: calculated based on statistics from UNCTAD)

The line graph shown in Figure 1.1 represents the year-on-year growth rates of China’s and India’s services’ exports and imports from 2006 to 2019. The four fluctuated lines indicate how the changeable and unpredictable international trade environment influenced the services trade of China and India. Affected by the 2008 global financial crisis, the year-on-year growth rates of India's and China's trade in services exports dropped 12.41% and 15.67% respectively in 2009, both hitting record lows. In the face of such a severe and complex situation, Chinese government and Indian government introduced a series of timely policies and measures, which effectively curtailed the sustained and sharp decline in foreign trade and achieved a rapid recovery in 2010[[50]](#footnote-50)[[51]](#footnote-51). However, this severe worldwide economic crisis hit the world economy so heavenly that led to a sharp decline in global wealth, coupled with the rise of trade protectionism and influenza A H1N1 pandemic, resulting in a sharp decline in the growth of China and India's trade in services. China's services trade showed sign of recovery in 2012, while the services trade of India started to pick up until 2013. Unfortunately, starting from 2014, the growth of services exports and imports of China and India slowed down. Despite some recovery in subsequent years, the growth of China’s and India’s trade in services entered a new round of decrease due to the China-US trade war and the COVID-19 pandemic.

**Figure 1.1 The year-on-year growth rates of China’s and India’s service trade exports and imports from 2006 to 2019** (Source: UNCTAD statistics)

In summary, except for a few years, the import and export values of China’s and India’s services trade have been on the rise from 2005 to 2019. China's service import value is generally larger than its service export value, showing an enlarging trend of trade deficit. Since 2008, India's export value of service trade has succeeded to exceed its import value of service trade, thus achieving a service trade surplus, and the trade surplus has grown steadily. However, due to the influence of uncertain factors, the international trade environment has deteriorated from time to time, thus making the growth rate of service trade import and export of China and India fluctuated constantly. In general, the growth rates of service trade of China and India slowed down.

## **China’s and India's service trade import and export by main service-category**

Table 1.2.1 and Table 1.2.2 indicate China’s and India’s service trade situation by main service-category in 2005 and in 2019 respectively. As author mentioned in the first chapter, this paper only focused on 10 main service-category of the total 12. So, based on the data found in website UNCTAD, the author regarded these 10 service-category as a whole and under this presumption, the total values and each service-category’s percentage of imports and exports are calculated.

In 2005, the service industries which contributed most to China’s service trade exports are transportation services, travel services and other business services which accounted for 28.45%, 44.96% and 21.54% respectively. While exporting travel and transport services in large quantities, China also imported a lot of these services, and the value of imported transport services is greater than that of exported. In addition, construction services and telecommunications, computer, and information services also shared noticeable proportions of China’s service trade exports. Besides, the rest of the service industries’ shares are relatively small, no more than 1% each. In 2005, China imported more services than exported, presenting trade deficit. China’s trade deficit arises from transport services, insurance and pension services, financial services, charges for the use of intellectual property services, other business services, personal, cultural, and recreational services and government goods and services. Among them, China mainly imported services of transport, travel, insurance and pension, charges for the use of intellectual property and other business, and together they accounted for 94.31% of the total China’s services imports.

The service industries of India contributed most to its service trade exports in 2005 are transportation services, travel services, telecommunications, computer, and information services and other business services which accounted for 12.53%, 14.36%, 32.32% and 34.9% respectively. Insurance and pension services and financial services also shared noticeable proportions to the total service exports of India. In 2005, India imported a large quantity of transport services, travel services, other business services, insurance and pension services, financial services, charges for the use of intellectual property and telecommunications, computer, and information services. Among them, transport service, other business service, travel service and insurance and pension services, together they accounted for 93.09% of the total service imports of India. The largest import share was taken by transport service, accounting for 54.44% of the total service imports. Same as China, India also imported more services than exported, showing a deficit of trade in services.

**Table 1.2.1 In 2005,** **China’s and India’s service trade situation by main service-category (unit: billion US dollars; percentage: %)**

 (Source: author’s calculations based on statistics from UNCTAD)

In 2019, the service industries which shared considerable proportions of China’s service trade exports are transport services – 18.13%, travel services – 13.59%, construction services – 11.03%, telecommunications, computer, and information services and other business services – 21.22%. Noteworthy, services of insurance and pension, finance, and charges for the use of intellectual property also have obvious contributions to the services exports of China. In regard to the China’s services imports, transport service, travel service, charges for the use of intellectual property, telecommunications, computer, and information services and other business services together contributed 93.9% to the whole services imports of China. In 2019, China continued to import more services than exporting services which led to enlarge the trade deficit of services. Among them, the enormous imports of transport service and travel service were the root cause of trade deficit, accounting for 104.87 billion and 251.1 billion US dollars in 2019 respectively.

The service industries which shared considerable proportions of India’s service trade exports in 2019 are transport services – 10.32%,, travel services – 15.01%,, telecommunications, computer, and information services – 31.96% and other business services – 35.94%. In addition, construction services, insurance and pension services, financial services and personal, cultural, and recreational services contributed obvious shares to the whole services exports of India as well. Regarding to the India’s imports of services, India imported a large number of transport services, travel services and other business services, and in total they accounted for 80.43% of the whole services imports of India. In 2019, India exported more services than importing services, realizing surplus of trade in services. Among the exporting services, telecommunications, computer, and information services and other business services made the greatest contributions, the respective exporting value was 65.4 billion and 73.54 billion US dollars.

**Table 1.2.2 In 2019, China’s and India’s service trade situation by main service-category (unit:** **billion US dollars; percentage: %)**

 *(Source: author’s calculations based on statistics from UNCTAD)*

## **Summary**

In summary, compared with 2005, the contributions made by China's construction services, telecommunications, computer and information services to China’s service trade exports in 2019 increased significantly. The exports of construction services increased from 2.59 billion US dollars in 2005 to 28 billion US dollars in 2019, a 27-fold increase. Telecommunications, computer and information services grew 22 times from 2.33 billion US dollars in 2005 to 53.87 billion US dollars in 2019. However, China still preserved deficit in trade in services. The trade deficit of China was caused by the sharp growth of imports’ travel and transport services. The imports of China’s travel services increased from 21.76 billion US dollars in 2005 to 251.10 billion US dollars in 2019, an increase of 10.5 times. China’s transport services’ imports increased from 28.45 billion US dollars in 2005 to 104.87 billion US dollars in 2019, an increase of 2.7 times.

Compared with 2005, in 2019, the exports’ proportions of India’s services didn’t show significant changes and at the same time, the proportion of transport services’ imports declined 14.56%, while the imports’ proportion of telecommunications, computer and information services increased 3.22%. India's trade in services was in deficit in 2005, and transport services contributed most to India’s deficit – -26.47 billion US dollars. However, in 2019, India's trade in services was in surplus (+34.51 billion US dollars), among which telecommunications, computer and information services and other business services contributed most. In 2019, the trade balance of telecommunications, computer and information services of India was 55.8 billion US dollars and that of other business services was 27.48 billion US dollars.

In general, China's service imports and exports are respectively larger than India's service imports and exports. China's service trade has been in deficit all year round and has a trend of expanding year by year. The largest service imported by China is travel service, and the large amount of travel service imports is the main reason for the imbalance in China's trade in services. India achieved positive balance of payments in services trade in 2008 and has maintained a surplus in services trade since then, with telecommunications, computers and information services contributing the most to India's service trade surplus.

# **Comparison of International Competitiveness of China’s and India’s Service Trade**

This chapter adopted the international market share index (IMS index), revealed comparative advantage index and symmetry comparative advantage index (RCA Index and RSCA index), trade competitiveness index and revealed trade competitiveness index (TC index and RTC index), to compare the different international competitiveness of China and India in world service trade.

## **Analysis of the International Market Share Index (IMS Index)**

The International Market Share Index (IMS Index) is the ratio of the volume of exports of a product or service in a country or region to the global volume of exports of this product or service. It shows the overall competitiveness of exports of a particular product or service in a country or region. The formula is:

;

where refers to the international market share of the product or service *j* in a country or region *i*. refers to the total export volume of *j* in *i;* stands for the total world exports of *j*. A variation in the IMS reflects a change in the international competitiveness and comparative status of a given industry or product in a given country. The higher the value of the IMS indicator, the stronger the international competitiveness of this product or service, and the improvement of this indicator indicates an increase in the competitiveness of exports, and vice versa.

The author will first compare the overall international competitiveness of services of India and China and then make comparisons between separate service industries of each country.

Figure 2.1 shows that, by and large, the IMS index curves of China’s and India's services showed upward trends, indicating that, the overall level of international competitiveness of the two countries' services had been increasing from 2005 to 2019. Second, China’s IMS index curve was above India’s which displayed that the overall international competitiveness of China’s services is higher than that of India’s services. Third, China's IMS index curve fluctuates more than India's, while India's IMS index curve is gentler. However, it can be seen from figure 2.1 that from 2005 to 2019, the international competitiveness levels of the overall services of the China’s and India’s increased at a similar rate, in other words, the overall slopes of China’s and India’s curves of IMS index are the same.

**Figure 2.1** **2005-2019 China and India's IMS index of service trade (%)** (Source: UNCTAD statistics)

Table 2.1.1 and Table 2.1.2 show the IMS indexes of main services trade of China and India separately from 2005 to 2019.

The IMS indexes of China’s transport services fluctuated slightly, but generally showed an upward trend. IMS Indexes of travel services were slowly declining. The construction services’ IMS indexes was growing fast. There was a slight increase in IMS indexes of insurance and pension services. IMS indexes of financial services grew slowly. Services of charges for the use of intellectual property’ IMS indexes showed significant growth after 2016. Telecommunications, computer and information services’ IMS indexes grew steadily. As for other business services, although its data in 2010 was unavailable, we can still notice that there was a significant increase of other business services’ IMS indexes from 2009 to 2011, but its IMS indexes had slightly decrease in the following years. The IMS indexes of personal, cultural, and recreational services and government goods and services increased slowly. In general, the international competitiveness of China’s construction and telecommunications, computer and information services had considerable improvement from 2005 to 2019, especially construction services whose IMS index increased from 5.65 in 2005 to 24.44 in 2019. In the meantime, China’s travel services’ international competitiveness was decreasing and its IMS index changed from 4.25 in 2005 to 2.39 in 2019.

**Table 2.1.1** **2005-2019 China’s IMS index of service trade** **by main service-category (%)**

*(Source: author’s calculations based on statistics from UNCTAD, “\*” means that data is unavailable)*

The IMS indexes of India’s transport, travel and insurance and pension services increased slightly. Construction services’ IMS indexes grew steadily. The IMS indexes of financial services increased firstly and then began to decline slightly. The IMS indexes of charges for the use of intellectual property were relatively small and didn’t show obvious changes. The telecommunications, computer and information services’ indexes rose steadily from 2005 to 2013 and followed by a small decline from 2013. Other business services’ IMS indexes fluctuated slightly and stayed relatively stable. The IMS indexes of personal, cultural and recreational services grew steadily. Government goods and services’ indexes had slight increase. In general, the international competitiveness of India’s construction and personal, cultural and recreational services realized obvious improvement and telecommunications, computer and information services’ international competitiveness started to decrease in recent years.

**Table 2.1.2** **2005-2019 India’s IMS index of service trade by main service-category (%)**

* (Source: author’s calculations based on statistics from UNCTAD)*

To sum up, China had international competitiveness over India in transport, travel, construction, insurance and pension, charges for the use of intellectual property and government goods and services. India has international competitiveness over China in telecommunications, computer and information, finance and personal, cultural and recreational services. Regarding other business services, China and India had similar international competitiveness.

## **Analysis of the Revealed Comparative Advantage Index (RCA Index) and the Revealed "Symmetric" Comparative Advantage Index (RSCA Index)**

### **The revealed comparative advantage index (RCA Index)**

The Revealed Comparative Advantage Index (RCA) is a tool for measuring the competitiveness of a particular industry or product in a country or region. The formula is:

;

where stands for the comparative advantage of product or service *i* in country or area *j;* represents the export of *i* in *j*; means the total export of *j* in *t* period; shows the total export of *i* in the world market; means the total world exports in *t* period. If ＞1, it means this product or service has comparative strong international competitiveness, and vice versa.

Table 2.2.1 and Table 2.2.2 exhibit the RCA Index of China’s and India’s main subcategories of services trade separately from 2005 to 2019.

From 2005 to 2019, the RCA indexes of China's transport services were less than 1 in all but a few years, indicating that China's transport services didn’t have comparative advantages in international arena. The RCA indexes of travel services declined over years, and the travel service of China turned from an advantageous service industry to an inferior one. The RCA indexes of the construction services had always been greater than one, indicating that China’s construction services had kept comparative advantage from time to time. The RCA indexes of other business services and telecommunications, computer and information services had increased over time. Therefore, other business services and telecommunications, computer and information services of China had changed from weak services with no comparative advantage to relatively strong services with comparative advantage. The RCA indexes of insurance and pension services, financial services, charges for the use of intellectual property and government goods and services had always been less than one, indicating that these services of China didn’t have comparative advantages in the world. In general, in recent year, China had kept comparative advantages in services of construction, other business and telecommunications, computer and information. Beyond these, no other services of China had comparative advantages in international market.

**Table 2.2.1** **2005-2019 RCA Index of China’s main service-category**



*(Source: author’s calculations based on statistics from UNCTAD**, “\*” means that data is unavailable)*

As for India, from 2005 to 2019, India's RCA indexes of transport services, travel services, construction services, insurance and pension services, financial services, charges for the use of intellectual property and government goods and services had been less than 1, indicating that India didn’t occupy comparative advantages in these services internationally. And except in 2009, the RCA indexes of India’s personal, cultural and recreative services were less than 1, indicating that as a whole India's personal, cultural and recreative services didn’t have comparative advantages in the international market. The RCA indexes of other business services and telecommunications, computer and information services had been keeping greater than 1 from 2005 to 2019, indicating that India's other business services and telecommunications, computer and information services had always had comparative advantages in the world. In other words, other business services and telecommunications, computer and information services of India achieved dominant positions in the world market.

**Table 2.2.2** **2005-2019** **RCA Index of India’s main service-category**

* (Source: author’s calculations based on statistics from UNCTAD)*

To sum up, using the RCA index comparative method, we knew that China has three service industries having comparative advantages: construction, other business and telecommunication, computer and information; and India has two service industries which have comparative advantages in the world market, namely, other business and telecommunication, computer and information.

### **The revealed symmetrical comparative advantage index (RSCA Index)**

Laursen found that the revealed symmetrical comparative advantage index (RSCA index) can well overcome the influence of the asymmetry of the RCA index on the results and reflect better the concept of specialization[[52]](#footnote-52). In this paper, the author tried to compare the competitiveness of specific service industry of China and India. In consideration of accuracy of final outcome, based on the results of RCA index, the author will use the method of RSCA index to compare the comparative competitiveness of each service industry of China and India again.

The formular is:

;

If -1< < 0, it means that the country does not have a comparative advantage in the service industry or has a comparative disadvantage in this service industry; if 0 < < 1, it means that the country has a comparative advantage in this service industry.

Table 2.2.3 and Table 2.2.4 showed the results of China’s and India’s RSCA indexes separately from 2005 to 2019. Mean values of each industry’s RSCA indexes were calculated to give more clear comparison of services of China and India.

According to the table shown below, the mean values of China’s RSCA indexes of transport services, insurance and pension services, financial services, charges for the use of intellectual property services, telecommunications, computer, and information services, personal, cultural and recreational services and government goods and services are negative. Pursuant to the explanation above, China didn’t have comparative advantages in these areas. Meanwhile, the mean values of China’s RSCA indexes of construction services, other business services were positive which means that China has comparative advantages in these two service areas.

Noteworthy, the travel services’ mean value of RSCA index is 0 which means that China didn’t have comparative advantage or disadvantage in travel service industry. But if we looked at the trend of China’s travel services’ RSCA indexes, we could notice that China’s travel services’ RSCA indexes had been negative from 2016 to 2019 and showed a downward trend. In addition, due to the outbreak of the COVID-19 pandemic, countries have taken quarantine, immigration control and strict lockdown measures, especially China who kept its zero-tolerance COVID-19 strategy until now. According to the data from State Administration of Foreign Exchange, China’s exports of travel were 34.5 billion US dollars in 2019, 18.9 billion US dollars in 2020, 12.4 US dollars in 2021 which indicated a clear downturn[[53]](#footnote-53). And the methodology of RSCA Index mainly involve the exports of specific service. Therefore, it’s not hard to sure that the RSCA index of China’s travel services will keep its downturn and China will continue losing its competitiveness in travel services.

It’s also worth to note that about China’s telecommunications, computer and information services, the RSCA index indicated the different result from the RCA index. It may be caused by the observation period of the data intercepted in the paper. According to the data from UNTAD, the exports of China’s telecommunications, computer and information services were 53.87 billion US dollars in 2019, 59.03 billion US dollars in 2020. In general, the RSCA index of China’s telecommunications, computer and information services will keep its upturn.

**Table 2.2.3** **2005-2019 RSCA Index of China’s main service-category**

*(Source:* *author’s calculations based on statistics from UNCTAD, “\*” means that data is unavailable)*

The mean values of India’s transport services, travel services, construction services, insurance and pension services, financial services, charges for the use of intellectual property services, personal, cultural and recreational services and government goods and services were below 0, which indicates that India didn’t preserve comparative advantages in these areas. The mean values of telecommunications, computer, and information services and other business services were above 0 which means that India preserved comparative advantages in these areas.

Although there is some slight difference between the results shown by the RCA indexes and RSCA indexes, if we make comparison based on the future trend of two countries’ services’ development, it’s not hard to find out the RSCA index and RCA index are consistent with each other.

All in all, India preserved comparative advantages in service industries of telecommunications, computer, and information services and other business services. China preserved comparative advantages in service industries of construction, telecommunications, computer and information and other business.

**Table 2.2.4 2005-2019 RSCA Index of India’s main service-category**

*(Source: author’s calculations based on statistics from UNCTAD)*

## **Analysis of the** **Trade Competition Index (TC Index) and the Revealed Trade Competition Index (RTC Index)**

### **The Trade Competition Index (TC Index)**

The Trade Competition Index (TC Index) is a commonly used indicator to analyze international trade competitiveness, also known as the Ratio of Net Export (RNE) or the Trade Specialization Coefficient (TSC). It refers to the ratio of the import or export of a product or service in a country or an area to its total import and export volume. The formula is:

1. ;

Where refers to the export volume of product or service *j* in country or area *i*; stands for the import volume of *j* product or service in country or area *i*, value range [-1, 1]. When TC = 1, this means that this good or service is only exported and not imported by the country. The closer TC is to 1, the higher the competitiveness of the product or service, and vice versa[[54]](#footnote-54). TC index not only excludes the impact of inflation and other macro factors on trade competitiveness, but also avoids incomparability of data. Considering the following research needs of this paper, transforming formula (2) will be introduced in the following text.

Table 2.3.1 and Table 2.3.2 indicated the TC indexes of China and India separately from 2005 to 2019. For the convenience of observation and comparison, we adopted mean values here in Table 2.3.1 and Table 2.3.2.

The mean values of TC indexes of China’s transport services, travel services, insurance and pension services, financial services, charges for the use of intellectual property services, personal, cultural and recreational services and government goods and services were negative which means China imported more these services than it exported. From the perspective of TC index, China didn’t have competitiveness in these service areas. Noteworthy, its financial services’ TC index were positive from 2016 to 2019 which means that since 2016, China exported more financial services than importing. But the share of financial services’ exports accounted for less than 2% of the total service exports of China and as shown in Table 1.2.2 and Appendix 2, and the degree of openness of China’s financial market is relatively low. Therefore, China still didn’t preserve competitiveness in financial service industry.

However, China’s TC indexes’ mean values of construction services, telecommunications, computer, and information services and other business services are bigger than 0, which means that China has relatively competitiveness in these areas.

**Table 2.3.1 2005-2019** **TC Index of China by main service-category**

*(Source: author’s calculations based on statistics from UNCTAD, “\*” means that data is unavailable)*

As for India, its TC indexes’ mean values of transport services, insurance and pension services, charges for the use of intellectual property and government goods and services are negative which indicated that India didn’t have international competitiveness in these areas and India depended on imports of these services to some extent. Meanwhile, India’s TC indexes’ mean values of travel services, construction services, financial services, telecommunications, computer and information services, other business services and personal, cultural and recreational services are positive, which means that India exported more these services than importing, in other word, India has international competitiveness in these service areas. Among them, the TC index’ mean value of India’s telecommunications, computer and information is 0.82 which indicated that India has relatively strong competitiveness in this service area. While although the mean value of personal, cultural and recreational services is positive, starting from 2014, the TC index of personal, cultural and recreational services started to decline and turn to be negative, and kept the downturn in the rest years. According to Table 1.2.2 and Appendix 2, the share of personal, cultural and recreational services of India accounted for around 1% of the total service exports of India. Therefore, the author tends to believe that India didn’t preserve competitiveness in personal, cultural and recreational service industry.

**Table 2.3.2 2005-2019 TC Index of India by main service-category** (Source: author’s calculations based on statistics from UNCTAD, “\*” means that data is unavailable)

### **The Revealed Trade Competition Index (RTC Index)**

The RTC index is obtained by transforming the TC index formula, its formular can be written as:

1. ;

Among them, refers to the service trade competitiveness index of country *a*; refers to the service trade competitiveness index of country *b*. The range of is (0, +∞). If 0 << 1, it means that the international competitiveness of service trade in country *b* is greater than that of country *a*; if >1, it means that the international competitiveness of service industry in country *a* is greater than that of country *b*; the closer the index is to 1, it means that *a* and *b* are comparable in the competitiveness of the service trade industry[[55]](#footnote-55). Country *a* represents China and country *b* represents India.

Figure 1.3.1 presented the overall RTC index between China and India. Table 2.3.3 showed each service industry’ RTC indexes between and India. For the convenience, we also adopted mean values here.

Figure 1.3.1 indicated the specific situation of overall RTC Index of China-Indian. From 2005 to 2007, the RTC index is higher than 1 which tells us that China’s services were more competitive than India’s services in the international arena. After 2007, the RTC index started to be lower than 1, which means that the overall services of India were more competitive than China’s.

**Figure 1.3.1 China-Indian RTC Index curve from 2005 to 2019** (Source: author’s calculations based on statistics from UNCTAD)

Comparing China-Indian RTC index by each service industry, we could find that the RTC indexes’ mean values of transport services, construction services and government goods and services exceeded 1 which means that China has more international competitiveness than India in these service industries. By observing the specific mean values of main service industries’ RTC indexes, India is more competitive than China in service industries of travel, insurance and pension, finance, charges for the use of intellectual property, telecommunications, computer and information, other business and person, culture and recreation.

Noteworthy, although the mean value of insurance and pension services is smaller than 1, we could notice that starting from 2015, the RTC index turned to be bigger than 1 and almost kept an upturn in the following years. So, it’s hard to judge who is more competitive in insurance and pension services. In addition, according to Table 1.2.2, Appendix 1 and Appendix 2, the share of insurance and pension services accounted for less than 2% of both China’ total service exports and India’s service exports. And both two countries imported more insurance and pension services than exporting. The Heckscher–Ohlin theorem pointed out countries export the products which use their relatively abundant and lower cost factors of production and import the products which use the countries' relatively scarce factors[[56]](#footnote-56). From the perspective of Heckscher and Ohlin, the author tends to believe that both China and India did not have competitiveness in insurance and pension service industry.

**Table 2.3.3 2005-2019 China-Indian RTC Index by main service-category**

*(Source: author’s calculations based on statistics from UNCTAD, “\*” means that data is unavailable)*

# **Summary**

From this chapter we get such findings: 1) under the calculation of IMS index, the international market share of China's overall service’s exports is greater than the overall international market share of India's service exports, specifically, China’s exports of transport, travel, construction, insurance and pension, charges for the use of intellectual property and government goods and services preserved greater international market share than India, and India shared larger international market share on service’s exports of telecommunications, computer and information, finance, personal culture and recreation; 2) Calculated with RCA and RSCA indexes, China has comparative advantages in construction, telecommunications, computer and information and other business services in the international market, and India has comparative advantages in telecommunications, computer and information and other business services in the international market; 3) According to the TC index, China's exports of construction, telecommunications, computer and information and other business services are greater than China’s imports of these services, and India's exports of travel, construction, finance, telecommunications, computer and information, other business and personal cultural and recreational services are greater than India’s imports of these services; 4) By transforming the TC index, we obtained the formula of RTC. The author used the RTC index to compare the overall service trade and specific service industries of India and China and found that the overall competitiveness level of India's services is higher than China's. Among them, India is more competitive than China in services of travel, insurance and pension, finance, charges for the use of intellectual property, telecommunications, computer and information, other business, person, culture and recreation. China has more competitiveness than India in transport services, construction services and government goods and services.

**Table 2.4.1 Results of Indexes**



(\* The RSCA indexes gave the same results of RCA indexes, so the RCSA index is omitted; “insurance and pension” is shortened as “insurance”; “charges for the use of intellectual property” is shortened as “Intellectual property”; “telecommunications, computers and information” is shortened as “Tele and IT”; “person, culture and recreation” is shortened as “Personal”; “government goods and services” is shortened as “government”; CHN shorten for China; IND shorten for India)

The author summed up the results of different indexes and made a table (Table 2.4.1) to show the results more visually.

The IMS Index indicates that China exported more services than India in service industry of transport, travel, construction, insurance and pension and government goods and services. And India exported more services than China in service industry of finance, charges for the use of intellectual property, telecommunications, computer and information, other business, and person, culture and recreation.

The RCA Index shows that China has comparative advantages in service industries: construction, telecommunications, computer and information and other business. While India has comparative advantages in service industries: telecommunications, computer and information and other business.

The TC Index indicates that in service industries of construction, telecommunications, computer and information and other business, China exported more services than importing the same kind of services. India exported more services than importing the same kind of services in service industries, such as travel, finance, telecommunications, computer and information, other business.

The RTC Index shows that China is more competitive than India in areas of transport services, construction services and government goods and services. While India has more competitiveness than China in service industries: travel, insurance and pension, finance, charges for the use of intellectual property, telecommunications, computer and information, other business, and person, culture and recreation.

To eliminate ambiguity and get a clearer and acceptable result, we still need to discuss the following points:

1. It is worth noting from Table 1.2.1, Table 1.2.2, Appendix1 and 2 that both India and China imported more charges for the use of intellectual property services than they exported. And the shares of charges for the use of intellectual property accounted for the total service exports are relatively small (China: less than 3%; India: less than 1%). According to Heckscher-Ohlin model, countries should concentrate on producing and exporting products that make full use of their own abundant factors in exchange for products that intensively use their scarce factors[[57]](#footnote-57). Although the result of the RTC Index showed that India may have comparative advantages to produce the charges for the use of intellectual property services at a lower opportunity cost, but the market share is too small in the international arena. In this regard, the author tends to believe that competitive advantages of both India and China in services of charges for the use of intellectual property are not significant.
2. By using the international market share (IMS) index, the result showed that China exported more travel services than India. While the results shown by the revealed trade competition (RTC) index told us that travel services of India are more competitive than that of China which caused ambiguity. It is worth to note that although China's travel service exports exceed India's, China's travel service imports are much larger than India's. The IMS index is only involved the comparison of service exports, and the RTC index is a composite comparison of imports and exports of services. And because of the outbreak of COVID-19, many countries have taken various measures to restrict entry and exit of people which severely hit the travel service industry around the world[[58]](#footnote-58). Moreover, India’s trade data of travel service industry is unavailable now. Taking everything into consideration, the competitiveness of travel service industry will not be taken into account in this paper.
3. As we discussed above, India didn’t have comparative advantage in personal, cultural and recreational service industry (Section 4.3.1), and both China and India didn’t have comparative advantages in insurance and pension service industry (Section 4.3.2).

To sum up, at the macro level (comparison in the international market), China has comparative advantages in service industries of construction, telecommunications, computer and information and other business and India has comparative advantages in service industries: telecommunications, computer and information and other business. At the micro level (comparison between China and India), China is more competitive in service industries of transport, construction and government goods and services, and India has more competitiveness in areas of financial services, telecommunication, computer and information services and other business services.

# **CONCLUSION**

China's service trade presents an unbalanced state, with the trade deficit mainly coming from the import of travel services. India's service trade is more balanced than China's, showing a trade surplus, and the largest contribution to India's service trade surplus is telecommunications, computer and information services. And the economic development paths adopted by China and India are different. At the beginning, the development of manufacturing industry is China's priority. On the basis of the well- developed manufacturing industry, China is committed to the development of producer services combining manufacturing and service industries. The producer services are regarded as a kind of intermediate input which will be added into the production of final goods, and due to the devoted producer services, the value of the final goods will get a significant improvement. The ultimate goal of China is to get rid of the previous single low value-added commodity production mode, so as to shift to the production and export of high value-added goods. In regard of India, at the beginning, the development of manufacturing industry was also the primary development goal of India. However, due to the later policy change, the government took the development of service industry, especially the technology-intensive IT service industry, as the primary development goal. And the policy tilt also led more resources and manpower flow into the information service industry. With the opportunity of information explosion and Y2K problem, India has successfully developed into a powerful country of IT services, and India's IT services have also once driven the growth of India's economy.

However, by comparing the data of 2005 and 2019 (Chapter 2), it can be found that although the export of IT services still brought huge benefits to India every year, the share of India's information services in the international market share did not have significant change. India will also face serious challenges from other countries such as China who become more and more competitive in IT services industry. In recent years, India has also begun to strengthen its secondary industry and focus on high value-added manufacturing products. With its competent IT services industry, India is committed to transform to digital economy.

China has comparative advantages in the traditional labor-intensive service industry (transport service), which is due to their advantages, such as abundant human resources and adequate infrastructure. As the later developing countries, on the one hand, India and China can achieve rapid development by learning the experience of the earlier developing countries and the existing technology; on the other hand, India and China will face more intense competition pressure from all over the world. In the modern service field where capital and technology are more intensive, the comparative advantages of India and China are not obvious. First, the competition in these industries is more intense. As developing countries, India and China need to compete with developed countries with certain competitive advantages in the same arena. Second, the modern service industry requires a higher degree of market openness. In recent years, though, both India and China have reformed their economies to varying degrees and lowered restrictions and barriers to entry for many service industries. But India and China are still less open than developed countries. Because further relaxing market and foreign investment access conditions will enable the country to make full use of foreign capital to create economic value and foreign direct investment will bring skillful management experience and advanced professional technology to the host country and promote local enterprises to improve product production technology and innovate management mode. Compared with China, India has a higher degree of market openness, especially, financial services industry where India are more competitive than China.

The government’s influence in the development of India and China is significant, including certain policy preferences, specific talent cultivation and investment in research and infrastructure on the one hand. On the other hand, the governments of India and China also tried to give service sector more freedom by realizing economic reform. The governments of China and India have implemented certain policies, sometimes even powerful government intervention, the role of the market has not been ignored, which is respectively reflected in China's socialist market-oriented reform in 1978 and India’s economic liberalization, privatization and market-oriented reforms in 1991, thus expanding the role of markets in both countries. The social economy organizes production according to the market demand is the best way to get the effective allocation of resources, and also is the benign baton of the change of industrial structure and strives to make the order of industrial allocation consistent with the order of people's demand change. To a large extent, the changes in the industrial structure of the two countries are also the result of market selection, the inevitable result of the operation of the internal market price mechanism and competition mechanism, in line with the objective law of market operation.

In addition, the industrial structure developed in accordance with the law of the market is conducive to the establishment of a reasonable industrial management system, that is, the management system suitable for the economic development at that time, which is conducive to the government's macro-management of the industrial structure. On the contrary, the industrial structure established by force without considering the law of the market, no matter how powerful the role of the government, will eventually restrict the normal development of the industrial structure, lose the internal power of the change of the industrial structure, and thus inhibit economic growth.

# **REFERENCE**

1. Abhrajit Sinha. A historical service led growth of in India: an unsolved question[C]. Prestige Institute of Management, Gwalior, 10th International Conference on Digital Strategies for Organizational Success,2019.6.
2. Abhrajit Sinha. India’s Services Revolution Amidst Worldwide Structural Change[J]. J. Quant. Econ，2015(13):253-254.
3. Aspray W., Mayadas F., Vardi M. Y. (2009) Globalization and offshoring of software. In The Innovation Imperative, Cheltenham: Edward Elgar Publishing.
4. Arnold, J. M., Javorcik, B., Lipscomb, M., & Mattoo, A. (2016). Services reform and manufacturing performance: Evidence from India. The Economic Journal, 126(590), 1-39.
5. Bhattacharya I. & Sharma K. (2007) India in the knowledge economy–an electronic paradigm, International journal of educational management.
6. Blaug, Mark (1992). The methodology of economics, or, How economists explain. Cambridge University Press. p. 190. ISBN 978-0-521-43678-6.
7. Dale W. Jorgenson，Marcel P. Timmer. Structural Change in Advanced Nations: A New Set of Stylised Facts[J]. Journal of Economics 113(1)，2011:1–29.
8. Davies H. & Ellis P. (2000) Porter’s competitive advantage of nations: time for the final judgement. Journal of management studies. vol. 37. no 8. P. 1189-1214.
9. Dedrick J. & Kraemer K. L. (1993) Information technology in India: The quest for self-reliance. Asian Survey. vol. 33. no 5. P. 463-492.
10. Dedrick J. & Kraemer K. L. (1993) Information technology in India: The quest for self-reliance. Asian Survey. vol. 33. no 5. P. 463-492.
11. Francisco J. Buera，Joseph P. Kaboski. Can Traditional Theories of Structural Change Fitthe Data?[J]. Journal of the European Economic Association，2009:1-10.
12. Francois, J., & Hoekman, B. (2010). Services trade and policy. Journal of economic literature, 48(3), 642-92.
13. Francois, J., & Woerz, J. (2008). Producer services, manufacturing linkages, and trade. Journal of Industry, Competition and Trade, 8(3), 199-229.
14. Gao J., Yao Y., Zhu,V. C., Sun L., Lin L. (2011) Service-oriented manufacturing: a new product pattern and manufacturing paradigm. Journal of Intelligent Manufacturing. vol. 22. no 3. P. 435-446.
15. Gao, Y. Q. (2020). Comparative study on international competitiveness of China and Japan’s service trade, China Academic Journal Electronic Publishing House, 11 – 32.
16. Gu Y. (2021) On the Relationship Between Computer and Information Services and the Development of Global Trade. Journal of Physics. vol. 1915. is. 4.
17. Hanna N. (1994) Exploiting information technology for development: A case study of India, The World Bank.
18. Hanna N. Exploiting information technology for development: A case study of India, The World Bank, 1994.
19. Hardwick P, Dou W. The Competitiveness of EU Insurance Industries[J]. Service Industries Journal, 1998, 18(1):39-53.
20. Hill, T.P. (1977) “On goods and services” Review of Income and Wealth, dec. pp. 315-38.
21. Hinloopen, J., & Van Marrewijk, C. (2008). Empirical relevance of the Hillman condition for revealed comparative advantage: 10 stylized facts. Applied Economics, 40, 2313–2328.
22. Hou S. (2019) Research on Chinese Network Film and Television Industry, Doctoral dissertation, Central China Normal University.
23. Kharbanda V. P. & Suman Y. (2002). Chinese Initiative in the Software Industry Current Science. vol. 83. no 12. P. 1450-1455.
24. Kochhar, K., Kumar, U., Rajan, R., Subramanian, A., & Tokatlidis, I. (2006). India's pattern of development: What happened, what follows?. Journal of monetary economics, 53(5), 981-1019.
25. Kostka, G., & Nahm, J. (2017). Central–local relations: Recentralization and environmental governance in China. The China Quarterly, 231, 567-582.
26. Kowalski, P. (2008). China and India: A tale of two trade integration approaches (No. 221). Working Paper.
27. Krugman, P.R. 1994a. ‘Competitiveness: a dangerous obsession’, Foreign Affairs, 73(2): 28-44.
28. Lardy, N. R., & Subramanian, A. (2011). Sustaining China's economic growth after the global financial crisis. Peterson Institute.
29. Laursen, K. (2015). Revealed comparative advantage and the alternatives as measures of international specialization. Eurasian Bus Rev 5:99–115
30. Laursen, K. (2015). Revealed comparative advantage and the alternatives as measures of international specialization. Eurasian business review, 5(1), 99-115.
31. Liu, J. H. (2007). Study on India’s service trade system. University of International Business and Economics Press, 38 – 40.
32. Lu, Q. (2015). Study on Indian foreign trade structures, China Academic Journal Electronic Publishing House, 67 – 71.
33. Lu, W. S., & Li, H., & Shen, L. Y., & M. ASCE., & Huang, T. (2009). Journal of Management in Engineering, 25:4(170 – 175).
34. Ma, G., & McCauley, R. N. (2014). Financial openness of China and India: Implications for capital account liberalisation (No. 2014/05). Bruegel Working Paper.
35. Marelli, E., & Signorelli, M. (2011). China and India: Openness, trade and effects on economic growth. The European Journal of comparative economics, 8(1), 129.
36. Mathur S. K. (2006) Indian Information Technology Industry: Past, Present and Future& A Tool for National Development. Journal of Theoretical and Applied Information Technology. vol. 2. no 2. P. 1-68.
37. Mattoo A, Subramanian R A. Measuring Services Trade Liberalization and Its Impact on Economic Growth: An Illustration[J]. Journal of Economic Integration, 2006, 21(1):64-98.
38. Nath, H. K., Liu, L., & Tochkov, K. (2015). Comparative advantages in US bilateral services trade with China and India. Journal of Asian Economics, 38, 79-92.
39. Nguyen, M. H., & Pham, S. A. (2011). Impacts of the global economic crisis on foreign trade in lower-income economies in the Greater Mekong Sub-region and policy responses: the case of Vietnam and its implications for Lao PDR and Cambodia.
40. OECD Employment Outlook, June 2000, OECD, Paris. page 83.
41. Owen B. M., Sun, S., Zheng, W. (2005) Antitrust in China: the problem of incentive compatibility. Journal of Competition Law and Economics. vol. 1. no 1. P. 123-148.
42. Pawan Jain. Offshore Outsourcing "India Vs China" An Empirical Investigation [J]. The Business Review, Cambridge,2010,3(6):33-37.
43. Popova, L. V., & Borisov, G. V. (2019). TRENDS IN INTRA-INDUSTRY TRADE BETWEEN RUSSIA AND CHINA. In Экономическая теория и хозяйственная практика: глобальные вызовы (pp. 33-39).
44. Popova, L., & Rasoulinezhad, E. (2016). Have sanctions modified Iran’s trade policy? An evidence of Asianization and De-Europeanization through the gravity model. Economies, 4(4), 24.
45. Porter M E. The competitiveness advantage of nations [J].The Free Pres, New York, 1990.
46. Porter, M. E. (1980). Competitive strategy, 1st Ed., The Free Press, New York
47. Porter, M. E. (1990). The competitive advantage of nations, Free Press, New York/Collier Macmillan, London.
48. Porter, M. E. (2005) Location, competition, and economic development: Local clusters in a global economy. Economic development quarterly. 2000. vol. 14. no 1. P. 15-34.
49. Purba Roy Choudhury，Biswajit Chatterjee. Growth in India’s Service Sector: Implicationsof Structural Breaks[J]. J. Quant. Econ，2016(1):1-25.
50. Raman R. & Chadee D. (2011) A comparative assessment of the information technology services sector in India and China. Journal of Contemporary Asia. vol. 41. no 3. P. 452-469.
51. Rodrik, D. (2006). What’s So Special About China’s Exports?, NBER Working Paper No. 11947
52. Rodrik, D. & Subramanian, A. & Trebbi, F. (2002). Institution’s rule: the primacy of institutions over geography and integration in economic development, NBER Working Paper No. 9305
53. Sampson G P, Snape R H. Identifying the Issues in Trade in Services[J]. World Economy, 1985, 8(2):171-182.
54. Sanjaya Lall. The Third World and Comparative Advantage in Trade Services[J]. 1986.
55. Sapir, André, Lutz, Ernst. Trade in services: economic determinants and development-related issues[J]. Staff Working Paper, 1981,480.
56. Saxenian A. (2011) Bangalore: The Silicon Valley of Asia? In Economic policy reforms and the Indian economy. University of Chicago Press. vol. 5. P. 169-210.
57. Saxenian A. (2011) Bangalore: The Silicon Valley of Asia? In Economic policy reforms and the Indian economy. University of Chicago Press. vol. 5. P. 169-210.
58. Stubbs, R. (1999). War and economic development: Export-oriented industrialization in East and Southeast Asia. Comparative Politics, 337-355.
59. Suparna Karmakar, Services Trade Liberalisation and Domestic Regulations: The Developing Country Conundrum, Global Economy Journal,2011,10.
60. Smit, A. J. (2010). The competitive advantage of nations: is Porter’s Diamond Framework a new theory that explains the international competitiveness of countries?. Southern African business review, 14(1).
61. T. P. Hill. ON GOODS AND SERVICES[J]. Review of Income and Wealth, 1977.
62. UNCTAD (2004) “World investment report 2004: the shift towards services” UNCTAD, Geneva.
63. Uyarra E. & Flanagan K. (2010. Understanding the innovation impacts of public procurement. European planning studies. vol. 18. no 1. P. 123-143.
64. Veena K Pailwar, Nirav R Shah.Revealed comparative advantages for India in services trade[J].International Journal of Trade and Global Markets,vol.2,issue2,2009.
65. Vollrath, T. L. (1991). A theoretical evaluation of alternative trade intensity measures of revealed comparative advantage. Weltwirtschaftliches Archiv, 127, 265–280.
66. Wang, S. F. (2013). The international competitiveness of computer and information service trade between China and India. Atlantis Press, 243 – 245.
67. Wu Z. L. (2008) An evaluation of the international competitiveness of China’s high-technology industry: a theoretical, methodological and empirical study, Doctoral dissertation, University of Science and Technology of China.
68. Xian, W. J. & Xiao, G. M. (2020) The evolution of RCEP: The gaming of all parties involving and Chinese strategic options. Nankai University Journal of International Economic Cooperation. Iss. 2. 64 –77.
69. Yao G. (2021) J. Phys.: Conf. Ser. 1915 042006
70. Yeats, A. J. (1985). On the appropriate interpretation of the revealed comparative advantage index: implications of a methodology based on industry sector analysis. Weltwirtschaftliches Archiv, 121, 61–73.
71. Ying Chen, Services and Global Value Chains: Servicification of Manufacturing and Services Netvorks[J].Journal of International Commerce Economics&Policy, 2016(03):42-54.
72. Ying S. Study on Theory of Competitive Advantage and Enilghtments to China's International Trade in Service[J]. International Trade Journal, 2005.
73. Zeng, F. (2020). Research on the influencing factors of international competitiveness of China’s producer services trade – based on comparison with the US and India, China Academic Journal Electronic Publishing House, 12 – 26.
74. Zhou, Y. (2008). Synchronizing export orientation with import substitution: creating competitive indigenous high-tech companies in China. World Development, 36(11), 2353-2370.
75. 于海莲,杜振华.中印经济竞争力的比较分析[J].世界经济与政治,2004(6):55-60.
76. 华民.中印经济发展模式的比较:相似的原理与不同的方法[J].复旦学报(社会科学版), 2006(06):36-50.
77. 周及真.中印经济不平衡:表现和成因分析[J].东南亚南亚研究,2012(4):40-45.
78. 唐鹏琪.浅析印度经济增长的动力[J].南亚研究季刊,2005(2):26-29.
79. 张勇.古明明.龙与象：中印改革与发展的比较分析[J].统计研究2008(10):34-39.
80. 文富德.印度产业模式浅析[J].亚太经济，2005(4):26-29.
81. 文富德.印度经济转型与经济增长前景[J].印度洋经济体研究，2015(5):106-128+159.
82. 李晓峰 & 姚传高.(2014).中印服务贸易竞争优势比较及影响因素的实证研究. 学术研究(09),79-85+120+159-160. doi:CNKI:SUN:XSYJ.0.2014-09-012.
83. 殷凤,陈宪,李武,康艺凡 & 陈峰.(2012).主题报告 OECD部分国家和“金砖五国”服务化发展水平测度与比较.陈宪,殷凤,程大中 主编(eds.)中国服务经济发展报告.上海交通大学出版社,1+3-36.
84. 董磊.战后经济发展之路[M].北京:经济科学出版社，2013:185.
85. 贾格迪什·巴格瓦蒂，阿尔温德·帕纳格里亚，王志毅译.增长为什么重要 来自当代印度的发展经验[M].浙江：浙江大学出版社，2015:23.
86. 郑吉昌.会展基础理论[M].北京：中国商务出版社，2009:22.
87. 郭少坤.(2013).中印服务贸易国际竞争力比较研究(硕士学位论文,河北经贸大学).https://kns.cnki.net/KCMS/detail/detail.aspx?dbname=CMFD201302&filename=1013186680.nh
88. 陈羽.印度产业升级的路径依赖和路径创新——基于新制度经济学视角的探讨[J].南亚研究，2013(4):20-32.
89. 韩岳峰 & 张龙.(2013).中日服务贸易竞争力、互补分析及政策比较. 现代日本经济(03),59-67. doi:10.16123/j.cnki.issn.1000-355x.2013.03.006.
90. 黄永春，郑江淮，杨以文等.“跨工业化”经济增长模式分析—来自印度经济增长模式的启示[J].中国人口·资源与环境，2012(11):137-143.

# **Appendix 1 India’s service trade situation from 2005 to 2020 (unit: billion US dollars)**



(Source: UNCTAD, \* means inaccessible data)

# **Appendix 2 China’s service trade situation from 2005 to 2020 (unit: billion US dollars)**

(Source: UNCTAD, \* means inaccessible data)

1. Viewed at the WTO website <https://www.wto.org/english/tratop_e/serv_e/gatsqa_e.htm> (accessed on 05, 12, 2022) [↑](#footnote-ref-1)
2. Smit, A. J. (2010). The competitive advantage of nations: is Porter’s Diamond Framework a new theory that explains the international competitiveness of countries?. Southern African business review, 14(1). [↑](#footnote-ref-2)
3. 华民.中印经济发展模式的比较:相似的原理与不同的方法[J].复旦学报(社会科学版), 2006(06):36-50. [↑](#footnote-ref-3)
4. 张勇.古明明.龙与象：中印改革与发展的比较分析[J].统计研究2008(10):34-39. [↑](#footnote-ref-4)
5. 陈羽.印度产业升级的路径依赖和路径创新——基于新制度经济学视角的探讨[J].南亚研究，2013(4):20-32. [↑](#footnote-ref-5)
6. 黄永春，郑江淮，杨以文等.“跨工业化”经济增长模式分析—来自印度经济增长模式的启示[J].中国人口·资源与环境，2012(11):137-143. [↑](#footnote-ref-6)
7. 文富德.印度经济转型与经济增长前景[J].印度洋经济体研究，2015(5):106-128+159. [↑](#footnote-ref-7)
8. 文富德.印度产业模式浅析[J].亚太经济，2005(4):26-29. [↑](#footnote-ref-8)
9. Abhrajit Sinha. A historical service led growth of in India: an unsolved question[C]. Prestige Institute of Management, Gwalior, 10th International Conference on Digital Strategies for Organizational Success,2019.6. [↑](#footnote-ref-9)
10. 郑吉昌.会展基础理论[M].北京：中国商务出版社，2009:22. [↑](#footnote-ref-10)
11. Hardwick P, Dou W. The Competitiveness of EU Insurance Industries[J]. Service Industries Journal, 1998, 18(1):39-53. [↑](#footnote-ref-11)
12. Mattoo A, Subramanian R A. Measuring Services Trade Liberalization and Its Impact on Economic Growth: An Illustration[J]. Journal of Economic Integration, 2006, 21(1):64-98. [↑](#footnote-ref-12)
13. Francisco J. Buera，Joseph P. Kaboski. Can Traditional Theories of Structural Change Fitthe Data?[J]. Journal of the European Economic Association，2009:1-10. [↑](#footnote-ref-13)
14. Dale W. Jorgenson，Marcel P. Timmer. Structural Change in Advanced Nations: A New Set of Stylised Facts[J]. Journal of Economics 113(1)，2011:1–29. [↑](#footnote-ref-14)
15. Abhrajit Sinha. India’s Services Revolution Amidst Worldwide Structural Change[J]. J. Quant. Econ，2015(13):253-254. [↑](#footnote-ref-15)
16. 于海莲,杜振华.中印经济竞争力的比较分析[J].世界经济与政治,2004(6):55-60. [↑](#footnote-ref-16)
17. 唐鹏琪.浅析印度经济增长的动力[J].南亚研究季刊,2005(2):26-29. [↑](#footnote-ref-17)
18. 殷凤,陈宪,李武,康艺凡 & 陈峰.(2012).主题报告 OECD部分国家和“金砖五国”服务化发展水平测度与比较.陈宪,殷凤,程大中 主编(eds.)中国服务经济发展报告.上海交通大学出版社,1+3-36. [↑](#footnote-ref-18)
19. 周及真.中印经济不平衡:表现和成因分析[J].东南亚南亚研究,2012(4):40-45. [↑](#footnote-ref-19)
20. 郭少坤.(2013).中印服务贸易国际竞争力比较研究(硕士学位论文,河北经贸大学).https://kns.cnki.net/KCMS/detail/detail.aspx?dbname=CMFD201302&filename=1013186680.nh [↑](#footnote-ref-20)
21. 李晓峰 & 姚传高.(2014).中印服务贸易竞争优势比较及影响因素的实证研究. 学术研究(09),79-85+120+159-160. doi:CNKI:SUN:XSYJ.0.2014-09-012. [↑](#footnote-ref-21)
22. Purba Roy Choudhury，Biswajit Chatterjee. Growth in India’s Service Sector: Implicationsof Structural Breaks[J]. J. Quant. Econ，2016(1):1-25. [↑](#footnote-ref-22)
23. Kostka, G., & Nahm, J. (2017). Central–local relations: Recentralization and environmental governance in China. The China Quarterly, 231, 567-582. [↑](#footnote-ref-23)
24. Marelli, E., & Signorelli, M. (2011). China and India: Openness, trade and effects on economic growth. The European Journal of comparative economics, 8(1), 129. [↑](#footnote-ref-24)
25. Ma, G., & McCauley, R. N. (2014). Financial openness of China and India: Implications for capital account liberalisation (No. 2014/05). Bruegel Working Paper. [↑](#footnote-ref-25)
26. Zhou, Y. (2008). Synchronizing export orientation with import substitution: creating competitive indigenous high-tech companies in China. World Development, 36(11), 2353-2370. [↑](#footnote-ref-26)
27. Stubbs, R. (1999). War and economic development: Export-oriented industrialization in East and Southeast Asia. Comparative Politics, 337-355. [↑](#footnote-ref-27)
28. The Year 2000 problem, also known as the Y2K problem, Millennium bug, refers to potential computer errors related to the formatting and storage of calendar data for dates in and after the year 2000, viewed at: <https://en.wikipedia.org/wiki/Year_2000_problem> [↑](#footnote-ref-28)
29. Viewed at: <http://www.gov.cn/gongbao/content/2006/content_268766.htm> (accessed on 11, 05, 2022) [↑](#footnote-ref-29)
30. Viewed at: <http://www.gov.cn/2011lh/content_1825838.htm> (accessed on 11, 05, 2022) [↑](#footnote-ref-30)
31. Viewed at: <http://www.gov.cn/xinwen/2016-03/17/content_5054992.htm> (accessed on 11, 05, 2022) [↑](#footnote-ref-31)
32. Viewed at: <http://www.gov.cn/xinwen/2021-03/13/content_5592681.htm> (accessed on 11, 05, 2022) [↑](#footnote-ref-32)
33. Wang Rui, “China’s (Shanghai) Free Trade Zone Paves Way for Foreign Investment in China’s Value-Added Telecommunication Service Market,” China Bulletin, May 2014 [↑](#footnote-ref-33)
34. 贾格迪什·巴格瓦蒂，阿尔温德·帕纳格里亚，王志毅译.增长为什么重要 来自当代印度的发展经验[M].浙江：浙江大学出版社，2015:23. [↑](#footnote-ref-34)
35. Dedrick J. & Kraemer K. L. (1993) Information technology in India: The quest for self-reliance. Asian Survey. vol. 33. no 5. P. 463-492. [↑](#footnote-ref-35)
36. Hanna N. Exploiting information technology for development: A case study of India, The World Bank, 1994. [↑](#footnote-ref-36)
37. 董磊.战后经济发展之路[M].北京:经济科学出版社，2013:185. [↑](#footnote-ref-37)
38. Saxenian A. (2011) Bangalore: The Silicon Valley of Asia? In Economic policy reforms and the Indian economy. University of Chicago Press. vol. 5. P. 169-210. [↑](#footnote-ref-38)
39. The Digital India Programme, launched by the Government led by Narendra Modi in 2015, aimed to ensure the Indian IT industry would deliver world class services at competitive quality and costs. [↑](#footnote-ref-39)
40. From The Ministry of Electronics and Information Technology, National Policy on Software Products (2019), viewed at: <https://www.meity.gov.in/writereaddata/files/national_policy_on_software_products-2019.pdf> (accessed on 11, 05, 2022) [↑](#footnote-ref-40)
41. Dedrick J. & Kraemer K. L. (1993.) Information technology in India: The quest for self-reliance. Asian Survey. vol. 33. no 5. P. 463-492. [↑](#footnote-ref-41)
42. Krugman, P.R. 1994a. ‘Competitiveness: a dangerous obsession’, Foreign Affairs, 73(2): 28–44. [↑](#footnote-ref-42)
43. Viewed at: <https://stats.oecd.org/glossary/detail.asp?ID=2440> (accessed on 11, 05, 2022) [↑](#footnote-ref-43)
44. OECD Employment Outlook, June 2000, OECD, Paris. page 83. [↑](#footnote-ref-44)
45. Francois, J., & Woerz, J. (2008). Producer services, manufacturing linkages, and trade. Journal of Industry, Competition and Trade, 8(3), 199-229. [↑](#footnote-ref-45)
46. Kochhar, K., Kumar, U., Rajan, R., Subramanian, A., & Tokatlidis, I. (2006). India's pattern of development: What happened, what follows?. Journal of monetary economics, 53(5), 981-1019. [↑](#footnote-ref-46)
47. Mathur S. K. (2006) Indian Information Technology Industry: Past, Present and Future& A Tool for National Development. Journal of Theoretical and Applied Information Technology. vol. 2. no 2. P. 1-68. [↑](#footnote-ref-47)
48. Saxenian A. (2011) Bangalore: The Silicon Valley of Asia? In Economic policy reforms and the Indian economy. University of Chicago Press. vol. 5. P. 169-210. [↑](#footnote-ref-48)
49. Arnold, J. M., Javorcik, B., Lipscomb, M., & Mattoo, A. (2016). Services reform and manufacturing performance: Evidence from India. The Economic Journal, 126(590), 1-39. [↑](#footnote-ref-49)
50. Lardy, N. R., & Subramanian, A. (2011). *Sustaining China's economic growth after the global financial crisis*. Peterson Institute. [↑](#footnote-ref-50)
51. Nguyen, M. H., & Pham, S. A. (2011). Impacts of the global economic crisis on foreign trade in lower-income economies in the Greater Mekong Sub-region and policy responses: the case of Vietnam and its implications for Lao PDR and Cambodia. [↑](#footnote-ref-51)
52. Laursen, K. (2015). Revealed comparative advantage and the alternatives as measures of international specialization. *Eurasian business review*, *5*(1), 99-115. [↑](#footnote-ref-52)
53. Viewed at <https://www.safe.gov.cn/en/2019/0926/1568.html> (accessed on 12, 05, 2022) [↑](#footnote-ref-53)
54. 韩岳峰 & 张龙.(2013).中日服务贸易竞争力、互补分析及政策比较. *现代日本经济*(03),59-67. doi:10.16123/j.cnki.issn.1000-355x.2013.03.006. [↑](#footnote-ref-54)
55. 韩岳峰 & 张龙.(2013).中日服务贸易竞争力、互补分析及政策比较. *现代日本经济*(03),59-67. doi:10.16123/j.cnki.issn.1000-355x.2013.03.006. [↑](#footnote-ref-55)
56. Blaug, Mark (1992). The methodology of economics, or, How economists explain. Cambridge University Press. p. 190. ISBN 978-0-521-43678-6. [↑](#footnote-ref-56)
57. Blaug, Mark (1992). The methodology of economics, or, How economists explain. Cambridge University Press. p. 190. ISBN 978-0-521-43678-6. [↑](#footnote-ref-57)
58. Benjamin, S., Dillette, A., & Alderman, D. H. (2020). “We can’t return to normal”: committing to tourism equity in the post-pandemic age. Tourism Geographies, 22(3), 476-483. [↑](#footnote-ref-58)