

Chapter 06: A Comparison of Export Performance of India and China in the World

6.1 Introduction:

India not only has a complementary trade relationship with China, but India also competes with China in the world trade. Since our focus in this chapter is to understand the competitive aspect of India China trade relation, we have considered only the exports performance of these two countries. We will begin our analysis by comparing the share of exports of the two countries in the world. This will give us an idea of the influences these two countries have in the world exports. Another indicator for comparing the performances of these two countries is their growth rates. To make sense of the increase in the value of exports over the years, we will use Export Value Index of each country and compare them. If the composition of exports of two countries are same, then it indicates that the two countries have competition. We will compare the export composition of India and China and find out whether they are similar or not. Along with this comparison of RCA also helps us to find out the extent of competition between the two nations. If the two countries have RCA in same products, then there exists competition between the two. So, we will make a comparison of RCAs to find out whether competition exists between them or not. After that we make a comparison between the direction of exports of the two countries. If two countries are exporting same type of products in same country or region, then this is indicative of competition between them.

The other indicators or measures that we have used to compare the performances of India and China includes, Trade dependence index which indicates the openness of a nation, Export Market Penetration and Export Propensity index for comparing the vulnerability of domestic producers of exportable, Herfindahl- Hirschman Index to compare the geographical concentration of exports and Trade Entropy Index to compare export diversification of the two countries.

The paper is structured as follows. In section 6.2 we review relevant literatures on the issue. Then in section 6.3 we discuss Data and Methodology used in this study. In the next section i.e., in section 6.4 we will discuss and analyze the performances of India and China in the world market. Finally in section 6.5 we have conclusion.

6.2 Review of Literature:

The study of the competition between India and China in the world trade has been an important area for scholars, researchers, and policy makers. A large volume of literature has been produced in last three decades on comparison of trade performance India

and China in the world. In this section we will review various literatures on the issues related to comparison and competition between India and China in world trade.

Y. Huang, and T. Khanna (2003), in their study made a comparison between India and China and observed that India and China adopted different types of development strategies. According to them even though India's performance is not at par with that of China, but India is doing better in certain important areas. And because of that there are possibilities that India not only catch up with China, but it may even outperform it. They conclude that if India outperforms China, then it proves that the India's strategy of prioritizing of home-grown entrepreneurship to long term economic development as well as how limited is China's FDI dependent approach.

A. G. Ahearne, J. G. Fernald, P. Loungani, and Schindler, J. W. (2003) in their study analysed the impact of China's exports on the exports of other emerging Asian economies. They wanted to find out whether increase in China's export has negative impact on exports of other emerging Asian economies. Their study finds that there was positive correlation between China's exports and the exports of other emerging Asian economies. For this analysis they controlled trade- partner income growth and real effective exchange rates. They also examined the relative importance of foreign income and exchange rates in explaining Asian export growth using VAR estimation of aggregate trade equations. They found that exchange rate has a role in export performance, but the role of income growth of trade partners was more important. They also found that China and emerging Asian economies are both companions in overall trade but are competitors in case of specific products.

P. Agrawal, & P. Sahoo(2003) paper examines the impact of China's accession to the WTO on its export's imports and foreign trade as well as on India's exports, imports, and foreign trade. According to them its accession to WTO will have positive impact on its economy as it will lead to increase in its economic activities which lead to higher GDP growth. After that they examined the impact of China's entry to WTO on India's exports, import and foreign direct investment. According to them China's entry to WTO has negative impact on India's exports as both India and China have comparative advantage in the exports of labour-intensive manufactured goods due to cheapness of labour. Along with this both composition and direction of exports of these two countries are same so China's entry will have negative impact in India's exports. In case of imports, they conclude that China's entry has positive impact on India's exports. One of the reasons for this surge in India's export to China was reduction is tariff as well as phasing out of subsidies by China making India's exports accessible to China. But since the negative impact on India's exports due to rise in China's

exports in stronger than positive impact on India's exports due to rise in China's imports, they conclude that overall impact of China's entry to WTO on India's trade in general and exports in particular will be negative.

T N Shrinivasan (2004), in his paper reviewed economic performances of Indian and China where he focused on the macroeconomy and the external sector. He observes that both countries had similar development strategies in the past. Both countries adopted reform policies, but China did it before India. After reforms, even though the exports of both India and China were increasing but China was growing much faster than India. He also concludes that the two countries have common interest in liberal world trading system as both compete in the world market. With reference to Doha round, he observes that the cooperation between India and China in the Doha Round of trade negotiation not only led to mutually beneficial result, but it will also promote the interest of developing countries.

B. Eichengreen, Y. Rhee, & H. Tong (2004) in their paper, analyzed the impact of growth of China's exports on the exports of other Asian countries. Based on the analysis using gravity model, their study concludes that China's export had significant impact only on markets of consumer goods and not in the markets of capital good. This means that impact was felt mostly by less developed Asian nations and not by advanced Asian nations. Again, in terms of China's imports, it had significant impact in markets for capital goods which means that its impact was felt by advanced Asian economies rather than less developed ones. So, they conclude that the China's growth had impacted less developed and advanced Asian economies differently.

A. Batra, and Z. Khan(2005), in their paper analyzed the revealed comparative advantage for both India and China. One of their conclusions was that the pattern of comparative advantage varies at different levels of commodity disaggregation. According to their study there was difference in the value of the index of RCA and comparative advantage at the 6-digit constituent commodity level. Any sector which ranked high according to RCA does not retain the same rank when comparative advantage at the 6-digit constituent commodity level is used. Their analysis found that both India and China had maximum advantages in manufactures and then in agriculture and allied categories. Comparatively, China had higher advantage in manufactures while India had in Agriculture and allied category. As they measured comparative advantages for 2000 and 2003 for India and China, they found that India's advantage was predominantly in agriculture and allied product category. Along with that India's comparative advantage as compared China in global market were in resource-based manufactures and in miscellaneous manufactures. China's advantages were in both resource-

based manufactures along with machine and equipment. They also found that even though there were similarities in the structure of their comparative advantage, there was no correlation between the manufacturing sectors of India and China.

V.N. Balasubramanyam, and Y. Wei, (2005), in their study made a comparison of textiles and clothing exports between India and China and found that China has much higher share in both textiles and cloths exports in the world. Their study reveals that India had comparative advantage in women's garments and some types of men's shirts. According to them, the impact of abolition of Multi- Fiber Agreement (MFA) will bring gains to China at the expense of India in most items of exports of clothing. This gain includes the categories where India had higher share than China. They suggest that India should improve its competitive strength relative to China.

V. Cerra, S. A. Rivera, and S.C. Saxena (2005), in their paper examined the implication of China's accession to WTO for India's trade. For this study, they used econometrics and computable general equilibrium. Their analysis focuses on the impact of China's entry on India either directly or through competition. The result of their econometric analysis concludes that India's exports to USA was impacted by China's exports through trade diversion with the reduction in US tariffs on Chinese imports. They also found that the competition between India and China in the third market was only about 25 percent of the products. They also found that China's entry to WTO had positive impact on India's direct trade with China as with the growth in China's trade, there will be growth in India's exports of intermediate goods to China. Textile industry provide such opportunity for India along with some other sectors. Their conclusion from the general equilibrium model also confirmed the likely loss of India's export share in third markets like USA and EU. According to them, due to the loss of market share and deterioration in terms of trade, there will be decline in India's welfare. And this decline according to them was partially compensated by likely expansion exhibited by other sectors. So according to this study, China's accession to WTO has positive direct effect and negative competitive effect. In other words, China's accession to WTO may lead to rise in India's direct trade with China but on the other hand it will have negative effect on India's exports in the world.

T.N. Srinivasan. T. N (2006) In his article, observed that India and China were growing rapidly since 1980s and according to him their growth have had significant effect on world economy. According to him China is more integrated with the world economy than India. He observes that even though India has become major destination in global outsourcing and exports of information technology enabled services, India could not compete with China

in the exports of manufacture sector. But India has advantage over China in the form of its vibrant democracy and its legal and financial system. He concludes that even if India does not overtake China, but in the medium term both these countries become ‘‘economic powerhouses’’ and their growth will have significant effect in the economy of the world.

T.P. Bhat, M.A. Guha, and M. Paul, (2006), reported that India along with other developing countries faces intense competition from China after its entry to WTO. According to them India faces competition from China in labor-intensive goods such as textiles, clothing, light manufacturing products, chemicals, and granite and leather products. The reasons for intensification of competition during that time were abolition of textile quota by countries like U.S. and Canada along with European Union and lowering of import duties on manufacturing inputs by China. Another reason was the increase in the inflow of FDI in China leading to improvement in the productivity of manufacturing sector. As far as export destinations are concerned, they observed that The U.S., the E.U., Japan and ASEAN countries are the major destination for both India and China. So, India faces major competition from China in these destinations. According to their report as compared to India China’s export had dominant presence in almost all these destinations.

F. Lemoine, and D. Ünal-Kesenci (2007), points out that India and China have successfully integrated with the world economy. And together, these two nations have affected both demand and supply in the in primary products, manufactured goods, and services. According to them the main reason for increasing importance of these two nations in world trade was due to huge and faster increase in outsourcing and offshoring since 1990s. According to them similarities between India and China was that both India and China faced increasing trade deficit in services related to transport and insurance, royalties etc., which were associated to merchandise trade. And difference between the two according to them was that on the one hand, China’s position in the international trade was based on its high- tech manufactured products on the other hand India’s position was based on higher price/ quality goods along with ‘‘customized’’ products and services.

Arvind Panagariya (2007) observes that due to relatively poor performance of Indian industry, India’s performance was lagging behind that of China. On the one hand the share of industry grows from 42 percent in 1990 to 51 percent in 2000 in China’s GDP, on the other the share of industry in India’s GDP was almost stagnant. He also points out that even though India’s performance was poor in case of industry but the share of service in India’s GDP shows rapid growth from 41 percent in 1990 to 48 percent in 2001. This means

that industry is most important sector for China and service is for India. He also suggests that India must focus on its traditional labor-intensive industry and modern IT industry and strengthen through reforms as he believes that even though information technology sector strengthens India, but it cannot be considered the main engine of transformation.

K. Kalirajan, and K. Singh (2007), in their study concludes that the most important determinants for both potential and actual exports for both India and China are country specific factors including trade policy. According to their study, during the sample period China was able to reduce the gap between its potential and actual export with its partners but same is not true for India. According to them, China on the one hand was able to realize 86 percent of its potential export but India on the other hand was able to realize only 68 percent of its potential exports. According to them, India needs to intensify its reform measures to catch up with China's performance.

Przemyslaw Kowalski (2008), observes that both India and China have achieved much in terms of trade integration process and the economic outcomes. According to the author, China's reform and particularly in manufacturing sector was one of the most important determinants of China's economic performance but in service sector regulatory barriers are still dominant. India also has reduced its tariff on non-agricultural products but due to the persistence of moderate protection, Indian manufacturing sector is still facing restrictions. In service sector, even though India enjoys comparative advantage, but it is still very restrictive. The author suggests that to promote trade led expansion India needs to phase out the remaining good and service trade barriers.

D. Greenaway, A. Mahabir and C. Milner. (2010). examined the impact of China's rising exports on other Asian countries using gravity model for the period of 1990-2003. In their study they found that overall effect of China's exports on other Asian country was of relatively small, but it was rising over time. They also found that the impact was more on more on markets of industrialized country. As compared to low- and middle-income Asian countries the impact of rising Chinese exports was more on advanced Asian exporters. Even though rising Chinese exports had adverse effect on advanced Asian exporters but rising Chinese imports had beneficial effect on advanced Asian countries. They also conclude that the overall exports of Asia to China was not sufficient to balance the loss of exports of Asia to third markets due to rise in China's exports. So, there was negative net effect on the exports of Asian countries of China's rising exports.

G. Wignaraja,(2011), in his paper made a compared India and China empirically based on their economic reforms and exports. He observes that in case of

manufacture sector China was dominating as compared to India but in case of skill intensive services India is relatively ahead of China. According to the author, large markets and low-cost productive labour at the initial stages were the favorable conditions for the success of these countries. Regarding global financial crisis, the author points out that as both India and China faced uncertainty after global financial crisis, the future success of these countries depends on reforms they initiate and adopt.

N. Bagaria, S. Santra, and R. Kumar, (2014), in their paper examined the comparative advantage between India and China for the period of 2002-2012. For this purpose, they used Revealed Comparative Advantage index to test comparative advantage. According to this study, RCA was stable throughout the study period for some commodities and for some commodities they found large variation. The study concludes that India and China complement each other in some commodity groups and there was competition between the two countries in some other commodity groups in the world market.

C. Veeramani, and P. Gupta, (2014), analysed the role of extensive and intensive margins in the export market penetration of India and China for the period of 1995-2011. Their study found that in case of extensive margin, India was catching up with China so the gap in exports between the two countries reduced during the study period. But India's performance was not the same in case of intensive margin and India was lagging behind China. They observed that most important reason for China's success in exports was its focus on intensification rather than in diversification of exports. In case of India, the authors observed that the performance of India's capital-intensive products were better than that of labour-intensive products. The reason of poor performance of labour-intensive products according to them was the lack of depth in India's market presence. According to their study the authors argues that if India adopts a policy that increases the export growth at the intensive margin, India will be substantially benefitted.

Yingqi Wei, and V.N Balasubramanyam (2015), in their paper, observes that India's manufacture is different from that of China. They also observe that, in terms of both production and exports, China's manufacturing sector is far ahead of India. On the one hand India's manufacture is relatively capital intensive but on the other hand China's manufacturing sector is relatively labour intensive. The authors opposed the view that India should follow China's strategy to promote labour intensive manufactures as according to them is not feasible. They pointed out that India failed to develop and implement its agricultural strategy as China did for the supply of low wage labour force and low-price raw materials. They suggest that India should utilize its service sector in particular the information technology

service to promote its non -farm manufacturing sector. In this case according to the authors India can follow China's example.

R. Panda, M. Sethi, and M. Kumaran (2016), in their paper studied the bilateral trade flow of India and China. Their analysis concludes that both India and China had tendency to trade more with geographically proximate countries. On the one hand they found that it was found that India's trade was more with the countries with higher GDP but lower per capita income or in other words with populous countries. On the other hand, China's trade was more with countries with higher per capita income and with the countries having common language. In addition to these, their study concludes that India's trade was affected by post crisis and common colony.

I. Ahmad, M.H. Kunroo, and I.A. Sofi, (2018), in their study applied revealed comparative advantage (RCA) and bilateral RCA to compare short run and long run trade pattern of India and China. The specific objective of this study was to understand the pattern of exports and area of specialization of both India and China. According to this study both India and China performed well in merchandise exports since 2000. Both countries had rising trend in exports not only with each other but with the world as well even though these countries were institutionally and structurally different. According to the authors, the difference in pattern of exports of these two countries cannot be detected when analysis is based on SITC (Standard International Trade Classification) two- digit level but it can be observed when analysis is based on SITC four- digit level of disaggregation. On the basis of this analysis, it was found that the products which are advantageous in India's export basket were engineering goods and technologically driven goods. As compared to India, China's specialization and the range of technologically embedded goods are much larger. In other words, China is at superior position as compared to India in terms of specialization and range of technologically embedded products.

6.3 Data and Methodology:

For the analysis we have used various trade related indices and measures. The description of all the indices and measures used are given in the Appendix of this chapter. The data are collected from the WITS- COMTRADE website. We have used the annual data of exports, imports, and other relevant variables for the period from 1992-2018.

6.4 Discussion:

In this section we will compare the performances of India and China in the world trade using various trade related indices and measures.

6.4.1 Share in World Trade (%):

We start our discussion with making comparison between India and China in terms of their share in the world for the period of 1992 -2018.

The table shows that India's trade share was 0.92 percent in 1992 and 2.34 percent in 2018. During this period India's highest share was 2.34 in 2018 and lowest was 0.71 in 1997, 1998, and in 2000. The trend shows that India's trade share declined to 0.72 percent in 1995 from 0.92 percent in 1992. It further declined to 0.71 percent in 2000. In 2005 it increased to 1.1 percent and further to 1.78 percent in 2010. It further increased to 1.9 percent in 2015 and finally in 2018 it reached its peak to 2.34 percent. The trend shows that India's trade share continuously declined from 0.92 percent in 1992 to 0.71 percent in 1998. The trade share followed the increasing trend from 0.71 percent in 2000 to 2.04 percent in 2012. Then again it followed declining trend for next three years from 1.9 percent to 1.84 percent. In the last two years the share again increased to 1.99 percent in 2017 and further to 2.34 percent in 2018.

Table 6.1: Comparison of Shares in World Trade (%)

Year	India	China	Year	India	China	Year	India	China
1992	0.92	3.36	2001	0.72	3.90	2010	1.78	9.29
1993	0.80	3.43	2002	0.78	4.51	2011	1.99	9.51
1994	0.73	3.13	2003	0.82	5.29	2012	2.04	10.12
1995	0.72	2.98	2004	0.90	5.91	2013	2.03	10.52
1996	0.72	2.88	2005	1.10	6.47	2014	1.97	10.91
1997	0.71	3.04	2006	1.17	6.91	2015	1.90	11.48
1998	0.71	3.05	2007	1.25	7.44	2016	1.84	11.00
1999	0.78	3.25	2008	1.47	7.60	2017	1.99	11.07
2000	0.71	3.51	2009	1.69	8.42	2018	2.34	11.50

Authors calculation

Data source: WITS- COMTRADE

In case of China, the share was 3.36 percent in 1992, which declined to 2.98 percent in 1995. But in 2000, it increased to 3.51 percent and further to 6.47 percent in 2005. After that improvement continued and increased sharply to 9.29 percent in 2010. It reached 11.48 percent in 2015 and increased further to 11.50 percent in final year of 2018. The trend shows that from 3.36 percent in 1992 the share increased to 3.43 percent in 1993 but after that it declined continuously for next three years from 3.13 percent to 2.88 percent in 1996. After that for a long period from 1997 onwards till 2015 it increased continuously from 3.04

percent in 1997 to as high as 11.48 percent in 2015. In 2016 it declined to 11 percent but again it increased continuously for next two years to 11.07 percent in 2017 and further to 11.50 percent in 2018. The share of 2018 was the maximum share of China's trade in the world for the period.

So, in terms of the trade share China had outperformed India throughout the period. During this period on the one hand India struggled to achieve even the two percent share in world trade, China on the other hand achieved more than eleven percent share. Even the minimum share of China which was 2.88 percent was higher than India's maximum share of 2.34 percent. As far as the trend is concerned the gap between the share of these two countries instead of narrowing, further widened over the period.

6.4.2 Share in World Exports (%):

In this section we make a comparison between India and China in terms of their export share in the world for the period of 1992 -2018. Before comparing them, we will discuss the trends of export share of these two countries individually. We will first discuss trend in India's export share and then China's. After that we compare them.

Table 6.2: Comparison of Shares in World Exports (%)

Year	India	China	Year	India	China	Year	India	China
1992	0.84	3.46	2001	0.64	3.89	2010	1.31	9.37
1993	0.79	3.24	2002	0.69	4.50	2011	1.49	9.39
1994	0.70	3.22	2003	0.70	5.18	2012	1.44	10.16
1995	0.68	3.18	2004	0.74	5.8	2013	1.6	10.51
1996	0.67	3.02	2005	0.87	6.63	2014	1.52	11.22
1997	0.66	3.45	2006	0.91	7.25	2015	1.45	12.45
1998	0.63	3.49	2007	0.95	7.96	2016	1.47	11.83
1999	0.67	3.56	2008	1.03	8.10	2017	1.51	11.61
2000	0.60	3.53	2009	1.28	8.69	2018	1.51	11.67

Data Source: WITS-COMTRADE

The table shows that India's export share was 0.84 percent in 1992 and 1.51 percent in 2018. During this period India's highest share was 1.52 in 2014 and lowest was 0.60 in 2000. Throughout the period India's share in the world export never reached even two percent. It was only in 2008 that India crossed one percent share and in 2013 it crossed one and half percent share. So, India's share in the World export was insignificant throughout the period. Now let us discuss the trend of India's export share. In 1992 India's share was 0.84 percent. After that it continuously declined for the next six years between 1993 to 1998 from 0.79 percent in 1993 to 0.63 percent in 1998. The share increased to 0.67 percent in 1999 but

then again it declined to 0.60 percent in 2000. The eleven-year period between 2001 to 2011 was the period of expansion of India's export share. During this period the share increased from 0.64 in 2001 to 1.49 percent in 2011. So, India crossed one percent share during this period and almost reached one and half percent share. India's share never falls below one percent after 2008. In 2012, the share declined to 1.44 percent but again increased to 1.60 percent in the next year of 2013. After that India's share contracted continuously for next two years to 1.52 percent in 2014 and further to 1.45 percent in 2015. The next two years witnessed expansion in the share to 1.47 percent in 2016 and further to 1.51 percent in 2017. The share remained at 1.51 percent in 2018. So, during this period of 1992 to 2018, India's export share in the World exports experienced contraction in most of the years in 1990s and expansion in the entire period of 2000s, India's export share remained low and insignificant throughout the period.

Now we will discuss China's export share in World exports. The table shows that in the beginning of the period China's share was 3.46 percent and at the end in 2018 it was 11.67 percent. So, China has a significant share in the World exports during this period and also there was a significant expansion in its share in World exports. The lowest share experienced by China was 3.02 percent in 1996 and highest was 12.45 percent in 2015. So, China's share never falls below three percent during this period. China's share was more than three percent in 1992. It took another 10 years to cross four percent share in 2002 but it did not take more than one year to cross five percent mark and crossed it in 2003. In another two years, i.e., in 2005 it crossed six percent mark. In the very next year in 2006 it crossed seven percent. It crossed eight percent in 2008, two years after it crossed seven percent. In another two years in 2010 it crossed nine percent mark and in two years after that in 2012 it crossed ten percent. It reached 11 percent in 2014. It crossed the highest share so far during this period of 12 percent in 2015. So, from 1992-2015 China's share in the world export expanded almost four times. Now, let us discuss trend of China's export share. In 1992, its share was 3.46 percent, but it declined continuously in the next four years. In 1993 it declined to 3.24 percent, and it continued till it reached 3.02 percent in 1996. After that there was continuous expansion in the share from 1997 to 2015. The share increased from 3.45 percent in 1997 to 12.45 percent in 2015. After that the share declined to 11.83 percent in 2016 and further to 11.61 percent in 2017 and in the final year it again expanded modestly to 11.67 percent. So, China's share in World export increased significantly during this period even though it experienced decline in the early years of the period and in the two years at the end of the period.

Let us compare India's and China's export share in the World. The lowest share experienced by India was 0.60 percent and that by China was 3.02 percent. So, China's lowest share was five times more than that of India. Similarly, India's highest share during this period was 1.60 percent and that of China was 12.45 percent which was almost eight times more than that of India. Even the lowest share of China was almost double than that of India's highest share. The gap between the shares of these two countries had widened over the period. The smallest gap between the two shares was registered in 1996 when the difference between the two shares was 2.35 percent. Similarly, the widest gap was experienced in 2015 when the difference was 11 percent. So, in terms of export share China had clearly outperformed India. in each year of the period. The rate of growth of export share of China was much higher than that of India as can be seen from the above graph where the slope of China's curve was steeper and that of India's curve was flatter.

6.4.3 Export Growth Rate (%):

The table shows the growth rate of exports of India and China for the period of 1992 -2018. India's growth rate was .37 percent in 1993 whereas in 2018 it was 9.49 percent. For China it was 8.01 percent in 1993 and 10.20 percent in 2018. During in these two years China's growth rate was marginally greater than that of India. As far as highest and lowest growth rates are concerned India's highest was 36.78 percent in 2011 and lowest was -16.74 percent in 2015. Similarly, highest rate for China was 35.39 percent and lowest was -16.01 percent.

The trend in India's growth rate shows that the growth rate increased to 18.41 percent in 1994 from 7.37 percent in 1993, which further increased to 20.39 percent in 1995. After that the growth rate slowed down in next three years After declining sharply to 5.58 percent in 1996 it further declined to 3.96 percent in 1997 and become negative for the first time in 1998. It was -4.56 percent. After that the growth increased to 11.18 percent in 1999 and further to 14.73 percent in 2000. The rate again declined sharply to 3.59 percent in 2001. From 2002 to 2005 the growth rate increased continuously from 14.17 percent to 32.21 percent. So, after increasing for four year the growth rate again slowed down to 20.77 percent in 2006 and further to 20.38 percent in 2007. The growth rate again revived to 24.65 percent in 2008. Another negative growth rate was registered in the next year of 2009 at -2.80 percent. After that there was a comparatively higher growth rate registered in the next two years with 24.69 percent in 2010 and further with 36.78 percent in 2011. Again, there was a dip in growth rate with – 3.95 percent. After growing at 16, 25 percent in 2012, the next three years registered negative growth rate in exports with -5.66 percent in 2014, -16.74 percent in 2015 and -1.53

percent in 2016. In the final two years growth increased to 13.07 percent but then declined to 9.49 percent in 2018.

Table 6.3 Comparison of Export Growth Rates (%)

Year	India	China	Year	India	China	Year	India	China
1992	—		2001	3.59	6.78	2010	24.69	31.30
1993	7.37	8.01	2002	14.17	22.36	2011	36.78	20.32
1994	18.41	31.90	2003	18.49	34.59	2012	-3.95	7.92
1995	20.39	22.95	2004	27.87	35.39	2013	16.25	7.82
1996	5.58	1.52	2005	32.21	28.42	2014	-5.66	6.03
1997	3.96	21.02	2006	20.77	27.16	2015	-16.74	-2.94
1998	-4.56	0.56	2007	20.38	25.92	2016	-1.53	-7.73
1999	11.18	6.05	2008	24.65	17.26	2017	13.07	7.90
2000	14.73	27.84	2009	-2.8	-16.01	2018	9.49	10.20
						2012-2018	11.13	13.88

Author's Calculation

Data Source: WITS-COMTRADE

Similarly, trend of rate of export growth of China shows that there was a sharp increase in growth rate in 1994 when the growth rate was 31.90 percent as compared to 8.01 percent in 1993. Then it declined to 22.95 percent in 1995 but the decline was sharper in next year in 1996 when the growth rate was only 1.52 percent. After the rate improved sharply in 1997 to 21.02 percent. But in the very next year it became less than one percent at 0.56 percent. Then the rate increased moderately to 6.05 percent in 1999 and then sharply to 27.84 percent. But again in 2001 it experienced a decline to 6.78 percent. From 2002 onwards it increased continuously for three years from 22.36 percent in 2002 to 35.39 percent in 2004. From 2005 to 2009 for five years the growth rate continuously declined and became negative in 2009. The rate was 28.42 percent in 2005 which came down to as low as -16.01 percent in 2009. This was the worst growth rate in exports for China. 2010 saw a huge improvement in the rate when it registered 31.3 percent. But again, after that, a continuous trend of decline in growth rate followed from 2011 to 2016. It declined from a modest 20.32 percent in 2011 to as low as -7.73 percent in 2016. The next two years experienced increase in growth rate as it registered a comparatively high rate of 7.9 percent in 2017 and even higher rate of 10.2 percent.

Out of the 26 years period in the table China's growth rate outperformed India's in 16 different years and India's growth rate outperformed China's in 10 years. So, in that sense China's performance was better than India's in terms of growth rate. And again, China's base value of export from which these growth rates were calculated each

year during the period of 1992-2018 was greater than that of India. So, it can be said that China outperformed India in terms of export growth during this period.

6.4.4 Export Value Index(EVI):

Here we will discuss the change in EVI of India and China for the given period and compare them. This is another way to understand the growth in exports of these two countries. We will first discuss the change in EVI for India and then for China and at the end we make a comparison between them.

For India, as compared to 1992, the value of EVI increased to 153.05 in 1995 and further to 204.52 in 2000. Then in 2005 it reached 484.53 and rose to 1064.19 in 2010. After that it reached 1276.51 in 2015 and further to 1556.12 in 2018. So as compared to 1992, the value of exports was more than 15 times greater in 2018. During this period highest value of exports was more than 16 times higher than the value in 1992. Trends shows that after 1992, from 1993 to 1997 the value continuously increased from 107.37 to 167.99. Then the value declined to 160.33 in 1998. After that from 1999 to 2011 the value continuously increased from 178.26 in 1999 to 1455.65 in 2011. the value declined to 1398.10 in 2012 but then increased to 1625.26 in 2013. There was decline in the value for next three years from 1533.20 in 2014 to 1256.93 in 2016. After that the value increased to 1421.28 in 2017 and further to 1556.12 in 2018. As compared to value of 1992, the value in 1995 was 1.5 times higher, in 2000 it was two times higher, in 2005 it was almost five times higher, in 2010 It was almost eleven times higher.in 2015, it was thirteen times higher and in 2018 it was sixteen times higher.

Table 6.4: Comparison of EVI (1992=100)

Year	India	China	Year	India	China	Year	India	China
1992	100.00	100.00	2001	211.86	313.28	2010	1064.19	1857.50
1993	107.37	108.01	2002	241.89	383.32	2011	1455.65	2234.98
1994	127.13	142.46	2003	286.61	515.93	2012	1398.10	2412.03
1995	153.05	175.16	2004	366.49	698.52	2013	1625.26	2600.67
1996	161.6	177.83	2005	484.53	897.05	2014	1533.20	2757.58
1997	167.99	215.20	2006	585.19	1140.73	2015	1276.51	2676.56
1998	160.33	216.40	2007	704.44	1436.38	2016	1256.93	2469.55
1999	178.26	229.49	2008	878.08	1684.36	2017	1421.28	2664.67
2000	204.52	293.39	2009	853.47	1414.70	2018	1556.12	2936.46

Author's calculation

Data Source: WITS - COMTRADE

China's EVI increased to 175.16 in 1995 and further to 293.39 in 2000 and reached 484.53 in 2005. After that it increased to 1857.50 in 2010 and further to 2676.56 in 2015. In 2018 its value rose to 2936.46. The trend in the value of EVI for China shows that it had a continuous and long rise from 108.01 in 1993 to 1684.36 in 2008. Then it declined to 1414.70 in 2009 but after that it again increased continuously from 1857.50 in 2010 to 2757.58 in 2014. Then the value declined for next two years firstly to 2676.56 in 2015 and then to 2664.67 in 2017. After that in the last two years the value increased to 2664.67 in 2017 and finally to 2936.46 percent in 2018. In case of China the highest value registered was 2936.46 in 2018. This means that China's export as compared to its value in 1992 increased by about 1.5 times in 1995 and by about 2 times in 2000 and further by almost five times in 2005. After that it increased almost by eleven times in 2010 and by about twenty-seven times in 2015. Finally in 2018 it increased by more than 29 times. The table shows that China grew relatively faster during the period from 2004 to 2008 and between 2010 to 2017.

On the basis of this discussion, it is clear that China's export's export growth was relatively higher than that of India's export growth. The table shows that the value of China's EVI outperformed India's during the entire period. And this can be easily confirmed by comparing the share of India's exports with China's in the world. In this index also India was far behind China during the given period of 1992-2018.

6.4.5 Export Composition:

Here we will discuss and compare the export composition by stages of processing of India and China in the world for selected years. In 1992, Consumer goods had the highest share of 41.38 percent followed by Intermediate goods in India's exports Capital goods had the lowest share of 5.61 percent. Similarly in China's exports also Consumer goods and Intermediate goods were the two major exports goods with a share of 55.88 percent and 19.77 percent respectively. In China's exports also Capital had the lowest share of 10.11 percent. In case of India there was not much difference between the shares of top two export goods but in case of China there was huge difference.

In 1995 also Consumer goods and Intermediate goods had the highest share in India's exports but in this year the share of Intermediated goods was higher than the share of Consumer goods. In this year the share of Intermediate goods increased from 39.39 percent to 41.82 percent and become the good with highest share in India's export and on the other hand the share of Consumer goods declined from 41.38 percent to 38.82 percent and become the good with second highest share. In this year also share of Capital goods was the

lowest share in India's exports. In case of China there was no change in the positions of goods with highest shares. Consumer goods continued to have the highest share in China's exports with 52.84 percent, and Intermediate goods with a share of 23.08 percent had the second highest share. As compared to shares of 1995, the share of Consumer goods was declined and that of intermediate goods had increased in this year. In this year with a share of 8.23 percent, Raw Materials replaced Capital goods as the good with lowest share in China's exports.

Table 6.5a: Comparison of Export Composition of Goods by Stages of Processing (%)

Year	1992		1995		2000		2005	
Goods by stage of processing	India	China	India	China	India	China	India	China
Intermediate goods	39.39	19.77	41.82	23.08	42.22	17.18	36.78	16.12
Capital goods	5.61	10.11	6.03	15.51	6.35	27.62	9.67	42.18
Raw materials	11.9	12.75	11.71	8.23	9.6	5.39	11.24	3.06
Consumer goods	41.38	55.88	38.82	52.84	39.84	49.61	41.13	38.43
Year	2010		2015		2018			
Goods by stage of processing	India	China	India	China	India	China		
Intermediate goods	34.87	15.64	32.56	16.26	32.56	16.7		
Capital goods	11.71	46.89	13.82	44.28	15.01	45.92		
Raw materials	9.69	1.99	8.26	1.67	7.43	1.67		
Consumer goods	41.77	35.39	44.5	37.77	44.92	35.49		

Source: WITS-COMTRADE

In 2000, the share of Intermediate goods increased slightly to 42.22 percent from 41.82 percent and continued to be the good with highest share in India's exports. It was followed by Consumer goods with a share of 39.64 percent which had increased from 38.82 percent in 1995. Even though the share of Capital goods was increased marginally in this year, but it still had the lowest share in India's exports. On the other hand, there was a slight change in China's export composition. Even though Consumer goods had the highest share with 49.61 percent but in this year Capital goods had the second highest share of 27.62 percent replacing Intermediate goods. In this year also Raw Materials had the lowest share in China's exports.

In 2005 also Consumer goods and Intermediate goods had the most shares in India's exports. With 41.13 percent Consumer goods had the highest share and with 36.78 percent Intermediate goods had second highest share in India's exports. As compared to 2000, on the one hand the share of Consumer goods was increased from 39.84 percent to 41.13 percent but on the other the share of Intermediate goods declined from 42.22 percent to 36.78 percent. Capital goods with a share of 9.67 percent had the lowest share in India's exports as

before. In case of China again there was a change in this year. In this year Capital goods replaced Consumer goods as the good with highest share in China's exports as its share increased sharply from 27.62 percent in 2000 to 42.18 percent. Consumer goods which had the highest share in the previous year had the second highest share with 38.43 percent. Raw material continued to have the lowest share as its share further decreased to 3.06 percent in this year.

Consumer goods and Intermediate goods continued to dominate India's exports in 2010 as well. With a share of 41.77 percent Consumer goods was the topmost good, followed by Intermediate goods with 34.87 percent. In this year the share of Consumer good was increased as compared to its share in 2005 and that of Intermediate goods declined. as its share was 36.78 percent in 2005. In this year Raw Materials replaced Capital goods as the good with the lowest share in India's exports. Its share was only 9.69 percent. China also did not any change in its composition. The most dominant goods remained Capital goods and Consumer goods. In this year the share of Capital goods further increased to 46.89 percent from 42.18 percent, but the share of Consumer goods had declined to 35.39 percent from 38.43 percent in 2005 In this year the share of Raw Materials was lowest as its share further declined from 3.06 percent in 2005 to 1.99 percent in 2010. So, in 2010, Raw Materials had the lowest share in the export compositions of both India and China.

The year of 2015 was also no different from 2010 for India's export composition as Consumer goods and Intermediate goods continued to have the highest and second highest share in total exports and Raw Materials continued to have the lowest share. Considering the change in percentage share we find that there was further increase in the share of Consumer goods from 41.77 percent in 2010 to 44.5 percent in 2015. But the share of Intermediate goods continued to decline from 34.87 percent in 2010 to 32.56 percent in 2015. The share of Raw Materials had also declined in this year from 9.69 percent in 2010 to 8.26 percent. In case of China also there was no change in the composition but only in the percentage share. In this year also with a share of 44.28 percent Capital good continued to have the highest share and with a share of 37.77 percent Consumer goods had the second highest share. Raw material continued to be the good with lowest share in China's exports with a share of 1.67 percent. In this year the share of Capital goods was declined from 46.89 percent in 2010 to 44.28 percent but the share of Consumer good improved from 35.39 percent to 37.77 percent. As far as the share of Raw Materials was concerned its share also showed reduction from 1.99 percent to 1.67 percent.

In the year of 2018, Consumer goods and Intermediate goods continue to dominate India's exports. Consumer goods had the highest share of 44.92 percent which was a marginal improvement from 2015. There was no change in the share of Intermediate goods as it remained at 32.56 percent. The share of Raw Materials which had the lowest share in this year also further declined to 7.43 percent from 8.26 percent. In case of China, with a share of 45.92 percent Capital goods continued to dominate the export composition of China. It was followed by Consumer goods with a share of 35.49 percent. Raw Materials with a share of 1.67 percent continued to have the lowest share in China's exports. As far as change in the share is concerned, there was a marginal increase in the share of Capital goods from 44.82 percent to 45.92 percent. But the share of Consumer goods declined from 37.77 percent to 35.49 percent. And finally, the share of Raw materials remained same at 1.67 percent.

To find out among the four types of goods which one was more dominant in India and China during these years we have used the Index of Rank Dominance. The table below shows the index values of these goods during the selected years.

Table 6.5b: Comparison of Index of Rank Dominance

Serial number	Goods	India	China
1	Consumer goods	0.93	0.86
2	Intermediate goods	0.82	0.76
3	Raw materials	0.79	0.57
4	Capital goods	0.71	0.79

Author's Calculation

Data Source: WITS-COMTRADE

On the basis of the above table, we find that in case of India, Consumer goods with index value of 0.93 was relatively most dominant good in India's exports during the period and it was followed by Intermediate goods with index value of 0.82. Capital good with index value of 0.71 was the least dominant good in India's exports. Similarly, in case of China's exports also Consumer goods was the most dominant good with index value of 0.86 and Capital goods was the second most dominant good with index value of 0.79. So, for both India and China the most dominant export item was Consumer goods, but they had different second most dominant goods in their respective exports. As far as the comparison of least dominant good is concerned then also these two countries had different least dominant goods. In case of India the least dominant good was Capital goods and in case of China it was Raw Materials.

6.4.6 Comparing sector wise RCA of India and China with the world:

Revealed comparative advantage(RCA) is another important indicator which helps us to understand the pattern of trade of different countries. Here we will discuss

the sector wise difference in RCA between India and China. For this we have considered RCA in different sectors of these countries for selected years in the period of 1992-2018.

In 1992 India had RCA in eight sectors of Stone and Glass, Minerals, Hides and Skins, Textiles and Clothing, Vegetable, Animal, Footwear, and Food Products. Whereas China had in six sectors of Footwear, Hides and Skins, Textiles and Clothing, Miscellaneous, Vegetable, and Minerals. There were five common sectors where both these countries had RCAs. These were: Footwear, Hides and Skins, Textiles and Clothing, Vegetables, and Minerals. Among these common sectors, only in the sector of Footwear where the value of China's RCA was greater than that of India's and all other four sectors' values of India's RCA were relatively higher than that of China's.

Table 6.6a: Sector-wise RCA of India and China (1992-2005)

Year	1992		1995		2000		2005	
	India	China	India	China	India	China	India	China
Food Products	1.21	0.87	0.74	0.63	0.95	0.53	0.65	0.38
Miscellaneous	0.17	1.63	0.23	1.90	0.27	1.71	0.25	1.48
Hides and Skins	5.04	4.85	5.24	5.09	4.06	4.79	3.11	3.62
Stone and Glass	5.82	0.61	6.16	0.62	6.37	0.69	7.27	0.78
Minerals	5.64	1.09	4.14	0.78	4.40	0.60	6.35	0.38
Animal	1.66	0.99	1.69	0.70	2.04	0.66	1.17	0.40
Transportation	0.12	0.08	0.22	0.10	0.19	0.15	0.28	0.17
Metals	0.92	0.65	0.83	0.77	1.12	0.84	1.25	0.86
Plastic or Rubber	0.33	0.59	0.40	0.70	0.54	0.81	0.74	0.70
Mach and Elec	0.16	0.53	0.19	0.81	0.22	1.08	0.27	1.66
Wood	0.12	0.45	0.15	0.42	0.21	0.53	0.22	0.59
Chemicals	0.76	0.52	0.80	0.46	1.25	0.40	1.14	0.36
Textiles and Clothing	4.02	3.75	4.14	3.26	4.22	2.96	3.62	2.67
Fuels	0.37	0.59	0.24	0.33	0.18	0.20	0.46	0.12
Vegetable	2.31	1.42	2.39	0.60	3.20	0.66	1.94	0.36
Footwear	1.65	7.78	1.97	8.10	1.79	6.96	1.62	4.83

Author's Calculation

Data Source: WITS-COMTRADE

India 1995, there were seven sectors where India had RCA. These sectors were: Stone and Glass, Hides and Skins, Minerals, Textiles and Clothing, Vegetables, Footwear, and Animal. On the other hand, China had RCA in Footwear, Hides and Skins, Textiles and Clothing, and Miscellaneous. There were three common sectors where both India and China had RCA. These sectors were: Footwear, Hides and Skin and Textiles and Clothing. In Footwear China had stronger RCA than India but in case of Hides and Skin and Textiles and

Clothing India's RCA was stronger than that of China in this year. In this year India lost RCA in one sector of Food Products and China lost RCA in two sectors of Vegetables and Minerals.

In 2000, India had RCA in nine sectors. These sectors were: Stone and Glass, Minerals, Textiles and Clothing, Hides and Skin, Vegetable, Animal, Footwear, Chemicals and Metals. On the other hand, China RCA in five sectors. They were Footwear, Hides and Skin, Textiles and Clothing, Miscellaneous and Machinery and Electricals. So, the common sectors in which both countries had RCA were Footwear, Hide and Skin, and Textiles and Clothing. Of the three, in two sectors of Footwear and Hides and Skin China had stronger RCA and in Textiles and Clothing India had stronger RCA. Again, as compared to 1995, India gained RCA in two more sectors of Chemicals and Metals. And China gained RCA in one sector of Machinery and Electricals.

Table 6.6b: Sector-wise RCA of India and China (2010-2018)

Year	2010		2015		2018	
	India	China	India	China	India	China
Food Products	0.74	0.31	0.70	0.28	0.59	0.30
Miscellaneous	0.24	1.36	0.33	1.25	0.38	1.40
Hides and Skins	2.43	2.95	2.50	2.14	2.33	2.08
Stone and Glass	5.22	0.65	3.56	0.50	4.00	0.51
Minerals	3.53	0.15	0.95	0.14	0.90	0.12
Animal	0.97	0.33	1.42	0.28	1.35	0.27
Transportation	0.46	0.32	0.55	0.28	0.57	0.32
Metals	1.00	0.86	1.23	1.05	1.33	0.95
Plastic or Rubber	0.55	0.72	0.63	0.79	0.76	0.85
Mach and Elec	0.37	1.90	0.34	1.90	0.39	1.96
Wood	0.27	0.65	0.27	0.66	0.31	0.64
Chemicals	1.20	0.45	1.55	0.48	1.64	0.54
Textiles and Clothing	3.33	2.71	3.34	2.22	3.16	2.10
Fuels	0.91	0.07	0.83	0.07	0.77	0.08
Vegetable	1.57	0.25	1.96	0.22	1.63	0.23
Footwear	1.56	4.05	1.62	2.97	1.49	2.63

Author's Calculation

Data Source: WITS-COMTRADE

In 2005, there was no change in the number of sectors where India had RCA. They remained same at nine. These sectors were: Stone and Glass, Minerals, Textiles and Clothing, Hides and Skin, Vegetables, Footwear, Metal, Animal and Chemicals. Similarly, the number of sectors where China had RCA also remained same at five. They were Footwear, Hides and Skin, Textiles and Clothing, Machinery and Electricals, and Miscellaneous. Again, the common sectors where both countries had RCA were Footwear, Hides and Skin and Textiles and Clothing. In this year also China's

RCA were stronger in the sectors of Footwear and Hides and Skin and that of India in the sector of Textiles and Clothing. In this year the number of sectors both these two countries had RCA remained same as in 2000

In 2010, (**Table 6.6b**) India had RCA in eight sectors. These includes Stones and Glass, Minerals, Textiles and Clothing, Hides and Skin, Vegetables, Footwear, Chemicals and Metals. On the other had China continued to had RCA in five sectors. These includes Footwear, Hides and Skin, Textiles and Clothing, Machinery and Electricals, and Miscellaneous. In this year also the common sectors were both these countries had RCA were Footwear, Hides and Skin and Textiles and Clothing. And in this year also China continued to have stronger RCA in the sectors of Footwear and Hides and Skin and India in Textiles and Clothing. There was one sector as compared to 2005 where India lost its RCA. That sector was Animal sector.

In 2015 also India continues to have its RCA in eight sectors. These were: Stone and Glass, Textiles and Clothing, Hides and Skin, Vegetables, Footwear, Chemicals, Animal, and Metal. Even the number of sectors remain the same but in this year the sector of Minerals was replaced by the sector of Animal. On the other China had RCA in six sectors in this year. These were: Footwear, Textiles and Clothing, Hides and Skin, Machinery and Electricals, Miscellaneous and Metal. The new sector added was the Metal sector. In this year also there was no change in the common sectors where both these countries had RCA. These were Footwear, Hides and Skin, and Textiles and Clothing. Unlike the previous years, in this year India's RCA was stronger in Hides and Skin and in Textiles and Clothing, and China's RCA was stronger only in the sector of Footwear.

Finally, in 2018, the number of sectors were India had RCA continued to be eight. These includes Stones and Glass, Textiles and Clothing, Hides and Skin, Chemicals, Vegetables, Footwear, Animal and Metal. But there was reduction in number of sectors where China had RCA from six to five. These sectors were: Footwear, Textiles and Clothing, Hides and Skin, Machinery and Electricals, and Miscellaneous. The sector that lost RCA was Metal sector. The same three sectors of Footwear, Textiles and Clothing, and Hides and Skin were the common sectors where both these countries had RCA. Of these three again, India had stronger RCA in the sectors of Textiles and Clothing and Hides and Skin, and China had stronger RCA in the sector of Footwear.

So, during these selected years both these countries more or less had RCAs in the same types of sectors. India had RCA in more sectors than China. The common sectors where both these countries had RCA also did not change over the years. Among the

sixteen sectors, the number of sectors where these two countries had RCA was less than the number of sectors where these two countries lack RCA.

6.4.7 Direction of Exports:

The table shows the direction of exports of India and China for the selected years. In 1992 the top three export destinations among the seven sectors for India were: Europe & Central Asia with 31.85 percent share, then it was East Asia & Pacific with 21.84 percent share and the third was North America with 20 percent share. The region with least export share of India was Latin America and Caribbean. Its share was 0.86 percent i.e., not even one percent in 1992. On the other hand, the top three export destinations of China were East Asia and Pacific with 68.59 percent, then Europe and Central Asia with 12.82 percent and the third one was North America with 10.89 percent share. So, the top three export destinations for the two countries were common even though their ranking were different as the export destinations for these two countries. India's first and second major export destinations were China's second and first major destinations. The third major export destination was common for both the countries in 1992. The Sub- Saharan Africa was the region with least share in China's export.

In 1995, India's major three export destinations in order of their share were: Europe & Central Asia with 29.85, East Asia & Pacific 25.25, and North America 18.33. So, there was no change in the position of these regions as major export destinations for India, but their share had changed. Whereas there were decline in the shares of Europe and Central Asia and North America as compared to their shares in 1992, but the share of East Asia and Pacific had increased. In this year also Latin America and Caribbean remained the region with least share in India's exports with a share of 1.26 percent. For China, even though the major three export destinations remained same as in 1992, but their positions and share had chained in 1995. In this year East Asia and Pacific with 57.04 percent remained topmost destination but its share was relatively less than in 1992, North America with a share of 17.65 percent become the second major export destination of China and Europe and Central Asia with 15.07 percent share become the third major destination. So, the position of North America and Europe and Central Asia had been reversed in 1995 relative to their positions in 1992 in terms of their shares. Sub Saharan Africa continued to be the region with least share in China's exports.

Europe and Central Asia continued to be the topmost export destination of India in 2000 with a share of 28.53 percent followed by North America with 23.49 percent and East Asia and Pacific was the region with third highest share in India's exports. So, during this period there had been a decline in the share of Europe and Central Asia and that of East

Asia and Pacific and increase in the share of North America as compared to 1995. There was no change in the region with least share in India's exports. Latin America with a share of 2.81 percent remained the region with least share in India's exports. For China East Asia and Pacific continued to be the region with highest export share even though there was continuous decline in its share. Its share was 48.15 percent in this year as compared to 57.03 percent in 1995. North America continued to occupy the second position in terms of export share with a share of 22.20 percent which was an increase as compared to 17.65 percent in 1995. Even though there was an increase in the share of Europe and Central Asia to 18.72 as compared to 15.07 in 1995, it remained the third highest export destination for China. For China also, Sub-Saharan regions with a share of 1.42 percent remained the region with lowest share in China's exports.

Table 6.7 Comparison of Direction of Exports

Year	1992		1995		2000		2005	
Region	India	China	India	China	India	China	India	China
World	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
East Asia & Pacific	21.84	68.59	25.25	57.03	21.39	48.15	26.85	41.32
Europe & Central Asia	31.85	12.82	29.85	15.07	28.53	18.72	25.21	22.99
Latin America & Caribbean	0.86	1.26	1.12	2.10	2.09	2.85	2.81	3.05
Middle East & North Africa	10.58	2.54	9.64	2.46	12.25	3.09	16.17	3.65
North America	20.00	10.89	18.33	17.65	23.49	22.20	17.47	22.96
South Asia	4.17	1.28	5.47	1.69	4.06	1.52	5.38	2.09
Sub-Saharan Africa	2.87	0.98	4.52	1.19	4.16	1.42	5.26	1.74
unspecified	7.82	1.63	5.82	2.80	4.03	2.05	0.85	2.19
Year	2010		2015		2018			
Region	India	China	India	China	India	China		
World	100.00	100.00	100.00	100.00	100.00	100.00		
East Asia & Pacific	27.78	37.09	22.77	39.78	24.67	37.86		
Europe & Central Asia	21.07	24.30	20.02	19.25	20.92	20.71		
Latin America & Caribbean	4.20	5.77	4.13	5.75	4.09	5.93		
Middle East & North Africa	21.60	5.10	20.69	6.17	17.32	5.07		
North America	11.27	19.42	16.04	19.34	16.89	20.66		
South Asia	5.04	3.65	6.53	4.15	7.65	4.73		
Sub-Saharan Africa	6.43	2.78	7.85	3.45	6.42	3.00		
unspecified	2.60	1.90	1.98	2.12	2.05	2.04		

Data source: WITS-COMTRADE

In 2005, East Asia and Pacific become the region where India exported the most. Its share was 26.85 percent as compared to 21.39 percent in 2000. This region was

in third position in 2000. Europe and Central had the second highest share with 25.21 percent which was not much different from the share of East Asia and Pacific. In 2000, it was the topmost export destination in terms of share. The region of North America was the third major destination for India's export with a share of 17.47 percent. This region was in second position in terms of export share in 2000. Even though the share of Latin America and Caribbean increased to 2.81 percent from 2.09 percent, it continued to remain as the regions with lowest share in India's exports. In case of China also, the top three major export destinations in order of their share were East Asia and Pacific, Europe and Central Asia and North America which was the same order as that of India. But there were differences in their share. As far as the share of these three regions in China's exports are concerned, the share of East Asia and Pacific even though it remained the topmost destination continued to decline as compared to previous years to 41.32 percent. The share of Europe and Central Asia which was the second major export destination for China's had increased to 22.99 percent in 2005. Similarly, the share of third major export destination of China i.e., North America's share also increased marginally to 22.96 percent as compared to 22.20 percent in 2000. Sub – Saharan region continued to be the region with lowest share of China's exports even though there was increase in its share from 1.42 percent in 2000 to 1.74 percent in 2005.

In 2010, the three major export destinations for India's export were East Asia and Pacific, Middle East and North Africa and Europe and Central Asia. So, in this year North America was replaced by Middle East and North African regions as one of the three major export destinations for India. As compared to 2005, the share of East Asia and Pacific was increased to 27.78 percent from 26.85 percent in 2005. The share of second major export destination, Middle East and North Africa had also increase in 2010 to 21.60 percent but the share of Europe and Central Asia had declined in this year to 21.05 percent. So, in this year along with East Asia and Pacific and Europe and Central Asia, Middle East and North Africa also gained more importance as a major export destination of India. In 2010 also with a share of 4.2 percent continued to be the region with lowest share in India's exports. As compared to 2005, the share of this regions had increased to 4.20 percent in 2010. On the other hand, in case of China there was no change in the three major export destinations and their positions. East Asia and Pacific regions continued to be the top export destination with a share of 37.09 percent which was comparatively less than its share of 41.32 percent in 2005. Europe and Central Asia was the second major export destination with a share of 24.30 percent which was an improvement as compared to 22.99 percent in 2005. Even though America remained the third major export destination, but its share had declined in 2010 to 19.42 percent as compared

to 22.96 percent. With a share of 2.78 percent Sub Saharan Africa continued to be the least export Region for China. Even though it was an improvement as compared to 1.74 percent in 2005.

In 2015, the major three export destinations of India's export remained the same along with their position but share of all these three regions declined as compared to 2010. The share of East Asia and Pacific declined from 27.78 percent in 2010 to 22.78 percent in 2015 and that of Middle East and North Africa declined to 20.69 percent from 21.60 percent. Similarly, the share of Europe and Central Asia declined from 21.07 percent to 20.02 percent. Latin America and Caribbean which continue to be the regions with lowest share had a share of 4.13 percent. The three major export destination for China continue to be East Asia and Pacific which had the highest share of 39.78 percent followed by North America with a share of 19.24 percent and then Europe and Central Asia with a share of 19.25 percent. The share of East Asia and Pacific had comparatively increased during this year but that of North America and Europe and Central Asia declined. In this year also Sub-Saharan Africa had the lowest share in China's export with a share of 3.45 percent.

In the final year of 2018, the same three regions dominated India's exports. As before East Asia and Pacific had the highest share of 24.67 percent which was followed by Europe and Central Asia with a share of 20.92 percent and with a share of 17.32 percent Middle East and North Africa was the third major export destination for India's exports. Contrary to this, in 2015 Middle East and North Africa was second major export destination whereas Europe and Central Asia the third. In this year also Latin America had the lowest share in India's exports with a share of 4.09 percent. For China also the three major export destinations were East Asia and Pacific was the topmost region with a share of 3.86 percent, followed by Europe and Central Asia with a share of 20.71 percent and the region with third highest share was North America with a share of 20.66 percent. In this year there was not much difference between the shares of Europe and Central Asia and North America. Like before Sub-Saharan Africa was the region with lowest share in China's exports. Its share was only 3 percent in 2018.

So, there was no major change taken place in the export destinations of India and China. For India regions with major shares of exports were East Asia and Pacific, Europe and Central Asia, North America and Middle East and North Africa. On the other hand, the major regions for China's exports were East Asia and Pacific, Europe and Central Asia and North America. As far as the region with lowest share is concerned, it was Latin America and Caribbean for India and Sub-Saharan Africa for China in all the years considered.

6.4.8 Export Import Coverage:

Export import coverage: We will now compare the export import coverage of India and China for the said period. This will help us to understand whether the country's export is capable of covering its imports or not. The table below shows the values of export import coverage for India and China.

The table clearly shows that India's export was not enough in any of the years to cover its imports. The highest coverage was 95 percent in 1993 and lowest was 52 percent of the exports in 2018. On the other hand, China's export was capable of covering its import obligations except for one year in 1993. In this year its export covered 88 percent of its imports. Highest coverage for China was 135 percent in 2015 and lowest coverage was 88 percent in 1993. So, comparison shows that China had very strong export import coverage as compared to India.

Table 6.8: Comparison of Export Import Coverage

Year	India	China	Year	India	China	Year	India	China
1992	0.85	1.05	2001	0.87	1.09	2010	0.63	1.13
1993	0.95	0.88	2002	0.87	1.10	2011	0.65	1.09
1994	0.92	1.05	2003	0.82	1.06	2012	0.59	1.13
1995	0.87	1.13	2004	0.77	1.06	2013	0.72	1.13
1996	0.86	1.09	2005	0.71	1.15	2014	0.69	1.20
1997	0.84	1.28	2006	0.68	1.22	2015	0.68	1.35
1998	0.78	1.31	2007	0.67	1.28	2016	0.73	1.32
1999	0.74	1.18	2008	0.58	1.26	2017	0.66	1.23
2000	0.80	1.11	2009	0.66	1.20	2018	0.52	1.17

Author's Calculation

Data Source: WITS-COMTRADE

Now we will discuss the trend in export import coverage between India and China. In case of India in 1992 its coverage was 85 percent which increased to 95 percent in 1993 but after that it continuously declined from 92 percent in 1994 to 74 percent in 1999. This was a huge decline or gap between export and import. After that in 2000, there was an increase in the coverage to 80 percent which further increased to 87 percent in 2001. The coverage remained same as in 2001 in 2002. It was followed by decline in the coverage continuously from 82 percent in 2003 to as low as 58 percent in 2008. In 2009, there was some improvement in the coverage to 66 percent but then declined to 63 percent in 2010. In 2011, there was slight improvement in coverage to 65 percent. But again, it reduced to 59 percent. After improving to 72 percent in 2013, the coverage declined marginally first to 69 percent in 2014 and further to 68 percent in 2015. In 2016 it again improves to 73 percent but then it declined continuously for last two years to 66 percent in 2017 and further to as low as only 52

percent in 2018. So, India's export import coverage was weak and deteriorated most of the years throughout the period and could not cover its 100 percent import obligations in any of the years of the period.

China's export import coverage in 1992 was 105 percent which was more than required to cover its import obligations in that year. But it declined to 88 percent in 1993. This was the only year in case of China when its exports were unable to cover its import obligations. In 1994 it again reached 105 percent and further to 113 percent in 1995. After declining slightly in 1996 to 109 percent it again improved continuously for next two years to 128 percent in 1997 and further to 131 percent in 1998. Then it declined to 111 percent in 2000 and further to 109 in 2001. In 2002 it improved marginally to 110 percent but again declined to 106 percent in 2003 and continued in 2004. From 2005 to 2007 there was an improvement in coverage from 115 percent in 2005 to 128 percent in 2007. After this improvement the coverage declined continuously for next four years from 126 percent in 2008 to 109 percent in 2011. In 2012 and 2013 coverage remained at 113 percent but after that improved to 120 percent in 2014 and further to 135 percent in 2015. The last three years showed declining trend in coverage from 132 percent in 2016 to 117 percent in 2018. So, in case of China except for 1993, the coverage never falls short of the value of its imports. So, China's export import coverage was very strong as compared to that of India.

6.4.9 Export Market Penetration:

This index as calculated as the ratio of no of countries to whom a country exports a particular good and number of countries that import that particular good in a year. If the value of this index is zero, then the country is not exporting to any country and if it is 100 then it is exporting to maximum number of countries. The table below shows the export market penetration of India and China.

Table 6.9: Comparison of Export Market Penetration

Year	India	China	Year	India	China	Year	India	China
1992	7.44	12.15	2001	17.58	33.60	2010	27.22	53.70
1993	8.34	13.85	2002	18.63	35.72	2011	27.06	53.62
1994	9.82	16.24	2003	19.92	39.09	2012	27.52	53.53
1995	10.33	17.84	2004	20.49	41.66	2013	28.53	54.22
1996	11.29	19.34	2005	22.85	44.87	2014	28.56	54.50
1997	12.31	21.89	2006	23.80	48.42	2015	29.40	54.90
1998	13.18	23.69	2007	25.01	51.01	2016	29.83	55.27
1999	14.06	25.47	2008	25.77	51.22	2017	30.29	55.92
2000	16.74	31.10	2009	25.79	51.73	2018	29.95	54.51

Data Source: WITS- COMTRADE

The value of export market penetration had increased for both India and China from 1992-2018. The maximum value for India was 30.29 percent in 2017 and minimum was 7.44 percent in 1992. Similarly, the maximum value for China was 55.92 in 2017 percent and minimum was 12.15 in 1992. Co incidentally, both India's and China's maximum was registered in same year of 2017 and minimum in 1992. Now, we will consider trend in this index for both India and China.

For India, in 1992, the penetration was only 7.44 percent which increased to 10.33 percent in 1995. It further increased to 16.74 percent in 2000 and reached 22.85 percent in 2005. In 2010 the penetration was 27.22 percent and in 2015 it was 29.40 percent. Finally in 2018 penetration was 29.95 percent. So, India's export market penetration had increased over the years from 1992 to 2018 but still it was around 30 percent only.

For China, in 1992 the penetration was 12.15 percent which increased to 17.84 percent in 1995. After that it increased sharply to 31.10 percent in 2000 and reached 44.87 percent in 2005. In 2010 it reached 53.70 percent which was more than 50 percent of the export market penetration. In 2015 its penetration was 54.90 percent. And finally in 2018 its penetration was 54.51 percent. China's export market penetration crossed 50 percent mark from 2007 and continued till 2018. Its penetration was below 30 percent from 1992 to 1999 and from 2000 to 2006 it was below 50 percent and after 2007 onwards its penetration was 50 percent and above.

So, China's penetration during the period of 1992-2018 was comparatively much higher than India's penetration. And the gap between China's penetration and that of India's penetration had widened over the years. This means that rate of increase in China's penetration was higher than that of India. In this indicator also China performance was superior to that of India.

6.4.10 Export Propensity Index:

The table below shows the export propensity index of India and China in the world. Here we will discuss and compare export propensity index of India and China in the world.

The highest value of this index for India was 18.13 and lowest was 7.19. The value was 7.19 in 1992 which increased continuously for next three years from 7.96 in 1993 to 8.80 in 1995. It was followed by three years continuous decline from 8.52 in 1996 to 7.88 in 1998. After that the value again improved to 9.04 in 2000 and in 2001 it remained same at 9.04 then the value showed continuous improvement for next five years from 9.73 in 2002 to 12.89 in 2006. In 2007 the value declined to 11.99 but again improved to 15.17 in 2008. The

value declined continuously for next two years first to 13.17 in 2009 and then marginally to 13.15 in 2010. It again improved to 16.54 in 2011 followed by decline in value to 15.84 in 2012. After that the value again improved to 18.13 in 2013. This improvement was followed by continuous decline in the value for next four years from 15.57 in 2014 to 11.10 in 2017. Finally in 2018 there was improvement in the value of this index to 11.93. On the basis of this discussion, we can say that the value of export propensity index for India had increased for most of the years during the given period, but it never crossed 20 in any of the years. So even though the dependence of India's producers in world market had increased over the years but this dependence was not very high.

First, we will discuss it for India and then for China and finally we will compare them.

Table 6.10: Comparison of Export Propensity Index

Year	India	China	Year	India	China	Year	India	China
1992	7.19	19.90	2001	9.04	19.87	2010	13.15	25.92
1993	7.96	20.63	2002	9.73	22.14	2011	16.54	25.14
1994	8.05	21.44	2003	9.77	26.39	2012	15.84	24.01
1995	8.80	20.25	2004	10.70	30.34	2013	18.13	23.08
1996	8.52	17.49	2005	12.23	33.33	2014	15.57	22.36
1997	8.37	19.01	2006	12.89	35.21	2015	12.57	20.55
1998	7.88	17.86	2007	11.99	34.36	2016	11.34	18.67
1999	8.05	17.82	2008	15.17	31.14	2017	11.10	18.39
2000	9.04	20.57	2009	13.17	23.55	2018	11.93	17.95

Author's calculation

Data Source: WITS-COMTRADE

In case of China, the highest value of the index was 35.21 in 2006 and lowest was 17.49 in 1996. The trend shows that in 1992 the value was 19.90 which increased continuously for next two years first to 20.63 in 1993 and then to 21.44 in 1994. After that it declined continuously for next two years first to 20.25 in 1995 and then to 17.49 in 1996. In 1997 it improved to 19.01 but again declined continuously for next two years first to 17.86 in 1998 and then to 17.82 in 1999. It again improved to 20.57 in 2000 but declined again to 19.87 in the very next year of 2001. This was followed by continuous improvement in the value for next five years from 22.14 in 2002 to 35.21 in 2006. The next three years showed continuous decline in the value of the index from 34.36 in 2007 to 23.55 in 2009. IN 2010 the value again improved to 25.92 but after that it declined continuously for next eight years from 25.14 in

2011 to 17.95 in the final year of 2018. This discussion shows that the value of this index improved for most of the years during this period for China but in the later years it showed declining trend. This means that in most of the years there was increase in the dependence of China's domestic producers in world market, but the later years of the period showed declining trend in the dependence of domestic producers in world market for China.

Comparing the values of index for India and China we find that the value of index for China was higher than India in all the years of the period. This means that the dependence of domestic producers of China was relatively higher than that of India or the dependence of domestic producers of India was relatively lower than that of China. This may make China's domestic producers relatively more vulnerable than India to the external shocks.

6.4.11 The Herfindahl-Hirschman Index (HHI):

This index is the measure of market concentration. Higher value of the index means the market is concentrated in fewer firms and smaller the value of this index more competitive will be the market of the concerned country. Here we will discuss HH index of India and China for the given period of 1992-2018.

The table shows that in 1992 the value of HHI was 0.12 then it declined to 0.07 in 1995. In 2000 also the value was 0.07 but in 2005 it declined to 0.06. There was further decline in the value to 0.04 in 2010. After that the value increased to 0.05 in 2015 and in 2018 the value remained at 0.05. This means that India's market had become more competitive over the years even though in 1992 also as the value of HHI was low so India's markets were competitive during that time also. But over the years it has become even more competitive.

Table 6.11 Comparison of The Herfindahl-Hirschman Index (HHI)

Year	India	China	Year	India	China	Year	India	China
1992	0.12	0.19	2001	0.06	0.13	2010	0.04	0.06
1993	0.09	0.21	2002	0.07	0.12	2011	0.04	0.06
1994	0.08	0.19	2003	0.06	0.11	2012	0.04	0.06
1995	0.07	0.17	2004	0.06	0.10	2013	0.04	0.06
1996	0.06	0.17	2005	0.06	0.09	2014	0.05	0.06
1997	0.06	0.16	2006	0.05	0.09	2015	0.05	0.07
1998	0.07	0.16	2007	0.05	0.07	2016	0.06	0.08
1999	0.08	0.15	2008	0.04	0.07	2017	0.05	0.06
2000	0.07	0.14	2009	0.04	0.07	2018	0.05	0.06

Data Source: WITS-COMTRADE

In case of China the value of HHI was 0.19 in 1992 which declined to 0.17 in 1995 and further to 0.14 in 2000. In 2005 the value further declined to 0.09. It reached

0.06 in 2010 but increased to 0.07 in 2015 and in final year of 2018 the value declined to 0.06. This means that the value of HHI for China also declined over the years and its market also become relatively more competitive in later years.

Now comparison of value of HHI between India and China shows that the China's market was relatively more concentrated than India's market throughout the period but over the years the gap between them reduced. In other words, the markets of both India and China become more competitive over the years as their values of HHI declined. And on the basis of values of HHI we can say that India's market was relatively more competitive than that of China during this period.

6.4.12 Trade Dependence Index:

This index is also known as Openness index and is defined as the value of total trade as a percentage of country's GDP. This index measures the openness of an economy in the world. The table below shows the values of trade dependence index of India and China in percentage terms for the given period of 1992-2018.

Table 6.12 Comparison of Trade Dependence Index (%)

Year	India	China	Year	India	China	Year	India	China
1992	14.99	38.77	2001	19.31	38.05	2010	34.41	48.86
1993	15.88	44.00	2002	20.54	42.21	2011	42.09	48.23
1994	15.85	41.93	2003	21.64	51.26	2012	43.03	45.32
1995	18.13	38.24	2004	24.88	59.05	2013	42.02	43.46
1996	18.08	33.56	2005	29.56	62.2	2014	38.53	41.06
1997	18.38	33.81	2006	31.93	63.97	2015	31.47	35.74
1998	18.14	31.48	2007	31.19	61.31	2016	27.29	32.81
1999	18.01	32.96	2008	43.03	55.79	2017	28.25	33.36
2000	20.05	39.15	2009	31.46	43.27	2018	31.07	33.27

Data Source: WITS-COMTRADE

In 1992 the value was 14.99 percent for India which increased to 18.13 percent in 1995. It further increased to 20.05 percent in 2000. The value increased to 29.56 percent in 2005 which further increased to 34.41 percent in 2010. There was a decline in the value of this index in 2015 to 31.47 percent and further to 31.07 percent in 2018. The maximum value was registered in 2008 and 2012 at 43.03 percent and minimum in the first year of the period i.e., in 1992 at 14.99 percent. The trend in the value of this index shows that during this period India had gradually opened to the world as openness index increased from 15 percent to as high as 43 percent. The change was more visible between 2002 to 2012 when the value of this index increased from 20.54 percent to 43.03 percent even though there were fluctuations in between. After the value declined continuously for next four years from 42.02 percent in

2013 to 27.29 percent in 2016. The value increase in the last two years to 28.25 percent in 2017 and further to 31.07 percent in 2018.

In case of China the value of the index in 1992 was 38.7 percent but declined to 38.24 percent in 1995. There was slight improvement in its value to 39.15 percent in 2000 but after that in 2005 there was a sharp improvement to as high as 62.2 percent. In 2010 the value again declined to 48.86 percent which further declined to 35.74 percent in 2015 and again in the final year of 2018 to 33.27 percent.

Now let us consider the trends in the value of trade dependence index in China. The value declined from 44 percent in 1993 to 31.48 percent in 1998 after than it increased for the next two years to 32.96 percent in 1999 and further to 39.15 percent in 2000. Then it declined to 38.05 percent in 2001. After that the value increased continuously from 42.21 percent in 2002 to 63.97 percent in 2006. It declined for the next three years after that and reached 43.27 percent in 2009. The value again increased to 48.86 percent in 2010 but then it declined continuously from 48.23 percent in 2011 to 32.81 percent in 2016. In 2017 it increased slightly to 33.36 percent but again declined marginally to 33.27 percent. So, the value of trade dependence index for China was more than 30 percent throughout the period and it reached as high as around 64 percent. In the period between 2002 to 2014 the value was above 40 percent, and this was the period when the value grew more rapidly and even reached its maximum.

Comparing India and China on this index shows that during the study period, the value of this index increased for both the nations. And even though the performance of China was relatively better than India but improvement in the performance of India was clearly visible as the gap between the value of China and India for this index was found to be reduced over the years. Even though India's performance in this index improved over time but we have to conclude that during the study period China was relatively more open than India.

6.4.13 Trade Entropy Index (TEI):

This is an index of geographical concentration or dispersion of exports. If a country's exports are diversified, then it will exhibit higher trade entropy index and vice versa. The table below shows the TEI for India and China for the given period.

The table shows that the value of TEI was more than 1 for both India and China. This means that the exports of both these countries were diversified across the geographical locations, and we had already discussed that in direction of exports section.

In 1992, the value of TEI for India was 1.74 which increased to 1.76 in 1995. In 2000 it remained at 1.76. But in 2005 its value declined marginally to 1.75. There was

an improvement in the TEI value for India in 2010 to 1.82 which further improved to 1.87 in 2015. The value declined marginally to 1.86 in 2018. During this period the highest value of TEI was 1.89 in 2011 and lowest value was 1.67. Trend shows that the value continuously increased from 1.73 in 1992 to 1.80 in 1998 then declined to 1.67 in 1999. After that it increased to 1.76 in 2000 and further to 1.82 in 2001. The value declined for the next two years to 1.78 in 2002 and further to 1.76 in 2003 In 2004 it increased to 1.77 but again declined to 1.5 in next year. The value again increased continuously from 1.78 in 2006 to 1.89 in 2011. After declining in 2012 to 1.84 it again increased to 1.87 and continued with that for next two years. In 2016 there was a decline in value to 1.86 and further to 1.84 in 2017 Then finally in 2018 it again increased to 1.86. It clearly shows that India's export was diversified not only during the early years of the period, but it became relatively more diversified in the latter half of the period.

Table 6.13: Comparison of Trade Entropy Index

Year	India	China	Year	India	China	Year	India	China
1992	1.73	1.08	2001	1.82	1.43	2010	1.82	1.64
1993	1.74	1.35	2002	1.78	1.44	2011	1.89	1.65
1994	1.74	1.30	2003	1.76	1.46	2012	1.84	1.64
1995	1.76	1.31	2004	1.77	1.48	2013	1.87	1.62
1996	1.77	1.31	2005	1.75	1.50	2014	1.87	1.65
1997	1.79	1.33	2006	1.78	1.54	2015	1.87	1.67
1998	1.80	1.42	2007	1.79	1.58	2016	1.86	1.66
1999	1.67	1.41	2008	1.80	1.61	2017	1.84	1.67
2000	1.76	1.41	2009	1.82	1.62	2018	1.86	1.67

Author's Calculations

Source: WITS-COMTRADE

The value of TEI in 1992 was 1.08 for China which increased to 1.31 in 1995 and further to 1.41 in 2000. The value reached 1.50 in 2005 and again increased to 1.64 in 2010. There was further improvement in the value in 2015 to 1.67. In the final year of 2018 the value remained at 1.67. The trend shows that the value increased from 1.08 in 1992 to 1.35 in 1993 but declined to 1.30 in 1994. From 1995 it again improved from 1.31 to 1.42 in 1998. After that it declined to 1.41 in 1999 and remained same in 2000. Interestingly, from 2001 up to 2011 there was continuous improvement in the value of TEI from 1.43 in 2001 to 1.65 in 2011. In 2012 the value again declined to 1.64 and even further to 1.62 in 2013. In 2014 it again increased to 1.65 and further to 1.67 in 2015. The year of 2012 showed marginal decline in the value of TEI to 1.66, which was compensated by a marginal increase in the value to 1.67 in 2017. There was no change in the value in 2018.

The comparison shows that India outperformed China in this index as the value of this index for India was higher than that of China for the entire period. But over the years the gap had been narrowed between the two. So, from this discussion we can conclude that during the given period India's exports was relatively more diversified than that of China's exports.

6.4.14 Export Similarity Index:

The last index that we have employed in our analysis is called Export Similarity Index (ESI). This index helps us to understand the extent of competition between India and China in the world market. If the value of this index is high, the competition between the two countries will be high and vice versa.

Now, we will discuss the trend in this index. The value of index was 0.79 in 1992 which reduced to 0.73 in 1993. After that it increased continuously for next two years, first to 0.74 in 1994 and then to 0.76 in 1995. It was followed by decline in value to 0.72 in 1996. In 1997 the value remains same at 0.72 and then increased marginally to 0.73 in 1998. There was a deterioration in value in 1999 to 0.67 but after that there was continuous improvement in value for next two years, first to 0.69 in 2000 and then to 0.71 in 2001.

Table 6.14: Export Similarity Index(ESI)

Year	ESI	Year	ESI	Year	ESI
1992	0.79	2001	0.71	2010	0.65
1993	0.73	2002	0.67	2011	0.67
1994	0.74	2003	0.68	2012	0.66
1995	0.76	2004	0.68	2013	0.67
1996	0.72	2005	0.67	2014	0.70
1997	0.72	2006	0.67	2015	0.70
1998	0.73	2007	0.66	2016	0.69
1999	0.67	2008	0.67	2017	0.68
2000	0.69	2009	0.66	2018	0.69

Author's Calculations

Source: WITS-COMTRADE

In 2002 the value declined to 0.67 which increased to 0.68 in 2003 and same value was continued in 2004 as well. Then in 2005 the value declined marginally to 0.67 which continued in 2006 as well then in 2007 a marginal decline took place and value become 0.66 which again increased marginally to 0.67 in 2008. After that the value declined continuously for next two years, first to 0.66 in 2009 and then to 0.65 in 2010. In 2011 it again improved to 0.67 but again declined to 0.66 in 2012. The fluctuation continued and in 2013 it again improved to 0.67 which further improved to 0.70 in 2014. The value remains same in 2015 at 0.70. Then there was continuous decline in the value for next two years, first to 0.69 in

2016 and then to 0.68 in 201. In 2018 there was marginal improvement in value to 0.69. So, the value of this index remains high during the study period. And also, it was observed that there was no large fluctuation in the value of this index. This means that India's competition with China in the world remain high throughout the period.

6.5 Conclusion:

In this chapter we compared the export performances of India and China in the world using various trade related indices. The comparison of shares of exports of India and China shows that China's share in the world exports was much higher than that of India. It was found that even the lowest share of China exports was higher than highest share of India's exports in the world during the period. As far as comparison of growth in exports are concerned, we found that there were not many differences in growth rates of two countries. Growth rates were 11.13 percent and 13.88 percent at CAGR for India and China respectively. Comparison of export volume index revealed that India's exports increased as high as 16 times relative to its value in base year of 1992. Similarly, China's exports increased as high as 29 times more than the value in base year of 1992. So, performance of China in this case was much better than India. Another observation that we made was with respect to composition of exports. Our comparison of export composition of two nations shows that, the stage of processing level, consumer goods was the most contributing export sector for both the nations. So, India may face most of the competition in this sector from China.

Again, our study finds that both India and China had comparative advantages in same types of exports sectors which means that India faces fierce competition from China in these sectors. This result is further confirmed by export similarity index. As far as comparison of openness is concerned China was found to be more open than India but the comparison of export diversification shows that India's exports were relatively more diversified than that of China. We also analyze the vulnerability of domestic producers of these two nations and found that the domestic producers of China were relatively more vulnerable to external shocks than that of India. So, during the study period not only China outperformed India in export performances in the world market, but India faced also faced fierce competition from China in the world market. Comparatively India was found to be much weaker than China in world exports.

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Appendix:

i) Growth rate of exports:

Growth rate of export is defined as the annual compound percentage change in the value of exports between two periods. This comparison is important for producers, exporters, investors, policy makers and trade negotiators. This is written as

$$\left[\left(\frac{\sum_{s\omega} X_{s\omega}^1}{\sum_{s\omega} X_{s\omega}^0} \right)^{\frac{1}{n}} - 1 \right] \times 100$$

Here, s is the set of countries in the source; w is the set of countries in the world; X^0 is the bilateral total export flow in the start period; X^1 is the bilateral total export flow in the end period; and n is the number of periods. We do not include starting year in calculation. The value it takes ranges from -100 percent to $+\infty$. -100 means the trade has ceased. When the value becomes 0, it indicates that value of trade has remained same.

ii) Export Value Index:

This index is the ratio of current value of export and the value of export in base year (1992=100). It tells us how much exports have increased or decreased over a period. It is written as

$$\frac{x_t}{x_b} \times 100$$

Here, x_t is the value of export in current year; x_b is the value of export in base year.

iii) Export Import Coverage:

This indicator helps us to know whether a country's import bill is fully paid by its exports each year or not. It is defined as the ratio of total exports to total imports. It is given as

$$\frac{\text{Total Export in year } t}{\text{Total Import in year } t}$$

The value of this index ranges from 0 to ∞ . When its value is 0, this means that country does not export and when it is ∞ , this means that country does not import. If the value of this indicator is 1 in a particular year, this means that country export is fully capable of covering its import bill during that year.

iv) Export Market Penetration:

This index is calculated as the ratio of number of countries to whom a country exports a particular good and number of countries that import that particular good in a year. If the value of this index is zero, then the country is not exporting to any country and if it is 100 then it is exporting to maximum number of countries

v) Export Propensity Index:

This index tells us about the degree of reliance of domestic producers on foreign markets. Even though this index is similar to trade dependence index, the advantage of this index is that it provides better indicator of vulnerability of certain types of external shocks such as fall in export prices, change in exchange rates etc. This index is defined as the ratio of exports to GDP in percentage terms. It can be written as

$$\frac{\sum X_{ds}}{GDP_d} \times 100$$

Here, d is the country under study; s represents set of all countries; X represents total bilateral exports; GDP is the gross domestic product of country d. The value of this indicator ranges from 0 to 100. When the value is 0, it means that there was no export and 100 means that all domestic production was exported.

vi) The Herfindahl- Hirschman Index:

This index is the measure of geographical concentration of exports. This tells us the degree to which a region or country's exports are dispersed across different destinations. This index is defined as the square root of the sum across destinations of the squared export share for the region under study to all destinations. This index is given by

$$\sqrt{\sum_d \left[\frac{\sum_s X_{sd}}{\sum_{sw} X_{sw}} \right]^2}$$

Here, s is the set of source countries under study; d is the set of destinations; w is the set of countries in the world; and X is the bilateral flow of exports from the source to the destination. The value of

this index lies between 0 and 1. Higher value of this index indicates that exports are concentrated on fewer markets and lower value indicates exports are diversified.

vii) Trade Dependence Index:

This index shows the openness of an economy. It can be defined as the total trade of a country as a percentage of its GDP. It can be written as

$$\frac{\text{Total Trade}}{\text{GDP}} \times 100.$$

In our case, since we are considering only the merchandise trade, so our index is modified as

$$\frac{\text{Total Merchandise Trade}}{\text{GDP}} \times 100$$

The value of this index lies between 0 and $+\infty$

viii) Revealed Comparative Advantage(RCA):

The RCA index is the ratio of a country's total exports of a commodity in its total exports and shares of world exports of the same commodity in total world exports. This index uses trade pattern to identify the sectors in which an economy has a comparative advantage. This is done by comparing the trade profile of the country of interest with the world average. It is written as

$$\frac{\sum_d x_{isd} / \sum_d X_{sd}}{\sum_{\omega d} x_{\omega d} / \sum_{\omega d} X_{\omega d}}$$

Here, s is the country of interest; d and w are the set of all countries in the world; I is the sector of interest; x is the quantity of commodity i and X is quantity of total exports. In the above expression, share of good i in the exports of country s is given by numerator and the share of good i in the exports of the world is given by denominator. This index takes the value from 0 to $+\infty$.

The country s is said to have revealed comparative advantage in good i if its value is greater than one and if its value is less than one then the country will have revealed disadvantage in the good i.

ix) Trade Entropy Index:

This index is a measure of the 'geographical concentration' or dispersion of exports. This measure tells us the degree of integration of a country in study with the world economy and it can be used to understand the vulnerability of the country in question to external shocks when it relies on limited number of partners. This index is calculated by summing the export shares multiplied by natural log of the reciprocal of the export share (this is a weight which decreases with the size of the share) of the country under study across all destinations. This can be expressed as

$$\sum_d \left(\frac{\sum_s X_{sd}}{\sum_{sw} X_{sw}} \right) \ln \left(\frac{1}{\sum_s X_{sd} / \sum_{sw} X_{sw}} \right)$$

Here, s is the set of source countries under study; d symbolizes set of destination countries; w is the set of countries in the world; X is the bilateral export flow from source country to destination country. The sets d and w contain the same elements as we want to sum over all destinations. Entropy index can be calculated using imports or exports shares as well. This index takes the values ranging from 0 to $+\infty$.

Higher value of this indicator means greater uniformity in geographical dispersion of exports. Maximum value of this index indicates that the export share in every market is same.

x) Export Similarity Index:

This index measures the degree of similarity between the export profiles of two economies. The more similar the export profile of two economies, more likely that they are competitors in global market. It is the sum over export categories of the smaller of the sectoral exports share (as a percentage) of each country under study. This index is given by

$$\sum_i \min \left(\frac{\sum_w X_{isw}}{\sum_w X_{sw}}, \frac{\sum_w X_{idw}}{\sum_w X_{dw}} \right) \times 100$$

Here, d and s are the countries of interest, w is the set of all countries in the world, i is the set of industries; x is the commodity export flow; and X is the total export flow. As far as the range of values of this index is concerned, a value of 0 indicates no overlap in the export profile and countries are considered as not competitors. And a value of 100 indicates that two countries are fierce competitors.