

## **Chapter 04: An Analysis of Extent of India's Intra Industry Trade with China**

### **4.1 Introduction:**

Intra industry trade is simply the trade within the same industry unlike in case of inter industry trade where trade takes place between industries. Traditionally the trade theories were directed towards the study of inter-industry trade, but many scholars find a mismatch between the traditional trade theories and empirical evidence and since 1960s intra-industry trade become an important area of studies in international trade.

. Even though in earlier times intra-industry trade was expected predominantly to be related to developed industrialized nations and most of the studies were conducted with focus on developed nations, but over the years this phenomenon was also examined in developing countries as it was realized that intra industry is a phenomenon not only present in developed industrialized nations but also found in the developing nations.

India was virtually a closed and a developing economy during 1960s. So, we cannot find any significant studies concerning the intra -industry trade of India. Most of the work regarding intra industry trade in India was conducted during 1990s as India was opening and started to integrate its economy with the world economy by adopting new economic policy.

In this chapter we will examine the issues related to intra –industry trade between India and China. We will try to find out the share of intra industry trade in India's total trade with China. We also identify the sectors which are important from this standpoint. Importantly we will try to find out the role of different factors responsible for the intra-industry trade between the two countries.

Rest of the chapter is organized as follows. In section 4.2 we made a thorough review of relevant literatures. It is followed by description of data and methods used in this chapter in section 4.3. In section 4.4 we have discussion where we have discussed and analysed intra-industry trade between India and China. Then in the last section of 4.5 we have conclusions of the chapter.

### **4.2 Review of Literature:**

#### **4.2.1 Theoretical development of IIT**

Here we will discuss the theoretical evolution of IIT since 1960s.

Pieter Verdoorn (1960) was among the first to observe the phenomenon on intra-industry trade. In his study of trade pattern of Benelux countries after the formation of their Customs union he found that there was increase in intraindustry trade between them rather

than interindustry trade.

Bela Balassa (1966), in his study of trade pattern of ECC countries found the similar pattern as concluded by Verdoorn. That is, he also found the increasing trend of intraindustry trade among these countries as compared to interindustry trade. Balassa is also attributed to have used the term "intra-industry trade" for the first time. He is also responsible for developing the first ever measure of intra-industry trade. His work was basically focused on trade of manufactured goods.

H. G Grubel (1967) made an empirical study on intra-industry trade. In this study he studied the trade pattern of ECC countries with an objective to establish relationship between intra-industry trade and trade liberalization.

H. G Grubel and p. J Lloyd (1975) continued their empirical study and were able to identify the factors which were responsible for the emergence of intra-industry trade. In their study they found that the most import factor for the emergence of intra-industry trade was product differentiation. They also developed an index which later known as Grubel-Lloyd index, to measure the degree of intra-industry trade. This index is one of the most popular and important indices for measuring intra-industry trade.

These works were followed by many important theoretical works as many researchers and economists were drawn to work in this direction. As a result, many important theories and models were developed for explaining intra-industry trade and related issues.

M. Spence (1976), in his study concluded that as compared to other types of markets it is monopolistic competition where maximum product differentiation happens implying that most intra-industry trade happens in monopolistic competition.

A. Dixit and J Stiglitz (1977), like work of Spence (1976) used Chamberlin's monopolistic competition model in their study. To explain intra-industry trade, they had used product diversity argument. The approach used by them is known as love for variety approach. They found that several reasons were responsible for demand and supply of variety of products.

#### **4.2.2 Studies related to HIIT and VIIT:**

Intra -industry trade has been divided into two types. They are Horizontal intra-industry trade (HIIT) and Vertical Intra-industry Trade (VIIT). Most of the studies after 1977 were focused on the development of theories and models of these two types of intra-industry trade.

M. An Andersen (2003) has provided the definitions of HIIT and VIIT.

According to him, HIIT is "characterized by products with similar quality levels with different attribute' and VIIT "is characterized by products with significantly different quality levels (high and low quality)". These definitions shows that as far as quality of product is concerned it is important in the context of VIIT only and not for HIIT. As said earlier, studies on specific type of IIT begin after 1977 with the works of Dixit and Stiglitz (1977). We will now review some of the important studies first on HIIT and after that on VIIT.

#### **A. HIIT:**

As far as theoretical works on HIIT is concerned the most important contributions were made by Dixit and Stiglitz (1977), Krugman (1979, 1980, 1981) Lancaster (1979), Helpman (1981) and Helpman and Krugman (1985).

Dixit and Stiglitz (1977) were responsible for modelling product differentiation in formal analysis of IIT. They introduced the 'love of variety' approach to HIIT.

Lancaster (1979) made another important contribution in the study of HIIT. In this work he introduced another approach known as 'favourite variety' approach to HIIT.

These two works were followed by many other works which were either based on the approach followed by Dixit and Stiglitz (1977) or that followed by Lancaster (1979). The theoretical works that followed the approach followed by Dixit and Stiglitz (1977) were Krugman (1979, 1980), Dixit and Norman (1980), Helpman and Krugman (1985) Similarly, the studies that followed the approach of Lancaster (1979) were Lancaster (1980) and Helpman (1981).

#### **B. VIIT**

In case of theoretical works on VIIT, the most important contributions were made by Falvey (1981), Caves (1981), Shaked and Sutton (1983), Falvey and Kierzkowski (1987)

Rodney E Falvey (1981), was among the first to develop a theoretical model of VIIT. He used partial equilibrium approach in his model. On the basis of his 2x2x2 model, he argues that it is possible to explain simultaneously the existence of VIIT and inter industry trade. According to him a capital abundant country produces high quality manufacture products and labour abundant country produces low quality manufacture products. concludes that there is a positive relationship between the share of VIIT and difference in factor endowment or per capita income between trade partners.

R. E Falvey and H. Kierzkowski (1987), developed a model for explaining VIIT. They argue that VIIT is caused by difference in quality of products which is

caused by difference in factor endowments in different countries. They also infer that dissimilarity in income distribution between two countries causes the share of VIIT to rise between them. According to the model market size and share of VIIT has positive correlation.

H. Flam and E Helpman (1987), while working on VIIT developed a model of North- South trade. In this model North produces and exports high quality manufactured products whereas South produces and exports low quality manufactured products. This study concludes that IIT (which is VIIT) between North and South arises due to overlapping of income distribution.

#### **4.2.3 India and Intra-industry trade:**

Now we will discuss studies related to India's intra-industry trade and related issues.

There are very few works related to IIT of India prior to 1990s. There may be several reasons for this. One of the reasons may be the field of study of IIT was very new during that time. Another reason may be the fact that IIT was considered to be an advanced industrialized country phenomenon and India being a poor developing nation there was no scope for studying IIT in the context of India's trade. Yet another reason may be the policy that India adopted prior to 1991 about its industries and external sector. India before the 1991's New Economic Policy was virtually a closed economy with heavy restrictions on trade. Whatever may be the reasons the result was that prior to 1990s there was not much interest among researchers to study the role of IIT in India's trade. After 1990s, with liberalization and opening of India's economy, relatively more researchers were attracted to the study of IIT in Indian context. In these studies, varied areas and issues related to India and its IIT were covered.

During the pre-reform period the main focus of the researchers was to determine the share of IIT in India's trade.

Pant and Barua (1986) in their empirical study on India's IIT, for the period 1960-1980, found that even though on the one hand India experienced an increasing trend in her foreign trade during the study period but on the other hand it concluded that the share of IIT in India's trade was very low.

Bhattacharyya (1994), In his empirical study of pre reform period, used various methods to measure India's IIT. Along with that the sensitivity of results were tested at various level of aggregation.

Kantawala (1997) made an analysis of India's share of IIT with SAARC countries for the period between 1981-1992. His conclusion was similar to that of Pant and Barua (1986).

Veeramani (1999), conducted his study on India's IIT for a capital goods industry for a period of three year. In this study he found that nature of India's IIT was predominantly vertical (VIIT) in nature.

Veeramani (2002), in his study observes the significant role played by liberalization process on expansion of share of IIT in India's trade. According to him expansion in IIT was due to faster growth of exports. As far as the direction of IIT is concerned he concludes that India's IIT was more with high income countries than with developing ones.

Veeramani (2003), analysed factors which were specific to industry that affected India's IIT.

Banerjee and Bhattacharyya (2004) in their study of India's IIT between 1971- 2000. They observed that IIT grew continuously during the study period. On the basis of cointegration analysis they conclude that economic development played a significant role in the expansion of India's IIT during the study period.

Chakraborty and Chakraborty (2005), in their study found that economic reforms had a vital role in expansion of India's IIT.

Burange and Chaddha (2008), while studying India's IIT with respect to various regions of the world for the period between 1987-88 to 2005-06, found that even though there is an expansion in IIT but there was an uneven distribution of share of India's IIT in these regions. According to them India's share of IIT increased with the countries of Asia and Europe more than any other regions. They also demonstrated that in the context of growth of IIT, India's IIT is growing faster with the countries of America, Middle East and Africa compared to other regions.

Eshleman and Kotcherlakota (2010), while working with the data for period 2002- 2008 concludes that there was high IIT between India and countries of European Union.

Das and Dubey (2014), conclude that India's active presence in Free Trade Area (FTA) is a key factor affecting IIT.

Singh (2014), in his study argued that institutional parameters play a significant role in affecting India's IIT in both short run and long run.

Verma (2015), while studying IIT in agricultural sector come to conclusion that difference in factor endowment have negative effect on India's IIT in agricultural sector.

Kelkar and Burange (2016), studied India's vertical and horizontal intra-industry trade during the post liberalization period. For this purpose, they used the HS-eight-digit level data for the period from 1990-91 to 2013-14. In this study they found that during the study period there was significant increase in India's IIT. It increased from 37 percent in 1990-91 to 78 percent in 2013-14. They attribute this growth in IIT to trade liberalization that occurred during the study period. They also found that India's intra-industry trade is dominated by VIIT rather than HIIT. And within VIIT, they found that VIITL products were dominant over VIITH products.

Aggarwal and Chakraborty (2017) made an examination of the patterns and determinants of India's IIT with her 25 major trading partners. In this study they employed panel data framework for the period of 2001–2015. According to this study India's IIT increased with the selected partner countries during the study period. They also found that the India's IIT was predominantly vertical in nature with the partner countries. As far as the factors affecting India's IIT with these countries are concerned they found that with high income partners 'trade facilitation among partners' had significant positive effect on IIT but with low-income countries this factor was not significant in affecting IIT.

#### **4.3 Data, Method, and Methodology:**

To study the share of IIT in India- China trade we have divided the analysis into two parts. First part we will discuss the extent of IIT between India and China for the period 1992-2018. In the second part we will disentangle the IIT into vertical IIT and horizontal IIT and examine the share of these two types on the intra industry trade of India and China. The vertical intra industry trade is further divided into low VIIT and high VIIT, so we also examined the share of these two types of VIIT in our study. For this we have used another set of data from 1996-2018, because unit price data (for both exports and imports) which is required for disentangling was available only from 1996 to 2018. . The source of the data for the first part was WITS and for the second part we have collected data from the Export Import Data Bank of Ministry of Commerce, India.

For our analysis we have considered the Grubel – Lloyd Index to find out the extent of India's intra -industry trade with China and to find out the type of intra - industry trade (either horizontal or vertical intra-industry trade) we have used the method of disentangling. Let us discuss the two methods in turn.

**Grubel – Lloyd Index:**

To calculate the aggregate IIT we will use Grubel- Lloyd index. This is one of the earliest and commonly used indices and was developed by H. G. Grubel & P. J. Lloyd, P. J in 1971. This index is written as

$$GL_i = 1 - \frac{|X_i - M_i|}{X_i + M_i}$$

and  $0 \leq GL_i \leq 1$

where  $GL_i$  = Grubel Lloyd index for product group  $i$ ;  $X_i$  = export of product group  $i$ ;  $M_i$  = import of product group  $i$ .

The value of  $GL_i$  lies between 0 and 1. If the value is 0, it means that there is no intra-industry trade and if the value is 1, it means that there are 100 percent intra-industry trade.

**Method of disentangling:**

Intra industry trade (IIT) can be divided into Horizontal IIT (HIIT) and Vertical IIT (VIIT), i.e.,

$$IIT = HIIT + VIIT \text{ ----- (2)}$$

To disentangle IIT into HIIT and VIIT, we use the following equation

$$1 - \alpha \leq \frac{UV_X}{UV_M} \leq 1 + \alpha \text{ ----- (3)}$$

In equation (3)  $UV_X$  denotes unit value and exports (X) and  $UV_M$  denotes the unit value of imports (M).  $UV_X$  and  $UV_M$  are calculated as the ratio of value of exports (X) or imports (M) and quantity (or units) of exports (X) or imports (M), given as

$$UV_X = \frac{Value_X}{Unit_X} \text{ and}$$

$$UV_M = \frac{Value_M}{Unit_M} \text{ ----- (4)}$$

As far as values are concerned, they are expressed in terms of US \$ on the other hand units (quantities) are concerned they are expressed in terms of kgs., tonne, etc. In the equation  $\alpha$  is known as the “dispersion factor” which is responsible for separating HIIT from VIIT. The most preferred value of  $\alpha$  is 0.15, even though there is no agreed value of  $\alpha$ . In our study also we have used the value of  $\alpha = 0.15$ . So, if the value of  $\alpha$  is taken as 0.15 then the ratio of  $UV_X$  and  $UV_M$  lies between 0.85 and 1.15. When this happens, we call the product in question as horizontally differentiated product and if value lies outside that range i.e., if value is less than 0.85 or more than 1.15 then the product in question is called vertically differentiated product. Again, the product whose value is less than 0.85, it is called low quality

vertically differentiated product (VIITL) and if it is above 1.15, it is called high quality vertically differentiated product (VIITH).

#### 4.4 Discussion:

##### 4.4.1 Overall Aggregated IIT:

###### a. Year to Year IIT:

Table shows India's share of India's intra industry trade in overall trade with China for the period of 1992 – 2018. Both in the beginning and in the end of the period i.e., in 1991 and 2018 the share of intra industry trade was same at 23 percent. The highest share was observed in 2000, when 41 percent of the trade was intra-industry trade. On the other hand, the share of intra – industry trade in the total trade was minimum in 1992 and in 2008 at 19 percent.

**Table 4.1: Aggregated Intra- Industry Trade**

YEAR	IIT	YEAR	IIT	YEAR	IIT
1992	0.19	2001	0.37	2010	0.31
1993	0.25	2002	0.35	2011	0.29
1994	0.30	2003	0.33	2012	0.27
1995	0.33	2004	0.33	2013	0.31
1996	0.38	2005	0.30	2014	0.29
1997	0.28	2006	0.33	2015	0.23
1998	0.31	2007	0.24	2016	0.20
1999	0.37	2008	0.19	2017	0.23
2000	0.41	2009	0.25	2018	0.23

**Author's calculation**

**Data source: WITS- COMTRADE**

The table shows that the share of intra- industry trade doubled from 0.19 percent to 38 percent between 1992 to 1996 and after falling in 1997 to 28 percent it again increased from 31 percent in 1998 to 41 percent in 2000. There was a declining trend in the share between 2001 to 2005. The share of intra-industry trade declined from 37 percent in 2001 to 30 percent in 2005. The share increased to 33 percent in 2006 only to decline for the next two years to 24 percent in 2007 and 19 percent in 2008. After that the share again increased for next two years to 25 percent in 2009 and 31 percent in 2010. During next two years of 2011 and 2012, there was again a decline in the share of intra industry trade with 29 percent in 2011 and 27 percent in 2012. The share increased to 31 percent for the year 2013. The share declined for the next three years from 29 percent in 2014 to 20 percent in 2016. The share remains same



for the next two periods of 2017 and 2018 at 23 percent.

**b. Five Year Average Intra-industry trade:**

We have also calculated the five-year average share of intra- industry trade for the given period of 1992-2018. For this we have divided the period into six sub periods. The share of intra-industry trade was 29 percent during 1992-1996 which was increased by 9 percent point to 35 percent during the period of 1997-2001. In the next two periods the share of intra-industry trade declined continuously, first to 33 percent during 2002-2006 and then further to 26 percent during 2007-2011. The share remained 26 percent during the next period of 2012-2016, but during 2017-2018 it declined by 23 percent.

**Table 4.2: Five Year Average Intra-Industry Trade**

Period	1992-96	1997-2001	2002-2006	2007-2011	2012-2016	2017-2018
IIT	0.29	0.35	0.33	0.26	0.26	0.23

Author’s calculation

Data source: WITS- COMTRADE

The share of intra-industry trade was highest during 1997-2001 and it was lowest during 2017-2018. The periods of 1997-2001 and 2002-2006 were comparatively better than other four periods in terms of the share of intra-industry trade. The situation was similar during the period of 2007-2011 and 2012-2016.

**c. Decadal Intra-industry trade:**

Again, we have calculated the decadal average share of intra -industry trade for the given period. Here we have divided the entire period into three sub periods of ten years each except for the period of 2012-2018 where we have only seven years. The last column shows the average intra-industry trade for the entire period (1992-2018).

**Table 4.3: Decadal Intra-Industry Trade**

Period	1992-2001	2002- 2011	2012-2018	1992-2018
IIT	0.32	0.29	0.25	0.29

Author’s calculation

Data source: WITS- COMTRADE

During the period of 1992-2001, the average share of intra-industry trade was 32 percent, and it was the highest as compared to other periods. There was a decline in intra-industry trade during 2002-2011 period to 29 percent which further declined in 2012-2018 to 0.25 percent.

So, the trend shows that there was a decline in the share of India’s intra-industry trade with China with every passing decade. The overall intra-industry trade during the entire period of 1992-2018 was 29 percent. So, on the basis of this analysis we can conclude

that India- China trade during the given period was inter-industry dominant rather than intra-industry.

#### 4.4.2 Sector wise intra industry trade:

In previous section we discussed share of aggregated intra industry trade in the trade between India and China. In this section we will discuss intra industry trade between India and China in different sectors of goods. Here we have considered sixteen different sectors as been suggested in WITS (World Integrated Trade Solutions).

**Table 4.4: Five-Year Average Sector -wise Intra- Industry Trade**

Sector/Period	1992-96	1997-2001	2002-2006	2007-2011	2012-2016	2017-2018
<b>Animal</b>	0.32	0.13	0.14	0.15	0.10	0.03
<b>Chemicals</b>	0.33	0.49	0.65	0.31	0.25	0.36
<b>Food Products</b>	0.36	0.45	0.47	0.45	0.67	0.64
<b>Footwear</b>	0.20	0.69	0.72	0.85	0.76	0.51
<b>Fuels</b>	0.00	0.00	0.15	0.47	0.80	0.76
<b>Hides and Skins</b>	0.71	0.79	0.82	0.83	0.74	0.47
<b>Mach and Elec</b>	0.12	0.12	0.08	0.06	0.06	0.06
<b>Metals</b>	0.60	0.35	0.63	0.59	0.61	0.46
<b>Minerals</b>	0.34	0.41	0.13	0.06	0.13	0.16
<b>Miscellaneous</b>	0.04	0.22	0.23	0.10	0.09	0.08
<b>Plastic or Rubber</b>	0.48	0.47	0.59	0.52	0.42	0.40
<b>Stone and Glass</b>	0.53	0.56	0.20	0.38	0.20	0.23
<b>Textiles and Clothing</b>	0.35	0.64	0.47	0.80	0.80	0.71
<b>Transportation</b>	0.35	0.50	0.45	0.09	0.19	0.09
<b>Vegetable</b>	0.50	0.69	0.73	0.73	0.59	0.60
<b>Wood</b>	0.08	0.40	0.10	0.02	0.08	0.25

**Author's calculation**

**Data Source: WITS- COMTRADE**

For the sake of analysis, we have made two different tables. In first table we have divided the entire period into six groups of five years each except for the last period where we have considered three periods. Similarly, in the second table we have divided the entire period into three groups of 10 years each. Here also the last group contains only eight years. In the second table, we have considered the average of the entire period of 1991-2018.

In this section we will discuss the share of individual sectors first and then we will make a comparison among them.

#### **Animal Sector:**

The average share of intra-industry trade in animal sector was 32 percent during the first period of 1992-1996 which declined to only 4 percent during the last period of 2017-2018. During the second period of 1997-2001, the average share was 11 percent which was 20 percent less than the first period of 1992-1996. There was a slight increase in the

average share during 2002-2006 when the share was 14 percent. The share remained same at 14 percent as in 2002-2006 during 2007-2011. Then there was an average one percent decline in the share in 2012-2016 to 13 percent which further declined to 4 percent during the last period of 2017-2018 as mentioned earlier. Except for the first period of 19991-1995, the average share of intra industry trade in the animal sector was less than 15 percent.

#### **Chemical Sector:**

In chemical sector, the average share during the first period of 1992-1996 was 30 percent and during the last period of 2017-2018 was 32 percent i.e., a two percent increase. between the two extreme periods. But the maximum average share was observed during the period of 2002-2006 at 64 percent and the minimum average share was observed during the period of 2012-2016 when the average share was 25 percent. Looking at the trend of average share of intra industry trade during these six periods shows that there was increasing trend in share during the first three periods from 30 percent in 1992-1996 to 45 percent in 19996-2000 which further increased to 64 percent(maximum) during the period of 2001-2005. There was a fall in average share to 38 percent during the next period of 2007-2011 which further declined to 25 percent(minimum) during the 2012-2016 period. After that there was an average seven percent rise in the average share of intra-industry trade during the last period of 2017-2018. The share of intra industry trade was not less than 25 percent for the entire period.

#### **Food products Sector:**

In food products sector, the average share during 1992-1996 was 45 percent and it was 59 percent in 2017-2018. So, between these extreme periods there has been an increase in the average share by 14 percent. The minimum average share was observed during the period of 1997-2001 at an average share of 33 percent and maximum share was observed during 2012-2016 at 68 percent. Trend of the average share during these six periods shows that there was a fluctuation. The average share in 1992-1996 was 45 percent which declined to 33 percent(minimum) in 1997-2001. During 2001-2005, there was an increase of 20 percent in the share when the share of average intra- industry trade went to 53 percent. After that during the period of 2007-2011 average share was 40 percent which was 13 percent less than the previous period. During the next period of 2012-2016 the share shoots up to 68 percent (maximum), which was 28 percent more than the share of previous period. Again, in the last period of 2017-2018 the share was 59 percent which was 9 percent less than the previous period. So, the trend of the average share of intra industry trade in the food products sector fluctuated in each of these six periods. Except for the one period when the average share was less than 40 percent, percent on an average for entire period for the food product sector.

**Footwear Sector:**

In footwear sector the average share during 1992-1996 was 11 percent and it was 56 percent during 2017-2018. The highest share of intra – industry trade in this sector was 89 percent during 2007-2011 and lowest was 11 percent in 1992-1996. There was 78 percent difference between these two periods. Trend in the share average intra- industry trade in these six periods shows that the share increased from 1992-1996 till 2006- 2010. After that it declined during 2012-2016 and 2017-2018. The share increased from 11 percent (minimum) in 1992-1996 to 62 percent in 1997-2001, i.e., a difference of 51 percent. The share further increased to 69 percent in the next period of 2002-2006 and again to 89 percent(maximum) in 2007-2011. After that in the next period of 2012-2016, there was a 12 percent decline in the average share than the previous period i.e., the share come down from 89 percent to 77 percent during this period. Decline in the share continued during the period as well, when the share become 56 percent which was 21 percent less than the previous period. In this sector during this entire period, except for the first period of 1992-1996, the average share of intra industry trade was more than 50 percent and at one period it was around 90 percent. This is the sector which shows the tendency towards more intra industry trade than inter industry trade.

**Fuel Sector:**

In the fuel sector there was no intra- industry trade for the first two periods of 1992-1996 and 1997-2001. During 2001-2005, the share of intra- industry trade in this sector was only 13 percent and during 2017-2018 it was as high as 82 percent. The lowest average share of intra industry trade in this sector was zero percent during the first two periods and highest share was 82 percent during the last period of 2017-2018. The table shows that the average share of intra- industry trade had monotonically increased in every succeeding period. Except for the first two periods, the average share was 13 percent during 2001-2005, which was increased to 30 percent during 2007-2011. After that the share increased to 80 percent during 2012-2016. This was the highest inter-period increase in the share. During the last period of 2017-2018, the share was 82 percent(maximum) which was two percent more than previous period. Whereas interindustry trade was significant during the first three periods in this sector, but during the last two periods intra-industry trade was more important than the inter- industry trade as 80 percent or more or the trade in this sector was intra-industry in nature rather than inter- industry.

**Hides and Skins Sector:**

In the Hides and Skins sector, average share of intra-industry trade

during the first period of 1992-1996 was 67 percent whereas same was 53 percent during the last period of 2017-2018. The maximum share was exhibited during 2007-2011 when the share was 87 percent and minimum was registered during the last period of 2017-2018 with 53 percent of intra industry trade in this sector. The table shows that that there was no definite trend in the share of intra- industry trade between the period of 1992-1996 to 2007-2011. The share increased from 67 percent during 1992-1996 to 82 percent during 1997-2001. But in the next period of 2002-2006 it declined to 77 percent. Again during 2006 -2010 the share of intra industry trade increased to 87 percent (maximum). After this period the share continuously declined during the next two periods of 2012-2016 and 2017-2018. Their respective shares were 76 percent and 53 percent (minimum). Even though there was no definite trend in the share of intra-industry trade in this sector but during all the six periods the share of intra industry trade was more than 50 percent in this sector. This means that intra-industry trade is more significant for this sector than inter industry trade.

#### **Machinery and Electrical Sector:**

In Machinery and Electrical sector, average share of intra industry trade during first period of 1992-1996 was 24 percent and during the last period of 2017-2018 was only 6 percent. There was a huge decline in the share from first period to last period. In this sector the share of intra-industry trade was maximum in the first period of 1992-1996 with 24 percent and minimum was during the last three periods of 2007-2011, 2012-2016, and 2017-2018 with an average share of 6 percent each. The table shows a declining trend of average share in this sector from the period of 1992-1996 up to the period of 2007-2011 and after that the share remained stagnant at 6 percent for the next two periods. As the highest share of intra-industry trade in this sector was only 24 percent and lowest was 6 percent, this sector is predominantly based on inter-industry trade with insignificant share of intra-industry trade.

#### **Metal Sector:**

In metals sector, average share of intra industry trade during 1992-1996 was 61 percent and during it was 43 percent during the last period of 2017-2018. There was a difference of 18 percent between these two extreme periods. The highest share of intra-industry trade in this sector was achieved during 2012-2016 at 68 percent and lowest during the period of 1996-2000 at 41 percent. There was no period-to-period definite trend in the share of intra-industry trade in this sector. From 61 percent in 1992-1996, the share declined to 41 percent during 1997-2001 after that in 2002-2006 there was a rise in share to again 61 percent. The share again declined from 61 percent to 58 percent in 2006-2011. There was again rise in the share to 68 percent (maximum) during 2012-2016. In the period of 2017-2018, there was a

huge decline in the share from previous period to 43 percent i.e., a fall in share by 25 percent. In this sector, both intra-industry trade and inter-industry trade are equally important.

#### **Minerals Sector:**

In minerals sector, during the first period of 1992-1996 the share of intra-industry trade was 33 percent and during the last period it was 15 percent which was more than half of the share of first period. The highest share of intra-industry trade in this sector was 38 percent and lowest share was only 5 percent. The share increased from 33 percent during 1991-1995 to 38 percent during 1997-2001. The share declined for the two consecutive periods of 2002-2006 and 2007-2011 at 21 percent and 5 percent respectively. Then in the next two consecutive periods it rose from 5 percent to 13 percent during 2012-2016 and to 15 percent during 2017-2018. So, for the entire period the share of intra industry trade is less than 40 percent which means that trade in this sector is predominantly inter industry in nature than intra-industry trade.

#### **Miscellaneous Sector:**

In miscellaneous sector, the share of intra-industry trade was only 3 percent during the first period of 1992-1996 and it was 10 percent during 2017-2018. The share was maximum during 2002-2006 at 29 percent and it was minimum during the first period of 1992-1996 at 3 percent. The trend shows that the share increased for first three periods from 3 percent (minimum) to 14 percent between first two periods of 1992-1996 to 1997-2001 and from 14 percent to 29 percent (maximum) between 1997-2001 to 2001-2005. After that the share declined to 12 percent during 2007-2011 and further to 7 percent during 2012-2016. There was a slight increase in the share during the last period of 2017-2018 at 10 percent. The table shows that the share of intra -industry trade was less than 15 percent for most of the periods except for the period of 2002-2006 when the share was 29 percent. This shows that the nature of trade in this sector is also predominantly inter industry rather than intra industry.

#### **Plastic and Rubber Sector:**

In Plastic or Rubber sector, share of intra-industry trade during the first period of 1992-1996 and the last period of 2017-2018 were respectively 43 percent and 34 percent. This means that there was a difference of 9 percent share of intra -industry trade between the two periods in this sector. Highest average share was registered during 2007-2011 at 59 percent and the share was lowest during the last period of 2017-2018 at 34 percent. This shows that there was a huge gap of 25 percent between the highest and lowest average share of interindustry trade. The table shows that there was an increasing tendency of intra-industry trade in this sector from the period of 1992-1996 to 2007-2011. Whereas the average share was

43 percent during 1992-1996, it increased to 46 percent during 1996-1998 which further increased to 48 percent during 2002-2006 period and continued to increase during 2007-2011 at 59 percent (maximum). After reaching the highest during 2007-2011, the share declined to 49 percent during 2012-2016, a difference of 10 percent than previous period. The average share further declined and reached 34 percent (minimum) during the last period of 2017-2018. This sector can be identified to have a significant share of intra-industry trade even though during most of the period the share was less than 50 percent.

#### **Stone and Glass Sector:**

In the stone and glass sector, 50 percent of trade was intra-industry in nature during the first period of 1992-1996 and it was only 22 percent during the last period of 2017-2018. There was a decline of 28 percent in the average share of intra-industry trade between these two periods in this sector. A comparison of different period shows that the share was maximum during the period of 1997-2001 at 70 percent and it was minimum during the period of 2012-2016 at 19 percent. This means that the gap between the highest and lowest share was as high as 51 percent. The trend shows that there was a fluctuation in the share of intra-industry trade in each period i.e., the share increased at one period and declined in the immediate next period. The share increased from 50 percent in 1991-1995 to 70 percent (maximum) during 1997-2001. In the next period of 2001-2006 there was a sharp decline in the share to 20 percent. After increasing to 40 percent in the next period of 2007-2011, it again declined to 19 percent (minimum) during 2012-2016. There was a slight increase in the share during the final period of 2017-2018 to 22 percent which was 3 percent higher than previous period. The share of intra-industry trade in this sector was 50 percent and more for the first two periods but it was 40 percent and less for the rest of the periods. It shows that even though the share of intra-industry trade was significant at the early periods but gradually its importance declined in this sector, and it became a sector predominantly based on inter-industry trade afterwards.

#### **Textiles and Clothing Sector:**

In Textiles and Clothing sector also, there was a huge gap between the average share of intra-industry trade during the first period of 1992-1996 and the last period of 2017-2018. Whereas the share was 24 percent during the first period, it was as high as 74 percent during the last period. This means that there was a difference of 50 percent between these two periods in the average share of intra-industry trade. The sector was more interindustry based during the first period, and it was intra-industry based during the last period. The highest share was 81 percent which was registered during 2012-2016 and lowest was 24 percent which

was registered during the first period of 1992-1996. Except for the two period of 1992-1996 and 2001-2005, the sector registered an average share of more than 70 percent in every other periods. From 24 percent during 1992-1996 share increased to 71 percent during 1997-2001, which was 47 percent more than previous period. Then there was a decline in the share during the next period to 43 percent. During 2007-2011 share again rise to 79 percent and there was an increase of other two percent in the share to 81 percent (maximum) during the next period of 2012-2016. And finally, during the last period of 2017-2018 the average share was 74 percent which was 7 percent short of the share of previous period. So, except for first period and third period , the share of intra-industry trade in this sector was more than 70 percent so the trade in this sector may be considered to be intra-industry based rather than inter-industry based.

### **Transportation Sector:**

In Transportation sector also the gap of share of intra-industry trade between the first period and last period was wide. The share declined from 42 percent during the first period to as low as 8 percent during the last period. The table shows that the highest share in this sector was registered during 2002-2006 period at 53 percent and lowest share of 8 percent was registered during two different periods of 2006 -2010 and 2017-2018. The trend in the share shows that share remained same at 42 percent during the first two periods of 1992-1996 and 1997-2001. In the next period of 2001-2005, there was an increase in the share to 53 percent (maximum) . There was a huge decline in the share during the period of 2007-2011 to 8 percent (maximum) i.e., a fall of 45 percent share compared to previous period. The share increased to 19 percent during the next period of 2012-2016. But again, it declined to 8 percent during the final period of 2017-2018. So, there was significant share of intra-industry trade in this sector during the first three periods but after that the sector became predominantly interindustry in nature.

### **Vegetable Sector:**

In Vegetable sector, during the first period of 1992-1996, the average share of intra-industry trade was significant 44 percent which rose to 64 percent during the last period of 2017-2018. So, between these two periods there was a 20 percent increase in the share of intra-industry trade. In this sector, the highest share was registered during the period of 2002-2006 at 75 percent and lowest was at 44 percent during the first period of 1992-1996. There was a rising trend in the share of intra-industry trade for the first three periods in this sector from 44 percent during 1992-1996 to 65 percent during 1997-2001 to 75 percent (maximum) during 2001-2005. But the share declined for the next two periods. The share was 72 percent during 2007-2011, which was 3 percent less than previous period which further



declined to 60 percent during 2012-2016, which was 12 percent less than previous period. There was a slight rise in share to percent during the last period of 2017-2018, which was 4 percent more than previous period. This sector on the basis of our discussion can be considered as a sector predominantly based on intra-industry trade where the average share of intra-industry trade was 60 percent and more in every period except for the first period when the share was 42 percent.

#### **Wood Sector:**

It was insignificant for every period except for the period of 1997-2001 when the share was 38 percent. The share during the first period of 1992-1996 was 6 percent whereas same for the last period of 2017-2018 was 19 percent. As far as highest share is concerned it was registered during the period of 1997-2001 as mentioned earlier at 38 percent . Similarly, the lowest share was registered during the period of 2007-2011 at meagre 2 percent. So, there was a difference of 36 percent between the maximum share and the minimum share. The trend in the share shows that the share increased from 6 percent to 38 percent (maximum) between 1992-1996 to 1997-2001. But there was a significant decline in the share to 14 percent during 2001-2005. The share further declined during the next period and reach its lowest at 2 percent (minimum). The period of 2012-2016 showed a little improvement in the share from previous period to 7 percent which further improved to 19 percent during the last period of 2017-2018. Even though there was improvement in the share of intra-industry trade during the last three periods, but value was not significant. Except for the period of 1997-2001 when the share was 38 percent, in every other periods the share was less than 20 percent which includes the three periods where the share was less than 10 percent. So, this sector can be considered to be predominantly interindustry based sector where most of the trade was inter-industry in nature rather than intra-industry.

#### **4.4.3 Comparing Shares of HIIT and VIIT in terms of sectors for the period 1996-2018:**

In this section we discuss the distribution of HIIT and VIIT among the different sectors in percentage terms. The table above shows the percentage of sectors that exhibited either HIIT or VIIT. It shows that during the period of 1996 -2018, India China intra-industry trade was dominated by VIIT, as the percentage of sectors exhibiting VIIT was higher than that exhibiting HIIT during the period. The table shows that the percentage of sectors exhibiting VIIT range from 80 percent to 100 percent whereas the percentage of sectors exhibiting HIIT range from 0 percent to 20 percent during the period. So as compared to sectors exhibiting VIIT, the sectors exhibiting HIIT were relatively insignificant.

**Table 4.5: Shares of HIIT and VIIT (with  $\alpha = .15$ )**

Year	HIIT	VIIT	Year	HIIT	VIIT
1996	13.33	86.67	2008	12.50	87.50
1997	20.00	80.00	2009	12.50	87.50
1998	20.00	80.00	2010	12.50	87.50
1999	18.75	81.25	2011	0.00	100
2000	0.00	100.00	2012	6.25	93.75
2001	6.67	93.33	2013	12.50	87.50
2002	6.25	93.75	2014	6.25	93.75
2003	0.00	100.00	2015	12.50	87.50
2004	6.25	93.75	2016	12.50	87.50
2005	6.25	93.75	2017	0.00	100.00
2006	6.25	93.75	2018	18.75	81.25
2007	12.50	87.50			

**Author's calculation:**

**Data source: Export Import Data Bank of Ministry of Commerce, India**

The table also shows that the share of sectors exhibiting HIIT and that exhibiting VIIT remained same for most of the years. In 1997 and 1998, share of sectors exhibiting VIIT was 80 percent and that exhibiting HIIT was 20 percent. Similarly, from 2004-2006, the share of sectors with HIIT was 6.25 percent and that with VIIT was 93.75 percent. Again from 2007 – 2010, shares of sectors with HIIT were 12.5 percent and that with VIIT was 87.5 percent. Same thing happened during 2015-2016 as well when share of sectors with HIIT was 12.5 percent and that with VIIT was 87.5 percent. There were four occasions during the period when all the sectors exhibited VIIT. These were: 2000, 2003, 2011, and 2017

We will now discuss the trend in these two types of IIT during the period. Since total number of sectors are fixed at sixteen, so the number of sectors that exhibit VIIT cannot exhibit HIIT and vice versa so rise in the percentage of sectors exhibiting VIIT (HIIT) also means declining in the percentages of sectors exhibiting HIIT (VIIT). The maximum value either of VIIT or HIIT can take is 100 percent and minimum is 0 percent. So, if in any year VIIT(HIIT) is exhibited by 100 percent of sectors then this also means HIIT(VIIT) is exhibited by 0 percent of sectors. This means that if we discuss the trend of percentage of sectors exhibiting HIIT(VIIT) we automatically know the trend in percentage of sectors exhibiting VIIT(HIIT). So, with this logic in mind we discuss trend of percentage of sectors exhibiting VIIT for the given period of 1996-2018.

The percentage of sectors exhibiting VIIT in 1996 was 86.67 percent which declined to 80 percent in 1997 and this percentage continued in 1998 as well. In 1999, there was a slight increase in the percentage of sectors to 81.25. In 2000, 100 percent of the

sectors exhibited VIIT. There was decline in the percentage of sectors exhibiting VIIT to 93.33 percent in 2001 but after that it increased continuously for next two years to 93.75 percent and further to 100 percent again in 2003. In 2004 it declined to 93,75 percent and it continued for next two years of 2005 and 2006. In other words, the percentage of sectors exhibiting VIIT remain same at 93.75 percent continuously for three years. After that there was decline in the percentage to 87.5. This percentage continued for another three years from 2008 to 2010.

Then in 2011, again 100 percent of the sectors exhibited VIIT. After that there was a continuous decline of percentage of sectors exhibiting VIIT to 93.75 percent and further to 87.5 percent. The percentage of sectors again reached 93.75 percent in 2014 only to decline again in 2015 to 87.5 percent. There was no change in percent of sectors exhibiting VIIT in 2016. In 2017, again for the last time in the period 100 percent of the sectors exhibited VIIT. After that in final year of the period there was a decline in the percentage of sectors exhibiting VIIT to 81.25 percent.

During this period, the percentage of sectors exhibiting VIIT showed both declining trend as well as rising trend and in majority of years it remained constant. But the percentage of sectors exhibiting VIIT during this period never fall below 80 percent. In every year of the period the percentage was either 80 percent or more. Opposite is true for percentage of sectors exhibiting HIIT. During this period the percentage of sectors exhibiting HIIT was either 20 percent or below that. It never exceeded 20 percent mark. This clearly indicates that VIIT was more dominant in most of the sector in most of the years than HIIT in the context of India China intra-industry trade.

So, based on this discussion it is clear that India's IIT with China during the period of 1996-2018 was predominantly VIIT rather than HIIT.

VIIT can also be divided into low VIIT and high VIIT. In the next section we will discuss the prevalence of these two types of VIIT and find out which type is more dominant.

#### **4.4.4 Comparing the shares of VIITH AND VIITL (1996-2018):**

In this final section we have further discussed the components of VIIT viz. high VIIT and low VIIT to find out which type of VIIT was more dominant in India China intra -industry trade. In the table the percentages are the percentage of sectors that exhibited either high VIIT or low VIIT. The table shows that from 1996 to 2005, among the sectors that exhibited VIIT, majority were exhibiting low VIIT. Similarly, the situation reversed after 2006 when majority of sectors exhibiting VIIT were exhibiting high VIIT. Let us consider first the trend during 1996-2005 and then discuss the trend during 2006 -2018.

**Table 4.6: Share of VIITH and VIITL in Total VIIT**

<b>Year</b>	<b>VIITH</b>	<b>VIITL</b>	<b>Year</b>	<b>VIITH</b>	<b>VIITL</b>
<b>1996</b>	30.77	69.23	<b>2008</b>	57.14	42.86
<b>1997</b>	41.67	58.33	<b>2009</b>	64.29	35.71
<b>1998</b>	33.33	66.67	<b>2010</b>	64.29	35.71
<b>1999</b>	38.46	61.54	<b>2011</b>	62.50	37.50
<b>2000</b>	37.50	62.50	<b>2012</b>	60.00	40.00
<b>2001</b>	42.86	57.14	<b>2013</b>	71.43	28.57
<b>2002</b>	33.33	66.67	<b>2014</b>	66.67	33.33
<b>2003</b>	43.75	56.25	<b>2015</b>	64.29	35.71
<b>2004</b>	40.00	60.00	<b>2016</b>	64.29	35.71
<b>2005</b>	46.67	53.33	<b>2017</b>	62.50	37.50
<b>2006</b>	60.00	40.00	<b>2018</b>	61.54	38.46
<b>2007</b>	64.29	35.71			

**Author's calculation**

**Data source: Export Import Data Bank of Ministry of Commerce, India**

From 1996 to 2005 the percentage of sectors exhibiting either high VIIT or low VIIT continuously fluctuated. In 1996 the percentage of sectors with high VIIT was 30.77 and that of sectors with low VIIT was 69.23 percent. In 1997, there was an improvement in the percentage of sectors with high VIIT to 41.67 percent leading to decline in the percentage of sectors exhibiting low VIIT to 58.33 percent. In the next year of 1998 the percentage of sectors exhibiting high VIIT again declined to 33.33 percent leading to increase in the percentage of sectors exhibiting low VIIT to 66.67 percent. As the fluctuation continued, again in 1999, the percentage of sectors exhibiting high VIIT increased to 38.46 percent and those exhibiting low VIIT declined to 61.54 percent. The sectors exhibiting high VIIT again decline to 37.5 percent in 2000 leading to increase in the percentage of sectors exhibiting low VIIT to 62.5 percent. Again, after declining in 2000, the percentage of sectors exhibiting high VIIT again increased to 42.86 percent and those exhibiting low VIIT declined to 57.14 percent. As fluctuation continues, no change in the trend observed in 2002. In this year also sectors exhibiting high VIIT declined to 33.33 percent and that of low VIIT increased to 66.67 percent. In 2003, the percentage of sectors with high VIIT increased to 43.75 percent and that of low VIIT declined to 56.25 percent. In 2004 the percentage of sectors with high VIIT again declined to 40 percent and percentage of sectors with low VIIT increased to 60 percent. After declining in 2004 percentage of sectors with high VIIT again increased to 46.67 percent causing the

percentage of sectors with low VIIT to decline.

So, during the period between 1996 to 2005 the percentage of sectors exhibiting low VIIT were dominant relative to those exhibiting high VIIT. 69.23 percent in 1996 was the highest and 53.33 percent in 2005 was the lowest percentage of sectors exhibiting low VIIT during the period between 1996 -2005. Similarly, 46.67 percent was the highest and 30.77 percent was the lowest percentage of sectors exhibiting high VIIT during the same period. So, it is clear from this that during the period between 1996-2005 low VIIT was dominant as it was exhibited by majority of the sectors.

Now let us consider the trend in percentage of sectors exhibiting high VIIT and low VIIT from 2006-2018. In 2006, there was increase in the percentage of sectors exhibiting high VIIT to 60 percent and decline in the percentage of sectors exhibiting low VIIT to 40 percent. So, in 2006, percentage of sectors with high VIIT dominated the sectors with low VIIT and this trend continued throughout. In 2007 there was further increase in the percentage of sectors exhibiting high VIIT to 64.29 leading to further decline in percentage of low VIIT exhibiting sectors to 35.71 percent. But in 2008, there was declined in the percentage of sectors with high VIIT resulting in improvement in the percentage of sectors exhibiting low VIIT to 42.86 percent. After declining in 2008, the percentage of sectors exhibiting high VIIT again increased to 64.29 percent and continued with same percentage in 2010 as well. This results in decline in the percentage of sectors exhibiting low VIIT to 35.71 percent and it also continued in next year of 2010. So, there was no change in the share in 2010.

There was continuous decline in the percentage of sectors exhibiting high VIIT for next two years to 62.5 percent in 2011 and further to 60 percent in 2012 leading to continuous improvement in the percentage of sectors exhibiting low VIIT to 37.5 percent in 2011 and further to 40 percent in 2012. After declining in 2011 and 2012, the percentage of sectors exhibiting high VIIT again increased significantly to 71.43 percent resulting in significant decline in the percentage of sectors exhibiting low VIIT to 28.57 percent. In 2014, the percentage of sectors exhibiting high VIIT declined to 66.67 percent and further to 64.29 percent in 2015 and continued with same percentage of 64.29 percent in 2016 and after that it continuously declined for next two years to 62.5 percent in 2017 and further to 61.54 percent in 2018.

On the contrary, the percentage of sectors exhibiting low VIIT increased to 33.33 percent in 2014 and further to 35.71 percent in 2015 and remained at that level in 2016 the increased continuously for next two years to 37.5 percent in 2017 and further to 38.46 percent in 2018. So, during this period between 2006-2018, high VIIT was exhibited by

majority of the sectors among the sectors exhibiting VIIT in each and every year. The highest percentage of sectors exhibiting high VIIT was 71.43 percent and lowest percentage was 57.14 percent during this period. On the other hand , highest percentage of sectors exhibiting low VIIT was 42.86 percent and lowest percentage was 28.57 percent during this period.

So, from this discussion we come to the conclusion that both high and low VIIT were dominant but at different periods. Whereas high VIIT was dominant during the early period of 1996-2005 and low VIIT was dominant during the later period of 2006-2018. The maximum percent of sectors exhibiting high VIIT throughout the period from 1996-2018 was 71.43 and minimum was 30.77. Similarly, maximum percentage of sectors exhibiting low VIIT throughout was 69.23 percent and minimum percentage was 28.57 percent. Both maximum percentage and minimum percentage of sectors exhibiting high VIIT was higher than those exhibiting low VIIT. Not only that but in terms of number of years also high VIIT was dominant. The number of years when majority of the sectors exhibited high VIIT was 13 out of 23 and in the rest 10 years majority of the sectors exhibited low VIIT. So, we can conclude that even though both high and low VIIT dominated different phases of the period, but high VIIT was relatively more dominant than low VIIT in terms of duration.

**Five Year Average percentage of sectors with VIITH and VIITL:**

We can also discuss them by dividing the entire period into five sub periods. In the table four sub periods had five years each and fifth one has three years. The table shows that low VIIT was dominant in two continuous period of 1997-2001 and 2001-2005. During these two period the average percentage of sectors exhibiting low VIIT were 63.65 percent and 58.68 percent respectively. Similarly, during these two periods the percentage of sectors exhibiting high VIIT were 36.35 percent and 41.32 percent respectively. So, during these two sub periods the percentage of sectors exhibiting low VIIT had declined from average 63.65 percent to 58.68 percent and the percentage of sectors exhibiting high VIIT increased from average 36.35 percent in 1997-2001 to average 41.32 percent.

**Table 4.7: Five Year Average Percentage of Sectors with VIITH and VIITL**

TYPE/YEAR	1996 -2000	2001-2005	2006- 2010	2011 - 2015	2017-2018
VIITH	36.35	41.32	62.00	64.98	62.77
VIITL	63.65	58.68	38.00	35.02	37.23

**Author’s calculation**

**Data source: Export Import Data Bank of Ministry of Commerce, India**

Even though the percentage of sectors exhibiting low VIIT declined but its share was more than 50 percent, so it was dominant against the other. The three periods from 2007-2011 to 2017-2018 showed that the percentage of sectors exhibiting high VIIT dominated

these three sub periods. In 2007-2011 its average percentage increased to 62 percent and further 64.98 percent in 2011-2015 but declined to 62.77 percent in 2017-2018. Similarly, the percentage of sectors exhibiting low VIIT declined significantly to average 38 percent in 2007-2011 and further to average 35.02 percent and it increased to 37.23 in the final period of 2017-2018. So, the high VIIT was more dominant than low VIIT as it dominated more periods than low VIIT. Whereas low VIIT dominates first two periods, but high VIIT dominates last three periods even though the last period had only three years.

### **Conclusion:**

In this chapter we discussed various aspects of intra-industry trade between India and China for the given period of 1992-2018. First thing that we found in this discussion was that the share of Intra- industry trade was less than that of inter industry trade throughout the period. In other words, the share of intra-industry trade was less than 50 percent of the total trade during the given period. It was between 20 percent to 35 percent in most of the years during this period. This means that the intra industry trade between India and China was not very low rather it was moderate. Next, we discussed the intra- industry trade in each sector for the sixteen sectors. Here, we considered the average share for five-year period. The analysis showed that there was variation in the share of intra-industry trade in these sectors. Some sectors had high average share, and some had low average share. The sectors of Hides and Skins and Vegetables had more than 50 percent average share throughout. On the other hand, the shares in the sectors of Animal, Minerals, and Machinery and Electricals were less than 50 percent throughout. In sectors of Chemicals, Metals, and Stone and Glass, the share varied between less than 50 percent to more than 50 percent from period to period. In other words, the share of intra-industry trade not only varied among these sectors, but variation was also observed in same sectors at different periods of time. After that we

Another thing that we analysed in this chapter was the share of HIIT and VIIT. Here we found that the percentage of sectors exhibiting VIIT was much higher than the sectors exhibiting HIIT throughout the period. This means that intra- industry trade between India and China was VIIT dominated rather than HIIT. After that, we analysed the shares of VIITH and VIITL, which are the two types of VIIT. Here, we found that VIITL dominated the sectors exhibiting VIIT from 1996-2005 and from 2006-2018 VIITH was dominant. As the sixteen sectors that we had considered for this analysis exhibited both HIIT and VIIT (VIITH or VIITL) at different years of the given period, for our final analysis we discussed what type of IIT was exhibited by each of these sectors. For this analysis we had divided the entire period between 1997-2001 into four sub periods of five year each and one period of three years. Here we found that among the sixteen sectors, there was not a single sector which exhibited HIIT for entire period of five years in any of the periods. On the other hand, many sectors

exhibited VIIT for entire years of the period. This includes the exhibition of both VIITH and VIITL in all the five years of particular period. Along with this we also found that some sectors exhibited both VIIT and HIIT in different years of a particular sub period. Not only that but some sectors also exhibited VIITH and VIITL in different years of a particular period.

In conclusion, we can say that India had moderate intra-industry trade with China and the nature of IIT between these two countries was dominated by VIIT rather than HIIT. This result confirms the conclusions of studies by Veeramani (1999) where VIIT was found to be the dominant type of India's IIT. As far as the types of VIIT is concerned, even though in the former years of the period VIITL was dominant but in the latter years, VIITH was dominant.

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