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CHAPTER 5

NATURE AND PATTERN OF INDIA’S INTRA-INDUSTRY TRADE
CHAPTER 5

NATURE AND PATTERN OF INDIA’S INTRA-INDUSTRY TRADE

Intra-Industry Trade (IIT) is now a very well accepted phenomenon of international trade and it has been proved that most of the countries of the world are involved in such type of trade. However the extent and pattern of intra-industry trade of a country depends on several factors like – the level of economic development, per-capita income, similarity in culture, technology used and so on. The importance of intra industry trade has already been discussed in previous chapters of the thesis. The significance of intra-industry trade has also been discussed by Brulhart (2008) where he showed that with the passage of time the degree of intra-industry trade of world has increased significantly.

The present chapter deals with the nature and pattern of India’s intra-industry trade, in general. The time period under consideration is from the year 1992 to 2008, the time period is chosen so because it will reflect the effect of liberalization process on the degree of India’s intra-industry trade. Here all the studies are based on at two different level of aggregation, like at the aggregated level (i.e., ITC-HS 4-digit level) and at disaggregated level (i.e., 6-digit level) and the reason for studying the degree of IIT at these two level of aggregations is to check that whether it is a pure phenomenon or it is mere the case of categorical aggregation (Greenaway and Milner 1983).

The chapter is divided into three sections – the first section deals with the hypotheses proposed for the study, data analysis regarding the proposed hypotheses have been discussed in the second section and the last section deals with the result of the study.

5.1 HYPOTHESES PROPOSED:

Based on the discussion regarding the concepts of intra-industry trade so far, different hypotheses, to find out the nature and pattern of India’s industry trade with the world, have been proposed here:
Case One:

\[ H_0 = \text{The degree of intra-industry trade does not change with the passage of time (i.e., with economic development).} \]

\[ H_1 = \text{The degree of intra-industry trade increases with the passage of time (i.e., with economic development).} \]

Case Two:

\[ H_0 = \text{The degree of intra-industry trade does not change with the increase in the level of disaggregation.} \]

\[ H_1 = \text{The degree of intra-industry trade decreases with the increase in the level of disaggregation.} \]

Case Three:

\[ H_0 = \text{The contribution of intra-industry trade in total trade does not change with time (i.e., with economic development).} \]

\[ H_1 = \text{The contribution of intra-industry trade in total trade increases with time (i.e., with economic development).} \]

Case Four:

\[ H_0 = \text{The contribution of export in intra-industry trade, is same as an import.} \]

\[ H_1 = \text{The contribution of export, and import in intra-industry trade, is not same} \]
Case Five:

$H_0 = \text{In case of India, both vertical intra-industry trade (VIIT) and horizontal intra-industry trade (HIIT) will have same contribution.}$

$H_1 = \text{In case of India, both vertical intra-industry trade (VIIT) and horizontal intra-industry trade (HIIT) will not have same contribution.}$

Case Six:

$H_0 = \text{The liberalization process (since 1991) does not affect the degree of intra-industry trade.}$

$H_1 = \text{The liberalization process (since 1991) helped in increasing the degree of intra-industry trade.}$

After analyzing these cases, we shall be able to understand and comment on the nature and pattern of India’s intra-industry trade with the world.

5.2 DATA ANALYSIS

The present section deals with testing all the hypotheses proposed in the previous section, but before that it shows the way the data have been collected and compiled.

Regarding exports and imports of India with world, the data have been collected from WITS (World Integrated Trade Solution) website, which normally collect the data from UNCOMTRADE. The currency used to represent trade data is US Dollar and its unit is in million of US Dollar. The classification used for collecting trade data is HS-1988/92, i.e., Harmonised System of Classification – the revision of 1988/92. Since the study is based on both the aggregation level – 4-digit and 6-digit, therefore the trade data is collected for both the levels. Both the exports and imports data were arranged in ascending order of their product code, since product code is a unique number and different for a different product, therefore for all the calculations, product code has been used. After then it found
out that what are all those the products in which intra-industry trade is taking place, that means, it was found out that which are the product codes which is both exported and imported. All those products, which show intra-industry trade, were arranged separately.

Now depending on the requirement like – India’s IIT with the world or product group-wise IIT or country group-wise IIT, the degree of intra-industry trade was calculated. To calculate the degree of intra-industry trade, the most popular index, Grubel Llyod Index (popularly called as GL-index) has been used here. Grubel and Lloyd proposed two formula for calculating the degree of intra-industry trade these were “unadjusted measure” and “adjusted measure”, as shown in Chapter 4 by equation 4.2.1 and equation 4.2.2 respectively. Although adjusted measure is better than that of unadjusted one because it is not downward-biased in case of unbalanced trade, but here both the measures have been discussed just to get a better picture of the index, however the value of adjusted one is supposed to be more reliable. Apart from this, for testing each hypothesis some more calculations were required and this will be discussed individually while testing the hypothesis. Let’s begin with the testing of hypotheses, one-by-one:

5.2.a) Case One: Changes in degree of intra-industry trade with time

\[ H_0 = \text{The degree of intra-industry trade does not change with the passage of time (i.e., with economic development).} \]

\[ H_1 = \text{The degree of intra-industry trade increases with the passage of time (i.e., with economic development).} \]

Here the objective is to find out the pattern of degree of India’s intra-industry trade and the alternate hypothesis is mainly based on the Brulhart (2008) work in which he showed that the degree of the intra-industry trade of the world is increasing and the reason behind this trend was an increase in economic conditions and integration of world economy. This growth in economic development leads to increase in purchasing power and hence
Figure 5.1: 4-digit GL-IIT of India with the World between 1992 – 2008

Source: Data compiled from WITS website

Figure 5.2: 6-digit GL-IIT of India with the World between 1992 – 2008

Source: same as figure 5.1

demand which ultimately leads to increase in intra-industry trade. Indian economy has also grown significantly after economic reform since 1991, not only the economy has become open but also the purchasing power of people have increased significantly,
therefore it can be assumed that the degree of intra-industry trade of India should also be increased with the passage of time.

Therefore, the alternate hypothesis has been proposed that the degree of intra-industry trade of India with the world is increasing with the passage of time (i.e., with the level of economic development). The time period, for the study, considered over here is from the year 1992 to 2008; and the study has been done for both the level of aggregation 4-digit and 6-digit. The trends of intra-industry trade separately for 4-digit and 6-digit level have been shown in Figure 5.1 and Figure 5.2 respectively:

Figure 5.1 shows the trend of both unadjusted and adjusted GL-IIT at 4-digit aggregation level. The figure shows that the trend is not smooth. In the year 1992, the degree of intra-industry trade was 35% and 36% for unadjusted and adjusted one respectively and initially it decreased but then after it increased continuously up to 2000 where the value was maximum 39% and 47% respectively. Thereafter in the year 2001 it decreased and its trend was irregular till 2005 and from 2006 it started increasing continuously, although this increasing trend is more visible for the adjusted one and its value, in the year 2008 was, 42%.

Almost similar kind of trend is seen in the case of 6-digit GL-IIT also as shown in the Figure 5.2, but it is not as irregular as the case of 4-digit GL-IIT. Its value in the year 1992 was 17.3% and 19.0% respectively for unadjusted and adjusted IIT. Its peak was there in the year 2000 and then it took a dip in the year 2001 and then after it is increasing continuously and its value becomes 25.2% and 34.0% respectively for unadjusted and adjusted one.

In both the cases, we have seen that although its trend was not smooth, but has been increasing since 2006. Specially there is dip in the degree of IIT in the year 2001 and this could be related to the global recession during that period and in fact in 2001 India’s export was less than that of 2000. Therefore, we can reject the null hypothesis and accept the alternate hypothesis that degree of India’s intra-industry trade has increased significantly with the passage of time, both for 6-digit and 4-digit level of aggregation.
5.2. b) Case Two: Changes in degree of IIT with the level of aggregation

\[ H_0 = \text{The degree of intra-industry trade does not change with the increase in the level of disaggregation.} \]

\[ H_1 = \text{The degree of intra-industry trade decreases with the increase in the level of disaggregation.} \]

In this case the effect of aggregation level on the degree of intra-industry trade will be analyzed. The alternate hypothesis has been proposed from the theoretical concepts of intra-industry trade, as discussed in earlier chapters. Theoretically it is assumed that as the level of disaggregation will increase the degree of intra-industry trade should decrease because at higher disaggregation level even if different products are exported and imported the number of products in a category decreases, moreover, as we move to more aggregated level the two different products will come together and the result will be that it will show there is intra-industry trade while practically it may be possible that there is no such trade exists at disaggregated level.

Although it is assumed that as we move towards higher aggregation level the degree of intra-industry trade should increase but while analyzing the trend we should be careful and it should be checked that whether the intra-industry trade is only due to aggregation level or it is happening really. The same problem has been discussed by Greenaway and Milner (1983) which they called as the problem of “categorical aggregation”. They suggested the way to check the problem also. According to them, the degree of intra-industry trade at different level of aggregation should be calculated and if there is a steep increase in the level from lower to higher aggregation level then this is the case of categorical aggregation and this is not the case of intra-industry trade.

Therefore, to check the case of India that whether intra-industry trade exists really or it is a consequence of categorical aggregation, the alternate hypothesis has been proposed. If intra industry trade really occurs then the difference between the degrees of intra industry trade at two different level of aggregation will not be much. Here it has been checked separately for unadjusted and adjusted GL-IIT at both 4-digit and 6-digit level of aggregation. Figures 5.3 and 5.4 discusses the issue:
Figure 5.3: 4-digit and 6-digit Unadjusted GL-IIT from 1992-2008

Source: same as Figure 5.1

Figure 5.4: 4-digit and 6-digit Adjusted GL-IIT from 1992-2008

Source: same as Figure 5.1

Figure 5.3 and 5.4 shows that the movement of both 4-digit and 6-digit GL-IIT for the unadjusted and adjusted case respectively. In both the cases it can be seen that the difference between the degrees of GL-IIT at two different aggregation level decreases with the passage of time. In case of unadjusted GL-IIT, as shown in Figure 5.3, the difference between the degree of IIT for the two 4-digit and 6-digit level of aggregation
was about 17% in the year 1992 but over the period of time this difference decreased to only about 6% in the year 2008. In the year 2008, 4-digit and 6-digit unadjusted IIT was about 31% and 25.2% respectively. This decreased in the difference of IIT at two different level of aggregation clearly shows that intra-industry trade in India is a real phenomenon and in-fact it has increased over the period of time. Since the degree of IIT is higher at 4-digit than that of 6-digit level of aggregation, therefore the hypothesis can be accepted for “unadjusted” case.

Almost the same kind of trend is there in case of adjusted IIT as shown in Figure 5.4, therefore here null hypothesis does not hold and the alternate hypothesis that degree of intra-industry trade decreases with the increase in the level of disaggregation can be accepted.

5.2. c) Case Three: Contribution of IIT in total trade

H₀ = The contribution of intra-industry trade in total trade does not change with time (i.e., with economic development).

H₁ = The contribution of intra-industry trade in total trade increases with time (i.e., with economic development).

In this case, the pattern of contribution of intra-industry trade in India’s total trade has been analyzed. Here the alternate hypothesis is based on the work of Havrylyshyn and Civano (1983) in which they said that as the economy will grow the proportion of intra-industry trade in total trade should increase. This hypothesis should not be confused with the first one in which it was proposed that the degree of intra-industry trade should increase with the passage of time, but here it is proposed that the contribution of intra-industry trade in total trade should increase with the passage of time.

Here both 4-digit and 6-digit level of aggregation have been considered for all those product groups where intra-industry trade takes place and then its share in the total trade is calculated. Figure 5.5 shows the contribution of 4-digit and 6-digit intra-industry trade in total trade and looking at the figure it is clear that the contribution of both the level has
increased with the passage of time, while 4-digit contribution has grown from 76.3% to about 96.9% from 1992 to 2008 respectively, but for the same time period, 6-digit contribution has increased from 67.1% to 96% respectively.

Another interesting finding came while analyzing the figure 5.5 is that with the passage of time the contribution of both the levels has become almost equal. This finding again signifies that the intra-industry trade has become an integral part of India’s total trade and it is not mere categorical aggregation.

**Figure 5.5: Percentage Contribution of 4-digit and 6-digit Intra-Industry Trade in Total Trade**

![Graph](image)

Source: Same as Figure 5.1

Therefore in this case, the null hypothesis does not hold and the alternate hypothesis that the contribution of intra-industry trade in the total trade of India has increased significantly with the passage of time can be accepted.

**5.2. d) Case Four: Contribution of export/import in IIT.**

**H₀** = *The contribution of export in intra-industry trade, is same as an import.*

**H₁** = *The contribution of export, and import in intra-industry trade, is not same*
Figure 5.6: %age Contribution of 4-digit Export and Import in 4-digit Total IIT

Source: Same as Figure 5.1

Figure 5.7: %age Contribution of 6-digit Export and Import in 6-digit Total IIT

Source: Same as Figure 5.1

Now the next case is to be analyzed is that whether the contribution of export and import in intra-industry trade is same or any one of them dominates over another? This case is
based on the work of Veeramani (2001) and is proposed here mainly to test the case for India that which one – export or import – is more important as far as intra-industry trade is concerned. The hypothesis has been tested for both the level of aggregation – 4-digit as well as 6-digit.

To analyze the case, total export and total import of only those groups of products have been considered where intra industry trade takes place. Then to get percentage contribution of 4-digit (or 6-digit) total intra-industry trade in total trade the former has been divided by the latter and multiplied by 100. Now to get contribution of 4-digit (or 6-digit) export, where intra-industry trade is taking place, from total 4-digit (or 6-digit) intra-industry trade again the former is divided by later and then multiplied by 100. The same calculation is done for calculating the percentage contribution of import in total intra-industry trade at a given level of aggregation. The next two figures – Figure 5.6 and 5.7 show the conditions for 4-digit and 6-digit respectively.

Figure 5.6 shows that the pattern of contribution of export and import in India’s total intra-industry trade at 4-digit aggregation level. It can be seen from the figure that in 1992 the contribution of export in total intra-industry trade was lesser than that of import but slowly it surpassed the import in the year 1993, but later on again its contribution decreased. After 2001, the contribution of import in IIT exceeded than that of export and this trend continued up to 2008. Most of the time, 11 out of 17 years, the contribution of import was more in 4-digit total intra-industry trade than that of export.

Similarly Figure 5.7 shows the percentage contribution of 6-digit export and import in 6-digit total intra-industry trade, and we can see that almost similar kind of the pattern is observed. Here the contribution of export is more than that of import only for 5 years (1993, 1994, 1998, 1999 and 2000) out of 17 years of the study, otherwise the contribution of import is higher.

Therefore, after analyzing both the figures – 5.6 and 5.7 – the null hypothesis stands rejected and the alternate hypothesis that contribution of export and import is not the same in India’s intra-industry trade can be accepted because contribution of import is found to be more than that of export.
5.2. e) Case Five: Contribution of VIIT/HiIT in total IIT

$H_0 = \text{In case of India, both vertical intra-industry trade (VIIT) and horizontal intra-industry trade (HiIT) will have same contribution.}$

$H_1 = \text{In case of India, both vertical intra-industry trade (VIIT) and horizontal intra-industry trade (HiIT) will not have same contribution.}$

In this case, the contribution of VIIT and HiIT has to be analyzed. Here the alternate hypothesis is proposed from the theoretical concepts discussed in previous chapters and is based on India related works done by Veeramani (2001,2003) and Havrylyshyn and Civan (1983). Now the proposition that for a developing country, like India, vertical intra-industry trade (VIIT) should dominates over horizontal intra-industry trade (HiIT) has come from the fact that in case of developing country, people don’t have enough money to purchase different varieties of a product, their money is spent for satisfying their own basic needs rather than consuming different varieties of a product. This leads to decrease in HIIT and increase in VIIT as well as inter-industry trade. India, although is a developing country but is growing very fast thus the level of intra-industry trade is found to be comparatively higher. Therefore, we can assume that, in India’s intra industry trade the contribution of VIIT should be more than that of HIIT.

To test the hypothesis, different equations, as discussed in Chapter 4 (like equations 4.3.1, 4.3.2 and 4.3.3) have been used. As far as the requirement of data is concerned first of all, all the products which show intra-industry trade at both 4-digit and 6-digit level of aggregation, have been taken separately. Then the export value of each of the product is divided by its number of units exported to get unit value of export, and similarly unit value of import was calculated. After then unit value of export divided by the unit value of import to get the ratio. If the ratio was lying between 0.85 to 1.15, intra-industry trade was considered as HIIT otherwise VIIT. In this case, the dispersion factor used is 15% because it is most commonly used dispersion factor.

In the study, VIIT has been further categorized into two parts – low-quality vertical intra-industry trade (LQVIIT) and high-quality intra-industry trade (HQVIIT). If the ratio of unit value of export to the unit value of import was found to be less than 0.85, then the
VIIT was called as LQVIIT while if the ratio was more than 1.15 then the VIIT was called as HQVIIT.

**Figure 5.8:** Contribution of HIIT and VIIT (along with LQVIIT and HQVIIT) in India’s IIT, at 4-digit aggregation level

Source: Same as Figure 5.1

**Figure 5.9:** Contribution of HIIT and VIIT (along with LQVIIT and HQVIIT) in India’s IIT, at 6-digit aggregation level

Source: Same as Figure 5.1
The significance of dividing VIIT into LQVIIT and HQVIIT is that if the developing country is performing lower end job then the trade of low-quality products will be more and hence LQVIIT dominates over HQVIIT. Since India is a lower-middle income country (according to the World Bank classification) so we can expect that LQVIIT will dominate over HIQVIIT.

The case has been analyzed for both the level of aggregation 4 digit and 6 digit level separately and figures 5.8 and 5.9 have been used for analysis purpose. Figure 5.8 and 5.9 shows the level of HIIT and VIIT along with LQVIIT and HQVIIT from the period of 1992 to 2008 at 4-digit and 6-digit level respectively. Figure 5.8 clearly shows that at 4-digit level of aggregation VIIT dominates over HIIT but interestingly over the periods the contribution of HIIT has increased from 9.0 % (out of the total products in which IIT was observed at 4-digit level of aggregation) in 1992 to 13.6% in the year 2008, on the other hand for the same time period VIIT decreased from 91.0% to 86.4% respectively. HIIT was found to be maximum in the year 2006 when its value was 18.4% while in the same year VIIT was minimum and its value was 86.4%.

Moreover, the figure 5.8 also shows that over the years LQVIIT has decreased while HQVIIT has increased. This can be easily seen in the figure that in 1992, out of the total products in which intra-industry trade was observed the contribution of LQVIIT was 69.4% and of HQVIIT it was only 21.6%, remaining was HIIT. But in the year 2008, the percentage of LQVIIT has decreased to 54.9% and HQVIIT has increased to 31.5%.

Almost similar type of pattern is seen at a somewhat higher level of disaggregation, 6-digit level, as shown in Figure 5.9. Here also VIIT dominates over HIIT, as well as the contribution of LQVIIT was more than that of HQVIIT. But over the periods, LQVIIT has decreased and HQVIIT has increased.

Therefore looking at the Figure 5.8 and 5.9, the null hypothesis stands rejected and the alternate hypothesis is accepted because in case of India’s intra-industry trade VIIT dominates over HIIT.
5.2. f) Case Six: Effect of the liberalization process on IIT

$H_0 = \textit{The liberalization process (since 1991) does not affect the degree of intra-industry trade.}$

$H_1 = \textit{The liberalization process (since 1991) helped in increasing the degree of intra-industry trade.}$

In this case the effect of liberalization process on intra-industry trade has been analyzed. Here the alternate hypothesis basically emerged from the Falvey’s (1981) work as well as by the basic nature of intra-industry trade. Normally liberalization in international trade means decreasing the tariff rate on imports and this decrease should lead to an overall increase in the import. And if import (or export) increases then the chances of increase in intra-industry trade also increases. This hypothesis has been tested at both the level of aggregation – 4-digit as well as 6-digit.

The extent of liberalization has been depicted by measuring the tariff rate on imports. Here weighted average tariff rate has been considered rather than simple average tariff rate. The methodology of calculating import-weighted average tariff rate (IWAT) has already been discussed in Section 4.4 of Chapter 4. Since the hypothesis has been tested at both the aggregation level therefore IWAT has also been calculated for both 4-digit as well as 6-digit.

As we know, the liberalization process started in India since 1991 therefore the time period considered over here is from the year 1990 onwards. But because of unavailability of IWAT data for each year, continuously from 1990 to 2008, only those years have been considered in which the data was available.

Here the movement of IWAT data year after year has been discussed and then the trend of both 4-digit and 6-digit GI-IIT (both unadjusted and adjusted) with the movement of IWAT, have been compared. This comparison again has been shown by two ways, first graphically and then to get more clarity in the analysis, the correlation coefficient between the movement of IWAT and the degree of GI-IIT has also been calculated.
Figure 5.10: Changing Patterns of Import-Weighted Average Tariff

![Chart showing changing patterns of import-weighted average tariff from 1990 to 2008.](chart.png)

Source: Same as Figure 5.1 and tariff profile data of India has been taken from the WTO website

All these issues have been discussed here one-by-one. Figure 5.10 represent the movement of IWAT from 1990 to 2008. It clearly shows that overall tariff rate has decreased drastically after the start of liberalization process in India. Its value for 4-digit and 6-digit level was 49.48% and 48.59% respectively for the year 1990, while it has decreased drastically and became 6.27% and 6.12% respectively for the 4-digit and 6-digit level, in the year 2008. Its value decreased from 1990 to 1997 and increased in 1999, but after then it is decreasing continuously. Therefore, it can be said that liberalization process has led to decrease in the overall tariff rate.

Now the effect of decreasing tariff rate on the degree of GL-IIT, both at 4-digit and 6-digit level of aggregation is considered over here. This will be discussed by two ways – graphically as well as using correlation coefficient values. First the graphical method has been discussed. Figure 5.11 and 5.12 represent the movement of GL-IIT with IWAT at 4-digit and at 6-digit respectively.
Figure 5.11: Changes in 4-digit GL-IIT with 4-digit Import-Weighted Average Tariff

Source: Same as Figure 5.10

Figure 5.12: Changes in 6-digit GL-IIT with 6-digit Import-Weighted Average Tariff

Source: Same as Figure 5.10

Looking at the figure 5.11 and 5.12 we can say that the effect of decreasing IWAT on the degree of GL-IIT is more clear at 6-digit level of aggregation than that of 4-digit. Surprisingly, in both the cases, initially decrease in the IWAT did not help in increasing
the degree of GL-IIT and in-fact the degree of GL-IIT decreased with a decrease in the IWAT, but later on it starts increasing. At 4-digit level, the increase is not very constant but at 6-digit level it has started to increase continuously since 1999.

Now the effect of changing IWAT on the degree of GL-IIT has also been considered using the correlation coefficient. Since decrease in tariff rate should promote intra-industry trade, therefore the correlation coefficient between these two should be negative. To get a better picture, the hypothesis has been tested for both GL-IIT and HIIT & VIIT.

Here it is pertinent to mention that since tariff data was not available for all the seventeen years (1992-2008), therefore the analysis was done on the basis of available data on tariff rate (nine years only) but this data is sufficient to give the information desired here. Since the study is based on both 4-digit and 6-digit level therefore import-weighted average tariff rate on both of these two levels have been calculated, but interestingly, as discussed earlier, the IWAT at both of these two levels are found to be almost same.

**Table 5.1: Correlation Coefficient between Import-Weighted Average Tariff Rate and the Degree of GL-IIT, HIIT and VIIT – both at 4- and 6-digit level of aggregation**

<table>
<thead>
<tr>
<th></th>
<th>4-digit level of aggregation</th>
<th>6-digit level of aggregation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unadjusted GL-IIT</td>
<td>0.398 (1.148)</td>
<td>-0.415 (-1.201)</td>
</tr>
<tr>
<td>Adjusted GL-IIT</td>
<td>-0.148 (-0.395)</td>
<td>-0.377 (-1.074)</td>
</tr>
<tr>
<td>HIIT</td>
<td>-0.628 (-2.137)*</td>
<td>-0.724 (-2.774)**</td>
</tr>
<tr>
<td>VIIT</td>
<td>0.628 (2.137)*</td>
<td>0.724 (2.774)**</td>
</tr>
</tbody>
</table>

Source: Same as Figure 5.10 (figures in the brackets shows “calculated t-value” of the concerned correlation coefficient) (** = significant at 95% CI and * = significant at 90% CI)

Even then, just to keep things separate for 4-digit and 6-digit level, here the correlation coefficient between tariff rate and IIT has been calculated separately for 4-digit and 6-digit, the result of correlation study is shown in the Table 5.1.

The results are quite interesting. Looking at Table 5.1, we can say that at 4-digit level of aggregation the sign of correlation coefficient is positive, it means that unadjusted GL-
IIT has not increased even after the decrease in the tariff rate while adjusted 4-digit IIT has increased, because the sign of correlation coefficient is negative, but not significant because its correlation coefficient is very low. At the same level of aggregation, it is actually horizontal IIT which increased with the advent of liberalization and not VIIT. The trend is almost similar at 6-digit aggregation level, which shows that, all the three – unadjusted, adjusted and HIIT, have increased with decreasing tariff rate while VIIT has decreased, but for total IIT, correlation coefficient is not very strong.

But on interpreting the result of these correlation coefficients with the help of t-value, it adds another dimension in the analysis. Since “tabular t-value” at significance level of p=0.05 and for 7 degree of freedom (because total number of observation, i.e., years, is 9) is 2.37, therefore on comparing “calculated t-value” with “t-tabular”, it can be found that the only correlation coefficient which is significant is 6-digit HIIT and 6-digit VIIT. Hence we can say, with 95 percent confidence, that on decreasing the tariff rate 6-digit HIIT increases while 6-digit VIIT decreases. On the other hand, t-calculated of 4-digit HIIT and 4-digit VIIT, although not significant, but very close and if we decrease the confidence level from 95 percent to 90 percent (or significance level p=0.1), then it would become significant because at that level value of t-tabular is 1.895.

Therefore the null hypothesis may not be accepted fully and the alternate hypothesis may be accepted partially – for adjusted GL-IIT it may be accepted for both the level of aggregation but for unadjusted GL-IIT it may be accepted only for 6-digit level of aggregation and rejected for 4-digit. On the other hand, the alternate hypothesis is accepted for both HIIT and VIIT, because the sign of correlation coefficient matches with the theoretical concepts, it is negative for HIIT and positive for VIIT.

5.3 RESULTS AND DISCUSSION

Looking at the analysis done so far it can be said that in general the importance of intra industry trade in India’s total trade has increased significantly. In all of the six cases discussed above, the null hypotheses stand rejected and the alternate hypotheses are accepted. This signifies the importance of IIT in India’s international trade.
The importance of intra-industry trade in the total trade can also be expected because India is a growing economy and its growth rate is one of the highest growth rates in the world. India has become an outsourcing hub for most of the developed countries, may it be manufacturing activities, financial activities or even services. This is also one of the reasons that why vertical intra-industry trade is dominating over horizontal one because of its being an outsourcing hub. Apart from this, since even in the outsourcing industry, mostly India is performing lower or lower-middle tier job that is why low-quality VIIT dominates over high-quality VIIT. Interestingly, it has been found that over the years, the contribution of low-quality VIIT has decreased while HQVIIT has increased this signifies that India is moving forward in the value-chain and it represents the potential of India to become an economic power. Moreover, since VIIT dominates over HIIT it signifies that most of the trade of India is with dissimilar countries, here in this case it is with developed countries.

One very important point to be mentioned over here is that we cannot expect the nature and pattern of India’s intra-industry trade as have been discussed in theory because most of the models of the intra-industry trade have been developed after studying the condition of developed countries and not the developing countries, like Grubel (1967) used the data of EEC, Grubel and Lloyd (1971) used Australian trade data, Greenaway and Milner (1981, 1983) used United Kingdom’s trade data, Bergstrand (1990) used OECD trade data and Abd-el-Rahman (1991) used French trade data. Since the level of economic development has a significant impact on the degree and pattern of intra-industry trade therefore, obviously, the nature and pattern of India’s intra-industry trade would be different than that of developed countries.

As Linder stated that (Hanink 1988) “although the trade between countries with similar income level is no different than intra-regional trade but the high level of trade between similar but poor countries are unlikely. Poor countries have domestic economies that are not sufficient to generate any significant number of potential exports, nor are poor domestic economies large enough to appeal many foreign producers”. Looking at the points discussed here and considering the India as a developing country, we can confidently rely on the findings that although the degree and percentage contribution of
intra-industry trade in India’s total trade is increasing with the passage of time, but it is not as much as the case of developed countries. Therefore, the nature and pattern of India’s intra-industry trade are matching with the expectations for the developing countries.