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Determinants of Intra-Industry Trade between Pakistan and Selected SAARC Countries

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This paper analyses country-specific and industry-specific determinants of intra-industry trade (IIT) between Pakistan and other SAARC countries using panel data techniques. This paper also disentangles total IIT into horizontal and vertical IIT. The Vertical IIT is further divided into high-quality and low quality IIT. This paper finds that country-specific variables are more important in explaining the IIT relative to industry-specific variables. The decomposition of IIT shows that in the SAARC region Pakistan's IIT is mostly comprised of the vertical IIT. The share of horizontal IIT is comparatively less. The paper offers specific policy recommendations for the promotion of IIT in the SAARC region.

JEL classification: F12, F14, F15
Keywords: IIT, Horizontal IIT, Vertical IIT

1. INTRODUCTION

The Ricardian theory of international trade envisages that the differential in technologies across countries determines the trans national trade pattern. On the other hand, the theory of factor proportions of Heckscher-Ohlin predicts that trade patterns are determined by the relative factor abundance. These theories thus conclude that trade takes place between those countries that have either different factor endowments or technologies. But over the past few decades, contrary to the predictions of these theories, the world has increasingly witnessed that countries having similar technologies and factor endowments do trade more among themselves than those that are dissimilar [Verdoon (1960) and Balassa (1966)].

Concomitantly, it has been noticed that when economies-of-scale are internal to firms in an industry, both the variety of goods and the scale of production are generally constrained by the size of the domestic market. Trade allows countries to relax such constrictions. With trade each country specialises in a narrower range of products than under autarky and enables countries to produce different varieties of goods (i.e., differentiated products). Thus, with trade a country can buy goods (varieties) from other countries that it does not produce itself; as a result its consumers benefit from a bigger

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variety and of course lower prices as well. The production of differentiated products and demand by domestic consumers for foreign varieties give rise to what is known as intra-industry trade (IIT). Economies-of-scale thus becomes an independent reason for international trade to take place even when countries have similar production technologies and primary resources [Krugman (1979) and Lancaster (1980)].

IIT is, thus, referred to a two-way exchange of goods within the same industry group. Evidently, the IIT share in the total trade among developed countries is quite significant[1] and has been secularly rising by about 5 percent annually. There is a virtual absence of IIT in trade relations among developed and developing countries, that rather observe the inter-industry trade pattern. Some studies find the presence of IIT in trade between developing countries [Willmore (1972)].

Since the 1980s, many studies examined the determinants of IIT with industry and country characteristics. Krugman (1981) argues that economies of scale and consumers' tastes for a diversity of products are the main determinants of IIT. Others argue that country-specific variables such as country size, per capita income, distance and trade orientation are the important determinants of IIT [Stone and Lee (1995) and Hummels and Levinsohn (1993)]. Greenaway, *et al.* (1995) argue that industry-specific variables, like scale economies, firm concentration ratio and product differentiation, are the determinants of IIT. Clark and Stanley (1999) and Greenaway, *et al.* (1999) argue for both country-specific and industry-specific variables as the determinants of IIT.

The above eclectic approach reached its climax with the above analysis was extended to the multi-country/multi-industry analysis using panel estimation techniques [Menon, *et al.* (1999)]. The need for such studies arose as the revolution in information, communication and transportation technologies facilitated fragmentation of global production that provides a sound basis for growing IIT at the regional level.

Being fairly similar to each other, SAARC (South Asian Association for Regional Cooperation) countries satisfy the basic requirements for the conduct of intra-regional IIT. The share of Pakistan's exports going to SAARC countries has been hovering around 5 percent, which is quite low as compared to its real potential. The main reason for this meagre performance, besides others, is lack of focus in regional policies on IIT. The regional trade share can be enhanced manifold by focusing more on IIT, as it prompts technological progress and takes advantage of economies of scale.

Despite the large potential of IIT for trade expansion in the SAARC region, only a couple of attempts have been made in Pakistan to estimate IIT levels for Pakistan's total trade [Kemal (2004) and Shahbaz and Leitao (2010)]. Shahbaz and Leitao (2010) also study the determinants of IIT between Pakistan and its ten major trading partners in the world using country-specific variables.

It is also important to disentangle total IIT into horizontal IIT and vertical IIT.[2] This is because for each type of IIT the explanatory variables are usually different. Horizontal IIT benefits countries more with similar factor endowments by enabling them

[1]For instance, in 2000, IIT was comprised of 86.20 percent, 85.01 percent and 80.42 percent of total manufacturing trade of Germany-France, Netherlands-Belgium and Luxemburg, France-Belgium and Luxemburg [Fontagne, *et al.* (2006)].

[2] Horizontal IIT is defined as IIT of goods having same qualities (e.g., automobiles of similar class and price range), whereas vertical IIT is defined as IIT of goods having different qualities (e.g., automobiles of different brands).

to utilise economies of scale in production. Specialisation in vertically differentiated products may reflect the countries' comparative advantage in those products, their differences in factor endowments, and high expenditure on research and development, etc. [OECD (2002)]. None of the available Pakistani study attempted to disentangle total IIT into horizontal IIT and vertical IIT. Within this perspective, this paper attempts to analyse the trends in IIT and using the panel estimation approach works out country-specific and industry-specific effects of IIT. Finally, the paper attempts to disentangle total IIT into horizontal and vertical IITs.

The rest of the paper is divided into three sections. Section 2 describes the methodology used in the paper. Estimation problems and empirical results are discussed in Section 3. Finally, Section 4 concludes and offers policy recommendations for the promotion of IIT in the SAARC region.

2. METHODOLOGY

This paper estimates the determinants of IIT by using the gravity model approach. The gravity model has been extensively used to analyse the impact of regional trade agreements, currency unions, migration flows, intra-industry trade etc. The following equation is referred as the core gravity model. It states that bilateral trade between country i and j is an increasing function of the size of the country h and f measured in terms of their GDP and decreasing function of the distance between the two countries. Thus, countries similar in their relative economic size or population will trade more with each other. Tinbergen (1962) proposed the following gravity model to analyse the effects of bilateral trade:

$$Y_{hf} = \alpha \frac{y_h y_f}{D_{hf}}$$

α is a constant of proportionality, Y_{hf} is total bilateral trade between home country h and trading partner f, y is economic size of the countries measured in terms of GDP, and D_{hf} represents trade barriers between the countries. These barriers can be distance, common language, common currency, colonial links, etc. The volume of trade will be lesser among countries located farther from each other. In its logarithmic form, the gravity equation can be defined as:

$$Y_{ij} = \alpha + \beta_1 logy_i + \beta_2 logy_j - \beta_3 logD_{ij} \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (1)$$

Since its introduction in the international trade literature by Tinbergen (1962) and its subsequent empirical success, at present, the gravity model is a widely used tool to estimate bilateral trade flows between countries. The core gravity model (Equation 1) is augmented by the inclusion of several additional variables like cultural differences, linguistic differences, exchange rate, border effects etc., that possibly affect a country's bilateral trade flows. Following the tradition of Clark and Stanley (1999), Greenaway, *et al.* (1999) and Turkcan (2005), we also augment the core gravity model with two types of variables, namely, country-specific variables and industry-specific variables for analysing the flows of intra-industry trade of Pakistan with SAARC countries. The augmented gravity model is expressed as:

$$Y_{jhft} = C + log\ DIST_{hf} + log\ AGDP_{hft} + log\ DPCGDP_{hft} + log\ DHCAP_{hft} + log\ AEST_{jhft} + log\ DVAEST_{jhft} + log\ DPCAP_{jhft} \quad \ldots \quad \ldots \quad \ldots \quad (2)$$

Y_{jhft}: Intra-industry trade flow between home country (Pakistan) h and trading partner f in industry j in year t.

A brief account of the variables described above and their economic relevance in the analysis are discussed below:

$DIST_{hf}$ (distance between Pakistan and its trading partner's port of entry in nautical miles): on a priori basis, it can be argued that trade is negatively correlated with the distance. That is, the farther the trading partners from each other, the higher the transportation cost.

$AGDP_{hft}$ (average GDP of Pakistan and its trading partner to represent market size): the gravity model measures the market size both in terms of GDP and population. In this paper we use real GDP in 2000 US dollar prices. Small economies without trade have limited ability to avail themselves of the economies of scale. Trade increases the size of the market for domestic firms and thus allows them to reap the benefits of economies of scale due to increased productivity and reduced average costs; while consumers enjoy increased variety of available goods at lower prices. With free trade, firms producing intermediate goods also make use of increasing returns to scale and thereby increase the scale of production and varieties of intermediate goods [Ethier (1982)]. Thus, a positive sign is expected on the share of IIT and the average market size.

$DPCGDP_{hft}$ (absolute difference in GDP per capita between Pakistan and its trading partner): it is used as a proxy for taste and preferences. Linder (1961) argues that per capita GDP is a measure of people's taste and preferences and countries with similar levels of per capita GDP have similar tastes and preferences, thus they will engage in more bilateral trade. Countries will trade less as bilateral differences of per capita GDP escalate. Helpman and Krugman (1985) consider differences in per capita GDP as differences in capital-to-labour ratio (that means countries have dissimilar factor endowments). If there are bilateral differences in factor endowments, then there will be lesser IIT. Thus, a negative sign is expected between the share of IIT in total international trade and differences in per capita income.

$DHCAP_{hft}$ (absolute difference of the percentage of population with higher education between Pakistan and its trading partner): we use the ratio of skilled labour to unskilled labour as a proxy for human capital endowment. Krugman and Helpman (1985) demonstrate that differences in factor endowments between any two countries lead to a decrease in the level of bilateral IIT. Ethier (1982) argues that skilled labour, mainly R&D personnel, is the essential ingredient for the production of intermediate goods variety. Therefore, if countries differ in their factor endowments, then the scope of IIT reduces. Contrary to this, Feenstra and Hanson (1997) show that a relative increase in the supply of skilled labour in the home country as compared with the foreign country will increase the supply of vertically differentiated goods from home to foreign country, which leads to an increase in IIT of intermediate goods. Thus, the expected sign of bilateral inequality in factor endowments on IIT will be ambiguous.

The industry specific variables are defined as follows:

$AEST_{jhft}$ (Average number of establishments at industry level between Pakistan and its trading partner): it is used as a proxy for product differentiation. The larger the number of establishments, the greater will be the variety of goods produced, since every firm produces only one differentiated product in equilibrium [Krugman (1981)].

$DVAEST_{jhft}$ (Absolute differences of value added per establishment at industry level between Pakistan and its trading partner): it is used as a proxy for economies of scale. Economies of scale internal to a firm are considered as negatively related to product differentiation. Ethier (1982) argues that the economies of scale are a result of greater division of labour rather than due to large plant size. And IIT in manufactured goods arises because firms find it profitable to split the production process at different plants due to the economies of scale achieved through division of labour. So, small plant size is positively related to IIT. He expects a negative sign between economies of scale accrued to a firm due to its large plant size and IIT. On the other hand, Feenstra and Hanson (1997) argue that vertical specialisation allows firms to produce goods at different plants, so the plant size should be small because the different stages of manufacturing are conducted differently at different plants. It means that vertical specialisation leads to increase in IIT.

$DPCAP_{jhft}$ (Absolute difference of physical capital endowment per worker at industry level): this variable is included to take into account the effect of the differences in factor endowments. Ethier (1982) argues that IIT is expected to be negatively correlated with the differences in the capital to labour ratio. He assumes the differentiated intermediate good to be capital intensive, when the supply of capital in the home country rises relative to labour, the number of intermediate goods produced in the home country will rise and the producers of final goods in the home country will begin to rely on locally manufactured intermediate goods. Thus, the share of IIT in intermediate goods will eventually decline. Feenstra and Hanson (1997) show that for vertical specialisation, dissimilarities in the capital to labour ratio between the trading partners is a necessary condition. Therefore, there is no consensus over the expected sign of bilateral inequality in the capital to labour ratio on the share of IIT.

2.1. Empirical Model

In the preceding subsections variables were defined and their relationships with IIT were discussed, on *a priori* basis. This subsection defines the methodology to find the empirical evidence on the relationship between IIT and the included variables. For this purpose we investigate the following model:

$$IIT_{jhft} = C + \log DIST_{hf} + \log AGDP_{hft} + \log DPCGDP_{hft} + \log DHCAP_{hft} + \log AEST_{jhft} + \log DVAEST_{jhft} + \log DPCAP_{jhft} \quad \ldots \quad \ldots \quad \ldots \quad (3)$$

Equation (3) is similar to Equation (2) except that Y_{jhft} is now replaced with IIT_{jhft} in Equation (3). For this we utilise the measure developed by Grubel and Lloyd (1975):

$$IIT_{jhft} = \frac{\sum_{i=1}^{N}\left[(X]_{jhft} + M_{jhft}\right) - \sum_{i=1}^{N}\left|X_{jhft} - M_{jhft}\right.}{\sum_{i=1}^{N}\left(X_{jhft} + M_{jhft}\right)} \quad \ldots \quad \ldots \quad \ldots \quad (4)$$

Where, $j = 1...J$ represents industry groups, $i = 1...I$ are products in an industry j, $f = 1...F$ are trading partners of Pakistan and h is home country (Pakistan). IIT_{jhft} means intra-industry trade in the *ith* good of the *jth* industry between Pakistan and its trading partner f in year t. Equation (4) takes its values between 0 and 1. A value of 0 indicates pure inter-industry trade (no intra-industry trade) and 1 represents pure intra-industry trade.

2.2. Data and Data Limitations

The data on the number of establishments, value added at establishment level, gross fixed capital formation for Bangladesh, India and Sri Lanka are taken from United Nations Industrial Statistics published by United Nations Statistics Division. For Pakistan, the data on these variables are taken from the Census of Manufacturing Industries. The data on GDP, per capita GDP and education are taken from World Development Indicators (WDI) published by the World Bank. The data on distance between ports of the home country and the trading partner are taken from the web.[3] Data on exports and imports of Pakistan are taken from Foreign Trade Statistics of Pakistan, and State Bank of Pakistan External Trade Statistics.

The available data on industry-specific variables are in Local Currency Unit of the respective countries. To make them comparable, values of all the variables are converted into the US dollar. All variables are nominal; this study makes them real by using the GDP deflator.

The latest data on the number of establishments, value added at establishment level and gross fixed capital formation are available only for the period up to 2000 for Bangladesh, India, and Sri Lanka. This study uses the data for the years: 1990-91, 1995-96 and 2000-01. The data on most of the variables used here are not available for other SAARC countries: Afghanistan, Bhutan, Maldives and Nepal, that is why these countries are not included in the analysis. Based on the trade data obtained from the foreign trade statistics of Pakistan, we compute values of IIT index at the three-digit level of ISIC (International Standard Industrial Classification) Revision 3.

2.3. Decomposition of Intra-industry Trade

To disentangle the total *IIT* into horizontal and vertical *IIT,* we apply the method proposed by Greenaway, *et al.* (1995). This method is based on the ratio of the unit value of exports to the unit value of imports. This method can be described by the following formula:

$$1-\alpha \le \frac{UV_i^{hf,x}}{UV_i^{hf,m}} \le 1+\alpha \qquad \text{or} \qquad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (5)$$

$$\frac{UV_i^{hf,x}}{UV_i^{hf,m}} \le 1-\alpha \quad \text{or} \quad \frac{UV_i^{hf,x}}{UV_i^{hf,m}} \ge 1+\alpha \qquad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (6)$$

$UV^{hf,\,x}{}_i$ is unit value of export in the *ith* industry between home country h, and foreign country f,

[3] www.e-ships.net/dist.htm

$UV^{hf,m}_i$ is unit value of imports in the same *ith* industry between home *h*, and foreign country *f*, α is the arbitrarily fixed dispersion factor; it normally takes a fixed value of 0.15. This is because the transportation and freight costs are normally taken as 15 percent of the value of the product.

If the ratio of the unit value of exports to imports lies within the range defined by Equation (5), then the good is classified under the horizontal IIT and if this ratio lies within the range defined by Equation (6) then the good is facing vertical IIT. The above formula is based on the assumption that prices of the goods reflect their quality. High priced goods have high quality whereas low price goods have low quality.

3. ESTIMATION AND RESULTS[4]

The data set used in the estimation is a panel data set having two dimensions: country and time, three country pairs and three years: 1990-91, 1990-95, and 2000-01. The number of industries differs over the years and across countries. The data for the number of establishments, gross fixed capital formation, and value added are reported in SITC-3 for 1990-91 and 1995-96, while data for 2000-01 of the same set of variables are in ISIC Revision-3 (International Standard Industrial Classification). To make the data comparable we convert SITC-3 codes into ISIC-3 codes using the conversion method obtained from the United Nations Industrial Classification Registry (2012). Before going for estimation, different diagnostic tests are performed on the data to check for any econometric problem present in the data. The four series exhibit the presence of the unit root that is discussed in the following sub-section. The fixed effects and random effects estimators are based on the assumption that the error term is idiosyncratic (i.e., it is distributed with zero mean and constant variance). Since in the panel data we have both time-varying and time-invariant regressors, there always exists a possibility of the correlation between the error terms and the presence of the heteroscedasticity. This leads to underestimation of the error term and over prediction of the regressors of the model. For short panels, it is possible to get error-corrected estimates of the model by using the robust command. Therefore, the robust command is used to adjust for the correlation and heteroscedasticity in the STATA programme.

3.1. Evidence of IIT

The results of Grubel-Lloyd (GL) indices for total manufactured goods trade are presented in Table 1. Estimates indicate that the share of IIT in Pakistan's total trade with Bangladesh, India and Sri Lanka is low by international standards. These estimates are consistent with the findings of Kemal (2004).

Table 1

Grubel-Lloyd Indices

(Percent)

Country	1990	1995	2000
Bangladesh	3.1	7.7	19.0
India	13.0	7.4	8.3
Sri Lanka	4.8	5.4	8.4
SAARC	6.9	6.8	11.9

[4] STATA software programme is used for estimation.

The trend in IIT of Pakistan is quite the same with each SAARC country. These shares of IIT in total trade, albeit low, show a rising trend over time. Pakistan's IIT with Bangladesh was 3.1 percent in 1990 but it increased to 19 percent in 2000. With Sri Lanka, the IIT was 4.8 percent in 1990 that rose to 8.4 percent in 2000. This shows a significant change in the pattern of Pakistan's trade with these countries. With India the share of IIT was 13 percent in 1990 but declined to 7.4 percent in 1995. However, it rose to 8.3 percent in 2000. Pakistan's share of IIT with India is expected to rise further after the granting of MFN status to India. In sum, despite some ups and downs at country levels, the volume of Pakistan-SAARC IIT has increased from 6.9 percent in 1990 to 11.9 percent in 2000.

3.2. Determinants of IIT

Industry-specific and country-specific determinants of IIT levels are tested here using the fixed effects (FE) model. Table 2 reports that country-specific variables are statistically significant at 1 percent significance level, whereas, industry-specific variables are not very significant in explaining the determinants of IIT.

The results reveal that the market size (measured by AGDP) exerts a positive and significant impact on IIT. Increase in the market size due to trade makes it feasible for firms to increase their production and benefit from the economies of scale. The presence of economies of scale in the production process reduces the average cost of production, thus making firms competitive in the international market. Consequently, with trade-led increase in profit making opportunities for firms the IIT increases.

Table 2

Fixed Effects (FE) Model Results for Intra-industry Trade

Variable	Coefficient	t-stat
DIST	–0.67	–4.83
AGDP	2.39	5.05
DPCGDP	–4.38	–5.19
DHCAP	1.88	3.86
AVGE	–0.09	0.91
DPCC	0.13	1.06
DVAD	–.015	–0.97
R-Square	12.38	

As expected, the distance with trading partners is found to be negatively affecting IIT of Pakistan with selected SAARC countries. It means that with a fall in distance, the cost of transportation and communication decreases that causes an increase in IIT.

Differences in per capita GDP (a proxy for consumer's tastes and preferences) have negative and statistically significant effect on the level of IIT. This result suggests that consumers' tastes and preferences become dissimilar (in trading partner countries) with increase in the differences in per capita income; they start demanding different goods. If products demanded by consumers are not available in the region, it leads to a fall in IIT.

The bilateral inequality in human capital endowment (DHCAP) has statistically significant and positive effect on the IIT. This result shows that a relative increase in the supply of skilled labour at home relative to a foreign country will increase the vertically differentiated goods from home to foreign country. This finding is in line with the findings of Turkcan (2005), Flam and Helpman (1987).

Regarding the industry-specific variables, the average number of establishments does not turn out to be statistically significant in explaining the IIT. The sign of the coefficient is opposite to the predictions of the theory. Turkcan (2005) finds similar results for Turkey.

The variable differences in value added at the industry level, a proxy for economies of scale is negative but is statistically insignificant. This implies that plant size should be reduced to increase the level of IIT. This finding is against the theoretical prediction of Krugman (1979) but in line with the empirical finding of Greenaway, *et al.* (1995), that favours production fragmentation to increase the number of differentiated variety, thereby leading to an increase in the level of IIT.

The bilateral differences in the capital-labour ratio between trading partners measure the differences in factor endowments. This variable has a positive correlation with IIT, but turns out to be insignificant. The positive association between DPCC and the IIT is consistent with Feenstra and Hanson (1997), who argue that bilateral inequality in capital-labour ratio is a necessary condition for vertical specialisation.

So far we have discussed the estimates obtained through the FE model. We shall now examine the RE estimates (Table 3). The RE technique does improve the significant level and magnitude of the coefficients of all variables relative to the FE model. But it does not make any of the variables significant that was found to be insignificant under the FE model. The RE model also explains more variation in the model relative to the FE model as indicated by the value of R-square.

Table 3

Random Effects Model (REM) Results for Intra-industry Trade

Variable	Coefficient	z-stat
DIST	–0.58	–6.15
AGDP	1.94	5.08
DPCGDP	–3.52	–4.93
DHCAP	1.56	3.84
AVGE	–0.12	–1.38
DPCC	0.14	1.47
DVAD	–0.15	–1.06
R-Square	12.59	

While choosing between the Fixed Effects (FE) and the Random Effects (RE) models, the Hausman test is performed. Hausman rejects the FE model in favour of the RE model. It is, therefore, concluded that the RE estimates are efficient and consistent relative to those of the FE estimates. This leads us to conclude that the level of IIT between Pakistan and its trading partners in the SAARC region is affected by random events.

3.3. Horizontal and Vertical Intra-industry Trade

The pattern of horizontal IIT and vertical IIT for Pakistan and her selected trading partners in the SAARC region is reported in Table 4. The table reveals that in the SAARC region Pakistan's IIT is mostly comprised of the vertical IIT (i.e., 82.50 percent) and to a lesser extent the horizontal IIT (17.50 percent). The vertical IIT is high among the countries with greater differences in the level of technology and factor endowments.

The vertical IIT is further decomposed into low vertical IIT (LVIIT) and high quality vertical IIT (HVIIT). The share of low quality vertical IIT in total IIT is 69.95 percent and that of high quality vertical intra-industry trade is 12.55 percent (Table 4).

Table 4

Percentage Shares of HIIT, LVIIT, and HVIIT in Total IIT: 2005-06

Intra-industry trade	Bangladesh	India	Sri Lanka	SAARC
HIIT	2.90	9.66	39.94	17.5
LVIIT	93.20	85.96	30.68	69.95
HVIIT	3.90	4.38	29.38	12.55

The cross-country analysis of the IIT indicates that Pakistan's share of low quality vertical IIT (LVIIT) in total IIT is much higher with Bangladesh (93.20 percent) and India (85.96 percent) and is low with Sri Lanka (30.68 percent). This implies that Pakistan's IIT with Bangladesh and India is largely composed of low quality, low priced products.

The share of high quality vertical IIT (HVIIT) is higher with Sri Lanka (29.38 percent) as compared to Bangladesh (3.9 percent) and India (4.38 percent). This trade is taking place mostly in textile products (HS 61034200, HS 61169300, and HS 61091000). The reason for the higher share with Sri Lanka is that Pakistan is specialised in the production of textile products while Sri Lanka is not. Pakistan exports high quality textile products to Sri Lanka. The same is not true for Pakistan's IIT with Bangladesh and India. The reason for the low share of HVIIT with Bangladesh and India is that Pakistan, Bangladesh and India specialise in the production of textile products. Besides, all three of these countries have very restricted trade policies in textiles.

The share of horizontal IIT in total IIT of Pakistan is low as compared with the vertical IIT. It comes to 17.5 percent of the total IIT. The cross-country shares reveal that in the category of horizontal IIT, Sri Lanka is leading with 39.94 percent followed by India with 9.66 percent and Bangladesh with 2.9 percent. The relatively lower share of the horizontal IIT in total IIT indicates that the region is trading very little in products that are similar in quality and price. In sum, the SAARC region's most potential lies in HVIIT, that of course is small right now. The regional countries therefore need to implement such policies that should enhance the share of HVIIT in the total IIT.

4. CONCLUSION AND POLICY RECOMMENDATIONS

The focus of this paper has been on analysing the trends and determinants of the intra-industry trade of Pakistan with her major SAARC trading partners. Specifically, the paper examines country-specific and industry-specific determinants of intra-industry

trade. The data set used has two dimensions: country and time, which allowed us to use the panel data techniques. Panel data techniques can be performed on using both the fixed-effects (FE) and random-effects (RE) models. The result of the Hausman test supported the RE model; that is, the RE estimates are more efficient than those of the FE model.

Based on the results of the RE model, this paper concludes that country-specific variables are more relevant in explaining IIT than industry-specific variables. In particular, market size is found to be positively correlated with IIT. The differences in per capita GDP between trading partners (i.e., tastes and preferences) are negatively correlated with IIT. The sign of the variable distance is also as expected, that is large distance between trading partners reduces bilateral trade. Intra-industry trade is found to be positively related with bilateral differences in human capital confirming the Feenstra and Hanson (1997) hypothesis that a relative increase in the supply of skilled labour in the home country relative to foreign country will increase the supply of vertically differentiated goods from home to foreign country, which leads to an increase in IIT of intermediate goods. The paper also finds an increasing share, albeit low, of IIT in the total trade of Pakistan with the SAARC countries. The paper thus suggests that Pakistan and its trading partners in the region should make concerted efforts to increase the level of IIT to enhance and sustain the overall volume of the regional trade and strengthen regional economic interests. The SAARC countries have vast potential to expand their economic relations within the region. The competitive nature of the SAARC countries is considered as the major impediment in the way of regional trade expansion. This obstacle can be overcome by engaging extensively in the IIT at the regional level.[5]

To increase the level of IIT in the SAARC region; we put forward the following recommendations:

- Since the distance appears to be a major constraint in the way of increasing regional trade, therefore regional governments should pay special attention to improve not only the conditions of their transport and communication infrastructures but also strive to reduce the cost of shipping goods across borders.
- Manufacturing firms need to allocate more funds for research and development to develop new and better varieties in the existing lines of production. This should help in expanding IIT in the SAARC region.
- Textiles and clothing have a large potential to increase the level of IIT in the region. Regional countries are currently restricting trade in textiles and clothing by using a negative import list and other tariff and non-tariff measures. It is, therefore, recommended that in the future trade negotiations at bilateral or regional levels, the governments should make efforts to remove textile products and clothing from the negative lists and reduce other trade barriers affecting their textiles and clothing trade.
- Vertical IIT has turned out as the major component of the (total) IIT in the region. Therefore, in the future the regional governments should focus on expanding and promoting the production of high-end products for which the

[5]Similar proposal was also made in Kemal (2004) and Mahmood (2012).

demand exists in the region. This would require special incentives to develop and design high-end products.

- Finally, since the size and the share of IIT in the SAARC region is growing sharply, therefore, it is advisable for the regional governments to encourage economies-of-scale in production, which is the basis of this kind of international trade. For this to happen, initially some incentives may be offered to selected firms until they attain sufficiently large production scale that makes them competitive regionally as well as internationally.

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