

The Potential of Intra-Industry Trade between Pakistan and India

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Chapter 1: An Analysis of Intra Industry Trade between Pakistan and India

As a result of the strained economic and political relations between Pakistan and India, South Asia remains one of the least integrated regions in the world.

Conventional trade theories based on comparative advantages (Ricardian¹ and Hecksher-Ohlin models²), suggest that South Asian economies have limited scope for intra-regional trade as they can export similar products namely, garments, light manufacturing and agricultural products. However, empirical evidence shows that many countries simultaneously export and import of products in the same industry. This is called intra industry trade.

This paper explores the potential for enhancing intra-regional trade between Pakistan and India through intra-industry trade. Key aspects of intra industry trade are examined using Grubel Lloyd indices, comparative advantages and indicative market potential.³ Trade patterns have been studied by constructing Grubel Lloyd, Trade Complementarity and Trade Intensity indices for Pakistan and India in the context of their trade with other major South Asian economies. Case studies were conducted on firms from the textile, chemicals and food processing sectors.

Out of tariff lines that were previously importable from India as per the Positive List⁴ regime, the highest incidence of intra industry trade (IIT) is observed in textiles (cotton and woven fabrics), vegetables and fruits, hydrocarbons, primary plastic forms and rubber tyres. The agricultural items that show significant levels of intra industry trade are fresh vegetables, fruit and nuts and spices.

Until March 2012, Pakistan was still trading with India under the restrictive Positive List regime; hence there was no intra industry trade in items that were not allowed to be imported from India. As a result the bilateral IIT index between India and Pakistan may not accurately capture the potential sectors where Pakistan may be able to form successful supply chain linkages with India. For this purpose, we determined the sectors in which Pakistan and India have the high levels of intra industry trade globally to identify potential areas in which they could develop high levels of IIT bilaterally once trade is normalized. The analysis based on global intra industry trade of Pakistan and India indicates a large potential of IIT expansion in labor intensive⁵ sectors like basic manufactures of metal, non-metallic minerals and cork and wood. At a further disaggregated level, the metal manufactures with highest IIT potential are cutlery, hand tools, sanitary ware and metallic cables. In the manufactures of minerals, the most significant items are marble, glassware and ceramics. There is also a potential of IIT in primary plastics, scientific instruments and metallic ores and scrap. Dairy and Beverages may emerge as high potential IIT sectors as currently there is no intra industry trade between India and Pakistan.

Case studies reveal a significant potential of forming successful supply chains in textiles, chemical and food processing sectors provided South Asia Free Trade Agreement (SAFTA) Sensitive Lists⁶ are liberalized. Estimates reveal notable savings in terms of unit cost and freight in sourcing machinery and raw materials from India instead of traditional trading partners.

¹ The Ricardian model of international trade states that countries export based on their comparative advantage, which arises due to differences in technology or natural resources.

² In the Heckscher-Ohlin model the pattern of international trade is determined by differences in factor endowments (labor, capital). It predicts that countries will export those goods that make intensive use of locally abundant factors and will import goods that make intensive use of factors that are locally scarce.

³ Please see section X for the definitions of trade indicators used for the analysis.

⁴ Pakistan allowed imports from India of only a limited number of tariff lines that were identified as the Positive List in Appendix G, Trade Policy of Pakistan, 2012. This list was abolished in March, 2012.

⁵ Measuring vertical and horizontal intra industry trade: Case for Turkey

⁶ As per the Trade Liberalization Program (TLP) of SAFTA, the partner countries are obligated to reduce tariffs on all tariff lines except the items on the Sensitive Lists.

Literature Review

The theory of comparative advantage by Ricardo⁷ and the traditional Heckscher-Ohlin Model (H-O model) formed the core of standard theory explaining trade between different countries. According to Ricardo, inter-industry trade takes place due to differences among countries in terms of factor endowment, technology and climate. The H-O model's main argument for trade is the differences in factor endowment between countries. According to these traditional trade theories, each country will export goods in industries that require intensive use of factors which are available in abundance, while importing goods in which the relevant factors are scarce and there is no comparative advantage. This results in **inter-industry trade**, with each country specializing in a particular industry and trading with other countries specializing in different industries.

However, empirical investigations have not yielded substantial support for the Heckscher-Ohlin model (Trefler, 1995). It has instead been observed that a large number of countries simultaneously import and export goods in the same industry. New theories have emerged to study patterns of **intra industry trade**.

In *Potential Supply Chains in Textile and Clothing Sector in South Asia: An Exploratory Study* (Wadhwa, 2009), the author examines the potential of intra industry trade in the textile sector. Grubel Lloyd (GL) Index has been computed to measure using the aggregate industry classification for the selected South Asian countries, for 1990, 2000 and 2008. For further granularity, IIT among Bangladesh, India, Pakistan and Sri Lanka has also been analyzed at the more detailed 3-digit level for 2008. As the GL index is not dynamic, the study computes Marginal Intra-Industry Trade (MIIT) indices developed by Hamilton and Kniest (1991). The MIIT indices measure only the new trade flow during a given period.

The study shows a significant IIT between Pakistan and India at a 3 digit level in refined petroleum, textiles yarn, carboxylic compounds (organic chemicals) and plastics in primary forms. The study also reports a moderate level of IIT in other manufactures, miscellaneous goods, and basic ores and metals. In sectors such as food, manufactures and textiles there was evidence of IIT between the two countries, but its extent was rather low.

The paper, *Vertical and Horizontal Industrial Integration in South Asia* (Mel & Jayaratne, 2009) examines the prospects for vertical and horizontal integration of industries in South Asia. ITT indices computed show significant potential of intra industry trade in garments and textiles and the automobiles sector in South Asia. Relatively high levels of intra-industry trade were reported between India-Nepal and India-Sri Lanka, possibly due to the impacts of the bilateral Free Trade Agreements. The case studies were further developed with firm level interviews with industrialists who have engaged in vertical industrial integration in South Asia. The paper also makes policy prescriptions to enhance the trade-investment nexus in South Asia.

⁷ Theory of Comparative Advantage, David Ricardo, 1917.

Trends and Patterns of Regional Trade in South Asia with a Focus on Pakistan and India

Pakistan and India, despite being a part of preferential trade agreements (SAPTA, 1995 and SAFTA, 2004), do not even trade on an Most Favoured Nation (MFN) basis. Until March 2011, Pakistan allowed only a limited number of tariff lines to be imported from India, the list was called the “Positive List”. Intra industry trade could only take place in tariff lines that were allowed to be imported from India.

As a result, the true potential of intra industry trade may not be accurately captured with the current bilateral trade figures. To address this issue, trade indicators have been computed for other SAARC economies as a benchmark to indicate what the regional trade patterns may look like once the relationship between the Pakistan and India is normalized.

Trade Intensity Index

The trade intensity index (TII) is used to determine whether the value of trade between two countries is greater or smaller than would be expected on the basis of their importance in world trade.

Methodology

It is defined as the share of one country’s exports going to a partner divided by the share of world exports going to the partner. It is calculated as:

$$T_{ij} = \frac{x_{ij}/X_{it}}{x_{wj}/X_{wt}}$$

Where,

T_{ij} = Trade Intensity between country i and country j

x_{ij} = country i ’s exports to country j

x_{wj} = world exports to country j

X_{it} = country i ’s total exports

X_{wt} = total world exports.

An index of more than one indicates a bilateral trade flow that is larger than expected, given the partner country’s importance in world trade.

Analysis has been conducted on Standard International Trade Classification, Revision 3 (SITC, Rev 3) data from the United Nations Commodity Trade Statistics Database (UNcomtrade).

Estimates of Trade Intensity

In the SAARC region, Pakistan has a trade intensity value less than 1 with only India, indicating that the current levels of exports to India are not in accordance with the significance of the Indian economy in world trade. The exports are rather low despite the fact that India has granted an MFN status to Pakistan.

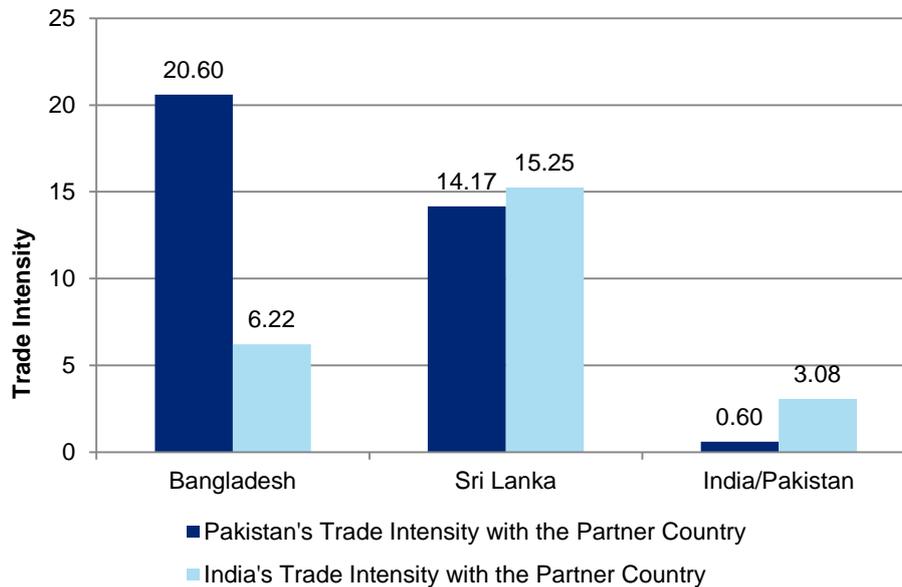
India, on the other hand, has greater than 1 trade intensity with Pakistan despite the fact that Pakistan has not granted MFN status to India and had allowed only approximately 33 percent of tradable tariff lines to be imported from India.

Pakistan’s trade intensity is greater than 1 with Bangladesh and Sri Lanka, indicating that the level of trade with these countries is more significant than the importance of these countries in world trade.

India, on the other hand, has greater than 1 trade intensities with all three countries. While, the trade intensity with Pakistan is greater than 1 it substantially lower than the trade intensity with Bangladesh

and Sri Lanka. India's trade intensity with Pakistan is expected to increase further once it is granted an MFN status.

Figure 1: Trade Intensity of Pakistan and India with Major SAARC Economies



Source: Author's calculations based on UNCOMTRADE data

Trade Complementarity Index

The trade complementarity (TC) index can provide useful information on prospects for intraregional trade in that it shows how well the import basket of a country matches the export basket of the partner country.

Methodology

The TC between countries k and j is defined as:

$$TC_{ij} = 100 \left(1 - \left(\sum |m_{ik} - x_{ij}| / 2 \right) \right)$$

Where,

TC_{ij} = Trade Complementarity between countries i and j

x_{ij} = share of good i in global exports of country j and

m_{ik} = share of good i in all imports of country k .

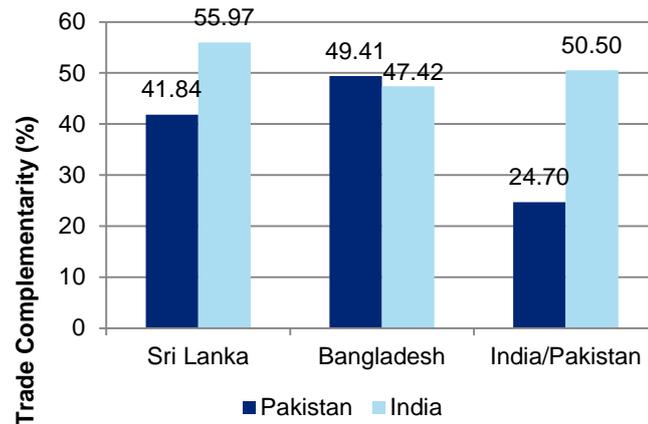
The index is zero when no goods are exported by one country or imported by the other and 100 when the export and import shares exactly match.

Analysis has been conducted on Standard International Trade Classification, Revision 3 (SITC, Rev. 3) data from the United Nations Commodity Trade Statistics Database (UNcomtrade).

Estimates of Trade Complementarity

The exports of India show a high degree of complementarity with the imports of Pakistan, but the converse is not true. Pakistan, in fact, has the least complementarity in the SAARC region with India. This may be Pakistan's export structure is not as diversified as the import basket of India.

Figure 2: Trade Complementarity of Pakistan and India with Major SAARC Economies in 2011



Source: Author's calculations based on UNCOMTRADE data

Export Diversification Index

Export diversification is defined as the spread of exports of a country over a range of sectors. The index ranges between 0 and 1. The greater the index, the more diversified the export basket of a given country.

Methodology

The export diversification (DX) index for a country i is defined as:

$$DX_i = \left(\sum |h_{ij} - x_i| \right) / 2$$

Where,

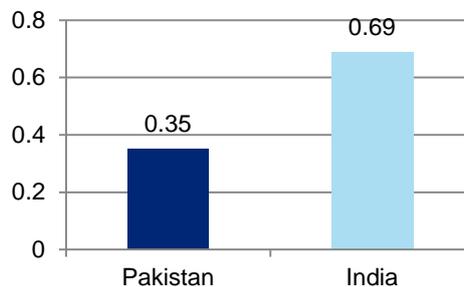
h_{ij} = share of commodity i in the total exports of country j and

x_i = share of the commodity in world exports

Analysis has been conducted on Standard International Trade Classification, Revision 3 (SITC, Rev 3) data from the United Nations Commodity Trade Statistics Database (UNComtrade).

Estimate of Export Diversification

Figure 3: Export Diversification Index of Pakistan and India



Source: Author's calculations based on UNCOMTRADE data

The figure indicates that the export base of India is almost twice as diversified as that of Pakistan. This suggests that India may be able to supply a greater variety of goods at various stages of production to Pakistan. For example, in addition to sourcing raw materials, Pakistan may also be able to benefit from the relatively stronger manufacturing sector and import machinery.

Intra Industry Trade (Grubel Lloyd Index)

Intra industry trade (IIT) is defined as simultaneous export and import of products in the same industry. There are two different types of intra-industry trade:

Horizontal IIT: This refers to the simultaneous exports and imports of goods classified in the same sector and at the same stage of processing. This is likely based on product differentiation, for example Pakistan's simultaneous import and export of garments in the final processing stage. As these products are produced using similar methods and provide similar functions they are classified in the same sector. Nonetheless, the exported garments differ in appearance, brand and product characteristics slightly from the imported clothing, catering to the tastes of different types of consumers. The secondary analysis covers horizontal intra industry trade.

Vertical IIT: This refers to the simultaneous exports and imports of goods classified in the same sector but at different stages of processing. This is likely based on the increasing ability to organize "fragmentation" of the production process into different stages, each performed at different locations by taking advantage of the local conditions. Pakistan, for example, imports technology-intensive food processing equipment and uses its wide agricultural base and abundantly available labor force to produce processed food which is then exported to Middle East or USA. To study vertical intra industry trade case studies were conducted with firms from the textile, chemicals and food processing sectors.

Methodology

IIT has been computed using the Grubel Lloyd index. Analysis is based on Standard International Trade Classification, Revision 4 (SITC, Rev 4) data from the United Nations Commodity Trade Statistics Database (UNcomtrade). The analyses cover Bangladesh, India, Pakistan and Sri Lanka as these are the major economies in South Asia.

Grubel-Lloyd Index (Basic)

The most often used method for determining the extent of intra-industry trade was proposed by Grubel and Lloyd (1975). This measure, now known as the Grubel Lloyd index (GLI), is simple to calculate and intuitive. The GLI of a country with a partner for sector i can be calculated as:

$$GLI = 1 - \frac{[|Export_{sector\ i} - Import_{sector\ i}|]}{[Export_{sector\ i} + Import_{sector\ i}]}$$

Where,

GLI = Grubel Lloyd Index in sector i

Export_{sector i} = Export to partner country in sector i

Import_{sector i} = Import from partner country in sector i

If the country only imports or only exports goods within the same sector, such that there is no intra-industry trade, the second term on the right-hand side of the equation is equal to one, such that the whole expression reduces to zero. Similarly, if the export value is exactly equal to the import value (export_{sector i} = import_{sector i}), the second term on the right-hand side of equation is equal to zero, such that the whole expression reduces to one. The Grubel–Lloyd index therefore varies between zero (indicating pure inter-industry trade) and one (indicating pure intra-industry trade).

IIT Levels may be interpreted as follows:

Level 1	GLI > 0.33	Evidence of Intra Industry Trade
Level 2	0.1 > GLI > 0.33	Potential of Intra Industry Trade
Level 3	GLI < 0.1	Inter Industry Trade

(Roldan & Perez, 2010)

Grubel Lloyd Index (Weighted)

In some cases a high Grubel-Lloyd index may be recorded without significant trade within that industry, a simple Grubel-Lloyd index may provide skewed results which may not be reflective of the true extent of intra-industry trade. Therefore GL index for each industry is weighted so as to account for the significance of trade within that industry. The weight for any sector i is determined based on the following formula.

$$weight_{sector\ i} = \frac{Export_{sector\ i} + Import_{sector\ i}}{Export_{total} + Import_{total}}$$

The weighted Grubel Lloyd Index (W. GLI) for any sector i is calculated as:

$$W.GLI = GLI \times weight_{sector\ i}$$

Data Aggregation

In practice, international trade flows are classified in various ways. SITC (Standard International Trade Classification) is widely used to study determinants of intra industry trade. It classifies products according to stages of processing. This allows an accurate analysis of horizontal intra industry trade patterns. The analysis has been conducted on SITC (Revision 4) data from UNComtrade.

The level of data aggregation is a key factor in determining the extent of intra-industry trade as different types of goods are grouped together in the same sector. Intra-industry trade index reduces at more disaggregated levels. SITC distinguishes ten different broad sectors at a 1-digit level. Each of these 1-digit sectors are subdivided into progressively more detailed 2-digit, 3-digit and 5-digit sectors. For example, sector 6 at the 1-digit level consists of "manufactured goods." One of the sub-sectors at the 2-digit level is sector 61 "leather manufactures" while another is sector 65 "Textile yarn, fabrics, made-up articles." Intra-industry trade analysis at the very broad 1-digit level would inaccurately classify trade of leather manufactures in exchange for textile articles as intra-industry trade.

To address this issue, the analysis has been conducted at the more detailed 2, 3 and 5 digit levels. The 3-digit level, for example, distinguishes between textile yarn (sector 651) and cotton fabrics (652) separately.

Estimates of Current Intra Industry Trade between Pakistan and India

Current level of intra industry was determined based on the Grubel-Lloyd index for items that were allowed to be imported from India as per the Positive List until March 2012.

Estimates of Potential Intra Industry between Pakistan and India

Current levels of bilateral intra industry trade between Pakistan and India do not give any indication of potential of intra industry trade in approximately 70 percent tradable tariff lines that were previously restricted from India as per the Positive List regime until March 2012

As a result, high potential sectors have been determined based on sectors in which Pakistan and India has high level of intra industry trade globally and/or in the SAARC region. Based on this criteria, the following sector have been determined as high potential:

- Sectors with a high weighted Grubel Lloyd Index in bilateral trade between India and Pakistan
- Sectors with high weighted Grubel Lloyd Index for Pakistan and India both
- Sectors that show as high potential IIT in bilateral trade of India and Pakistan with major SAARC economies, namely, Sri Lanka and Bangladesh

The Grubel-Lloyd index was computed between the following pairs:

- Pakistan global trade
- India global trade
- Pakistan Bangladesh
- India Bangladesh
- Pakistan Sri Lanka
- India Sri Lanka

The weighted Grubel-Lloyd index for each of the above mentioned pairs is shown for each industrial SITC chapter at the 2 digit level. The index is shown to the nearest 4 decimal places. Please see the Appendix for IIT indices for India, Pakistan, Bangladesh and Sri Lanka.

Estimates of Intra Industry Trade

Current Intra Industry Trade (Positive List)

In February 20012, Pakistan ended the Positive List regime and allowed all imports from India except for 1206 tariff lines indicated in the Negative List.⁸

Table 1 shows the level of IIT between India and Pakistan in the sectors that were open to India as per the positive list at SITC digit level 2. The highest level of IIT was observed in vegetables and fruit, textiles, nonferrous metals and organic chemicals.

Both Pakistan and India have higher levels of intra industry with Bangladesh in textile fibres (cotton) than with each other. A high level of intra industry trade was observed between India and Bangladesh in inorganic chemicals and non-metallic mineral manufactures. India also has relatively high IIT with both Sri Lanka and Bangladesh in petroleum products indicating a potential for Pakistan.

Table 1: Products with High Intra Industry between Pakistan, India and other SAARC Economies

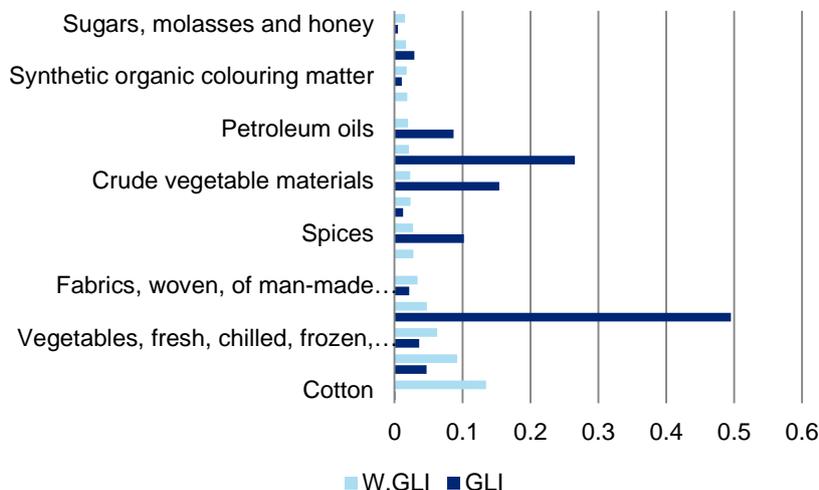
#	SITC4 Digit 2	Product Description	Pakistan India W. GLI	Global Pakistan W. GLI	Global India W. GLI	Pakistan Bangladesh W. GLI	India Bangladesh W. GLI	Pakistan Sri Lanka W. GLI	India Sri Lanka W. GLI
1	5	Vegetables and fruit	0.0757	0.01823	0.007	5E-05	0.022	0.0222	0.0045
2	65	Textile yarn, fabrics, made-up	0.0283	0.03625	0.009	0.005	0.062	0.0169	0.014
3	68	Non-ferrous metals	0.0172	0.00152	0.012	-	0.004	0.0025	0.0091
4	51	Organic chemicals	0.015	0.00941	0.027	-	9E-05	8E-05	0.002
5	52	Inorganic chemicals	0.0086	0.00109	0.003	0.0001	0.004	0.0005	0.0017
6	26	Textile fibres (other than wool top	0.0077	0.01424	0.003	0.1325	0.051	0.0004	0.0001
7	66	Non-metallic mineral manufactures,	0.007	0.00633	0.091	8E-07	0.006	0.0011	0.0137
8	89	Miscellaneous manufactured articles	0.0066	0.01567	0.016	0.0006	0.002	0.0034	0.0045
9	57	Plastics in primary forms	0.0058	0.01234	0.008	6E-05	0.001	0.0003	0.0015
10	33	Petroleum, petroleum products	0.0054	0.03813	0.146	-	0.017	-	0.011

Source: Author's calculations based on UNCOMTRADE data

⁸ Appendix G, Pakistan Trade Policy, 2012

Intra industry trade indices, at SITC Digit Level 3, for high potential sectors in the Positive List shows the following numbers:

Figure 4: Intra Industry Trade in Items of the Positive List



Source: Author's calculations based on UNCOMTRADE data

Table 2: Items on the Positive List with the highest Weighted GLI between Pakistan and India

Sr. No.	Product Code	Product Name	GLI	W.GLI
1	263	Cotton	0.0013018	0.1345913
2	511	Hydrocarbons, n.e.s., and their halogenated, sulphonated	0.0473512	0.0920758
3	054	Vegetables, fresh, chilled, frozen or simply preserved	0.0360439	0.0626069
4	057	Fruit and nuts (not including oil nuts), fresh or dried	0.4953906	0.0476906
5	653	Fabrics, woven, of man-made textile materials	0.0217204	0.0340213
6	625	Rubber tyres, interchangeable tyre treads, tyre flaps	4.154E-05	0.0277449
7	075	Spices	0.1020502	0.027182
8	575	Other plastics, in primary forms	0.0126266	0.0234597
9	292	Crude vegetable materials, n.e.s.	0.1544596	0.0231293
10	661	Lime, cement, and fabricated construction materials	0.2658414	0.0213047
11	334	Petroleum oils and oils obtained from bituminous	0.0868098	0.0198599
12	074	Tea and mate	0.000221	0.0185813
13	531	Synthetic organic colouring matter and colour lakes	0.0106883	0.0178327
14	516	Other organic chemicals	0.0293942	0.0166611
15	061	Sugars, molasses and honey	0.0049443	0.0153151

Source: Author's calculations based on UNCOMTRADE data

At SITC digit level 3, the highest incidence of IIT (weighted) is observed in textiles (cotton and woven fabrics), agricultural products, hydrocarbons, primary plastic forms and rubber tyres. The main agricultural items that show significant levels of intra industry trade are fresh vegetables, fruit and nuts and spices. There is a notable potential in sugars, molasses and ethanol also.

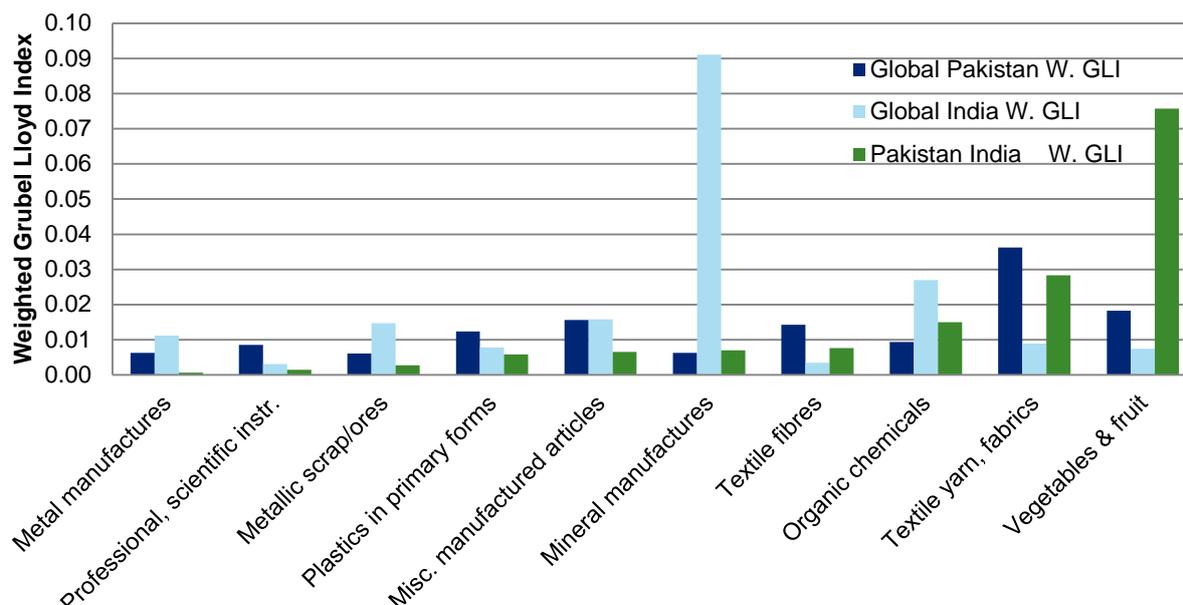
Simple Grubel Lloyd index shows maximum IIT in fruits and nuts, however when the index is weighted against total bilateral trade, cotton emerges as the tariff line with the most significant level of intra industry trade.

Potential Intra Industry Trade

Sectors in which Pakistan and India have high levels of intra industry trade globally were determined to identify potential areas in which Pakistan could develop high levels of IIT with India once trade is normalized. The premise is that if Pakistan has integrated successfully into international supply chains, it will also be able to form successful linkages in those sectors with India.

Potential IIT at Sector Level (SITC Digit Level 2)

Figure 5: Top 10 Tariff Lines (excluding petroleum products)
at SITC Digit Level 2 with Pakistan Global W. GLI > 0.001 and India's Global W. GLI > 0.001



	Metal manufactures	Professional, scientific instr.	Metallic scrap/ores	Plastics in primary forms	Misc. manufactured articles	Mineral manufactures	Textile fibres	Organic chemicals	Textile yarn, fabrics	Vegetables & fruit
■ Global Pakistan W. GLI	0.0063	0.0086	0.0061	0.0123	0.0157	0.0063	0.0142	0.0094	0.0363	0.0182
■ Global India W. GLI	0.0112	0.0031	0.0148	0.0078	0.0159	0.0910	0.0035	0.0269	0.0089	0.0074
■ Pakistan India W. GLI	0.0007	0.0014	0.0027	0.0058	0.0066	0.0070	0.0077	0.0150	0.0283	0.0757

Source: Author's calculations based on UNCOMTRADE statistics

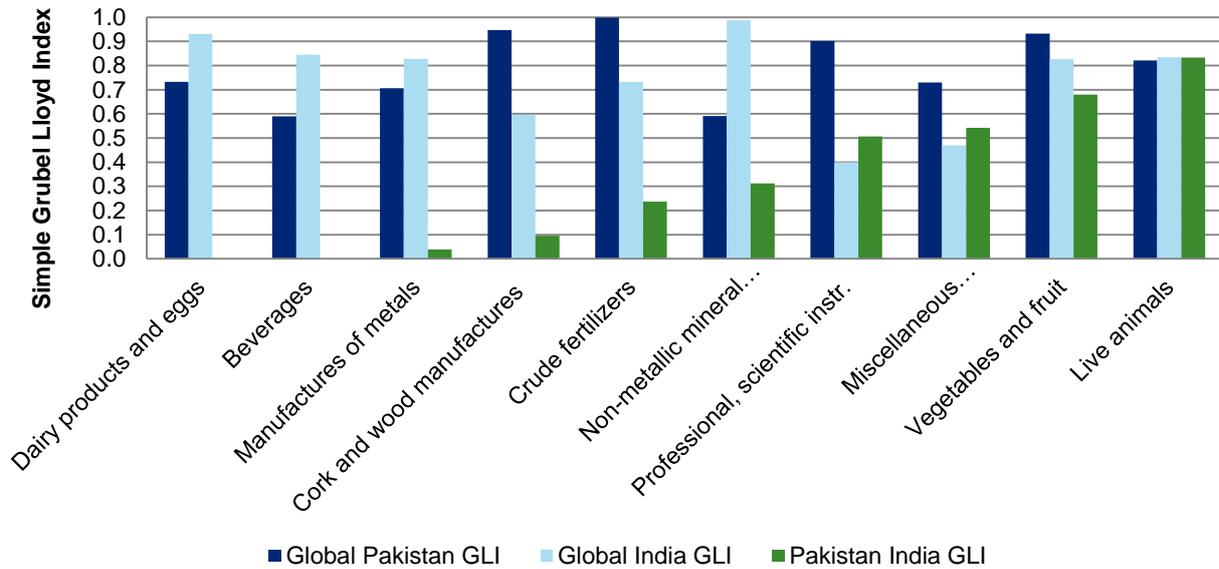
Weighted Grubel Lloyd Indices show that Pakistan and India have high levels of intra industry trade in agricultural products including vegetables and fruits both globally and bilaterally. A significant level of intra industry trade is also indicated in natural resources based sectors like textile fiber (cotton), yarn and fabric.³ IIT has also been observed in organic chemicals.

Figures indicate a large potential intra industry trade expansion in labor intensive⁹ sectors like basic manufactures of metal, non-metallic minerals and cork and wood. At a further disaggregated level, the metal manufactures with highest IIT potential are cutlery, hand tools, sanitary ware and metallic cables. In the manufactures of minerals, the most significant items are marble, glassware and ceramics.

There is a potential of IIT in primary plastics, scientific instruments and metallic ores and scrap. Textiles, chemicals and food processing are covered in detail in the case studies. Please see Appendix A for a detailed list of high potential products at SITC digit level 5.

⁹ Measuring vertical and horizontal intra industry trade: Case for Turkey

Figure 6: Top 15 Tariff Lines at SITC Digit Level 2 with Pakistan Global GLI > 0.3 and India's Global GLI > 0.3



	Dairy products and eggs	Beverages	Manufactures of metals	Cork and wood manufactures	Crude fertilizers	Non-metallic mineral manufactures	Professional, scientific instr.	Miscellaneous manufactured articles	Vegetables and fruit	Live animals
Global Pakistan GLI	0.733	0.589	0.706	0.946	0.998	0.591	0.901	0.730	0.932	0.821
Global India GLI	0.931	0.844	0.827	0.597	0.732	0.987	0.400	0.469	0.826	0.835
Pakistan India GLI	0.000	0.000	0.038	0.096	0.237	0.312	0.506	0.542	0.679	0.833

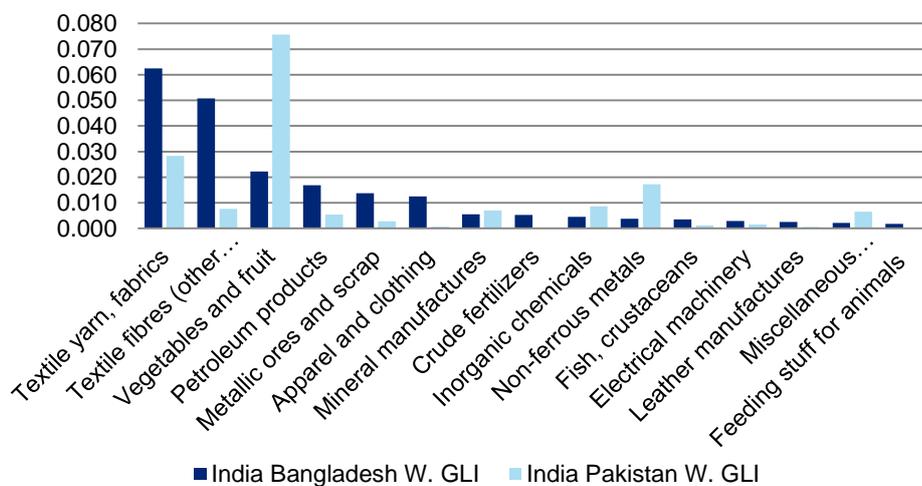
Source: Author's calculations based on UNCOMTRADE statistics

When simple Grubel Lloyd indices are considered, dairy and beverages emerge as high potential IIT sectors as currently there is no intra industry trade between India and Pakistan. At a disaggregated level, Pakistan and India have high IIT levels in dairy cream.

India and Pakistan have high levels of global and bilateral IIT in live animals. There is a potential of importing goats from India and exporting poultry to India.

IIT Potential indicated by Regional Trade Patterns

Figure 7: India's Intra Industry Trade with Bangladesh and Pakistan

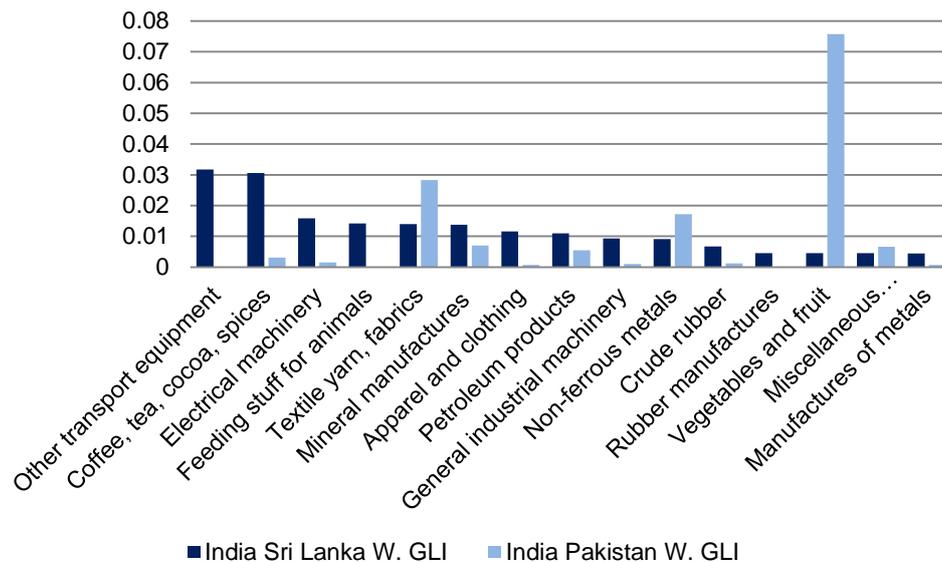


Source: Author's calculations based on UNCOMTRADE statistics

In apparel and clothing, intra industry between India and Bangladesh is significantly higher than that between India and Pakistan. This is primarily because India opened its textile sector to imports from Bangladesh in 2008, by removing all textile tariff lines from the SAFTA Sensitive List that India maintains for least developed countries (LDCs) including Bangladesh.

There is potential for Pakistan to form supply chain linkages with India in sectors where there is a greater intra industry trade between India and Bangladesh including petroleum products, metallic ores and scrap and crude fertilizers.

Figure 8: India's Intra Industry Trade with Sri Lanka and Pakistan



Source: Author's calculations based on UNCOMTRADE statistics

High levels of intra industry trade have been observed between India and Sri Lanka in the automobiles sectors where India is a large investor in the auto sector in Sri Lanka. Pakistan can only form linkages with India in this sector once the negative list is removed and there is cross border FDI.

India also has a higher incidence of intra industry trade with Bangladesh than Pakistan apparel and clothing. This is because India has given deeper preferences to textile imports from Sri Lanka under SAFTA and also the bilateral FTA.

Similarly sectors like electrical machinery, animal feed and mineral manufacture also present an opportunity for expansion of intra industry trade between India and Pakistan.

Freight Saving Estimates

Low freights costs and transport duration from India to Pakistan are expected to encourage intra industry trade between the two countries. The following table lists freight rates for 20 and 40 feet containers to Pakistan. The lowest freight is from Delhi to Wagah indicating substantial cost savings if trade is conducted by road. The freight by sea from Mumbai to Karachi is comparable to freights from various ports in China.

Table 3: Textile Industry's Economic Contribution

Country of Origin	Port of Origin	Port of Destination in Pakistan	20 Ft	40 Ft
India	Delhi	Wagah	\$650	\$1,050
China	Shanghai	Karachi	\$680	\$1,050
China	Quingdao	Karachi	\$720	\$1,100
China	Kwantang	Karachi	\$760	\$1,150
China	Hong Kong	Karachi	\$800	\$1,200
India	Mumbai/Navasheva	Karachi	\$750	\$1,250
EU	Germany (Hamburg)	Karachi	\$1,800	\$2,600
EU	Poland(Gdansk)	Karachi	\$2,600	\$3,600

Source: Freeline Movers, Islamabad, 2013

Challenges

In order to make the potential supply chain work, SAFTA can play a very important role. The lowering of tariffs and removal of the identified products of imports from a country's sensitive list under SAFTA can help in not only improving the cost competitiveness of a country's imports, but will also make its exports more competitive globally.

Future Work

The case studies may be expanded into a comprehensive sector wide survey to capture the potential supply chains. Input output tables may be used to construct potential supply chain analysis. The secondary analysis may be expanded to study VIIT.

The GL index lacks desirable dynamic properties; an increase or decrease in the GL index over time is not necessarily associated with corresponding increases or decreases in IIT. For example if the imposition of a trade barrier results in a decline in the exports from a country and, hence, a decline in the volume of IIT, the GL index may not be able to capture this fall in IIT (Andresen, 2003). To address this issue, Marginal IIT may be computed.

Chapter 2: Intra Industry Trade in Textiles: Case Study on Knitwear

Executive Summary

There is significant intra industry trade between Pakistan and India in the textiles sector. The item with the largest weighted GLI in bilateral trade is cotton. Pakistan grows the short staple variety of cotton that is in demand for denim, towel ware and knitwear. India produces long staple cotton which is used in producing fine fabrics including lawn.

Pakistan specializes in cotton based intermediate goods, primarily yarn and grey fabrics. India has developed supply chains from fiber production to garmenting and packaging. Pakistan's advantage lies in large volumes, high quality fabric (as per coarse count needs for bed linen) and the broad gauge of widths. Indian fabric is produced in smaller volumes and India's superiority lies in the mid-range and finer counts than in the standard weave for home furnishings. Printing technologies in Pakistan are considered far superior than India's. It also has an edge in flannel and fleece (Tewari, 2008).

This study suggests a potential in intra industry trade in filament yarn and man-made fibers in addition to cotton and cotton based fabrics. Estimates reveal significant savings in import bill if Pakistan imports textile machinery, chemical dyes and intermediate products (elastics, buttons, labels etc.) and high quality packaging materials from India instead of its current trading partners. Further savings may be accrued if the intermediate products are not protected by Pakistan's Sensitive List and are imported at preferential tariffs under SAFTA.

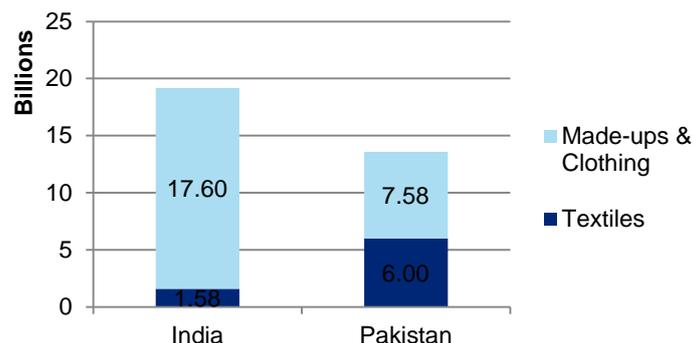
Sector Overview

Table 4: Textile Industry's Economic Contribution

	Pakistan	India
Exports	52% of total exports	17 %
Manufacturing	46% of total manufacturing	14%
Employment	40% of labor	35 Million
GDP	8.5% of GDP	4%
Market Capitalization (Listed Companies)	5.0% of market capitalization	-

Source: Pakistan Economic Survey, 2011-2012

Figure 9: Comparison of the Export Structure of the Textiles Industry in Pakistan and India, 2011



Source: COMTRADE

Pakistan

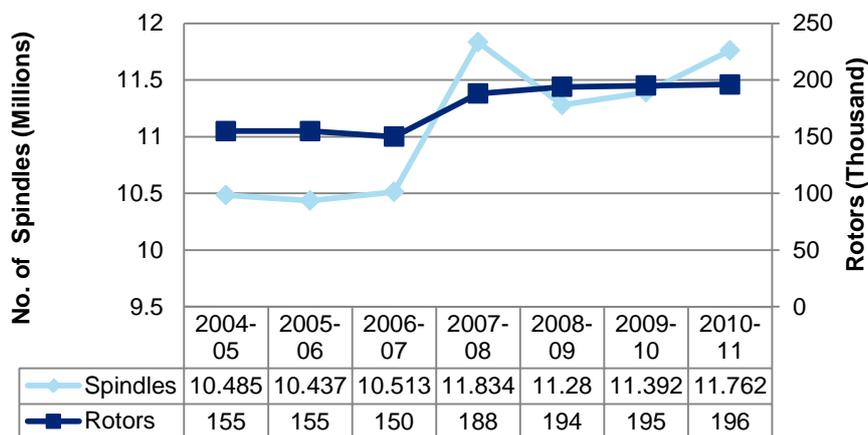
Textile industry is the largest industry of Pakistan's economy. It accounts for 8.5 percent of GDP, contributes to 54 percent of export earnings and employs 40 percent of the industrial workforce. Pakistan is the 4th largest producer of cotton in the world and the 3rd largest consumer of raw cotton. However it ranks as the 12th largest exporter of textiles.

In Pakistan, the T&C sector is divided equally into textile and clothing. Pakistan exported US \$ 6 Billion worth of textiles in 2011-2012, and exported US \$ 7.6 Billion worth of clothing in the same period. Pakistan's main markets are US and EU. Top exports are textiles and made-ups including bed linen, toilet and kitchen linen and cotton yarn.

Spinning Sector

The spinning sector is the most important segment in the hierarchy of textile value chain. There has been a steady growth in the spindles in the last decade over 3 million spindles were added. As a result the demand for cotton and polyester fiber has increased. However weaving capacity has not increased at the same pace and the excess production of yarn could not be absorbed by local industry.

Figure 10: Growth of the Spinning Sector in Pakistan, 2005-2011



Source: APTMA

While there is a general upward trend in the installed capacity of spindles, there was a sharp decline at the outset of the recession. Several factors including inflation, doubling of labor wages and gas and electricity shortages led to this decline.

Weaving Sector

Pakistan's organized mill sector is reported to have over 4,000 air-jet looms and 24,000 shuttle less looms. There are 300,000 power looms also. However, a large capacity of shuttle less looms has been installed to replace power looms. Air jet and shuttle less looms produce high quality cloth a bulk of which is exported. Pakistan produces high quality sheeting fabrics. However has not set up weaving capacity in shirting fabrics.

Garment Industry

This sector is fragmented with a range of small, medium and large scale units most with 50 or less machines. There are 450,000 stitching machines installed. Denim wear and knitwear form constitute a large percentage of exports.

Pakistan is a market leader in home textiles with an installed capacity of 4.6 billion square meters per annum.

India

India's textile and clothing industry is one of the pillars of the national economy of India. The textiles industry currently contributes about 14% to industrial production, 4% to GDP, and 17% to the country's export earnings, according to the Annual Report 2010-11 of the Ministry of Textiles.

The industry accounts for nearly 12% share of the country's total exports basket. Indian textile sector is the second biggest employment generator in the economy, after agriculture. It provides direct employment to more than 35 million people.

The Indian textiles industry is unique and extremely varied, with the hand-spun and hand-woven sector at one end of the spectrum, and the capital intensive, sophisticated mill sector at the other. The decentralized power-looms/hosiery and knitting sector form the largest section of the Textiles Sector.

The 12th Five Year Plan (2012-2017) projects that India's export of Textiles and Clothing will rise to USD 64.41 billion by 2017.

The export of textiles and clothing totaled US\$ 22.42 billion in 2009-10. FDI into the textiles sector was US\$ 959 million from Apr 2000 - Apr 2011, according to Department of Industrial Policy and Promotion statistics.

Following the abolition of the Multi Fiber Agreement in 2005, India's T&C exports grew rapidly at a compound annual growth rate of 8 percent from 2004-2008 until the recession.

Exports valued at USD \$17,053.71 million as against USD \$13,225.72 million during the corresponding period of previous financial year registering an increase of 28.94 percent in US dollar terms. However, the share of textiles in India's total exports of all commodities has declined to 10.03 percent from 10.74 per cent during April- October, 2011 as against April- October, 2010.

In rupee / US dollar terms (during 2010-11), exports of readymade garments witnessed the highest export share of 39.61 percent, followed by Cotton Textiles (31.16), and Man-Made Textiles (17.31).

Spinning Sector

The Cotton and Man-made fiber textile industry is the largest organized industry in the country in terms of employment (nearly 1 million workers) and number of units. Besides, there are a large number of subsidiary industries dependent on this sector, such as those manufacturing machinery, accessories, stores, ancillaries, dyes & chemicals.

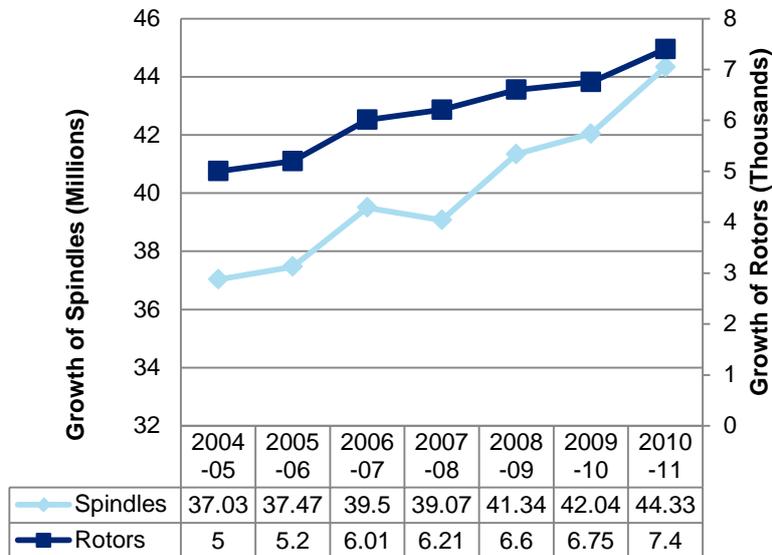
As on 30.11.2011, there were 1946 cotton/man-made fiber textile mills (non-SSI) in the country with an installed capacity of 43.13 million spindles, 20,000 rotors and 52,000 looms.¹⁰

In 2011-2012 The capacity utilization in the spinning sector of the organized textile mill industry ranged between 80 to 90 % while the capacity utilization in the weaving sector of the organized textile mill industry ranged between 41 to 62 %

¹⁰ Annual Report, Ministry of Textiles, GoI, 2011-2012

The installed capacities of spindles and rotors have been increasingly steadily over the years.

Figure 11: Growth of Spinning Sector in India (2004-2011)



Source: Southern India Mills Association

Production of manmade filament yarn has grown at a rate of 5.6 percent while the production of spun yarn trailed behind at a growth rate of 4.2 percent. The spun yarn constitutes 73 percent of the total yarn production.

The spinning is able to benefit from the strong fiber base of the country. India is the largest producer of jute and the second largest producer of cotton, silk and cellulosic fibers after China.

However India does not grow the short staple cotton variety which is produced in Pakistan. This variety is used in denim, knitwear, towels and other such materials for its absorbent quality.

Weaving Sector

India's weaving sector is fragmented as a result of restrictive government policies that favored the small scale operations. As a result India lags in productivity to supply high quality of fabrics for garmenting.

India has a relatively low percentage of shuttle less. Only 3 percent as compared to a world average of 16 percent. This limits India's capacity to produce high quality fabrics.¹¹

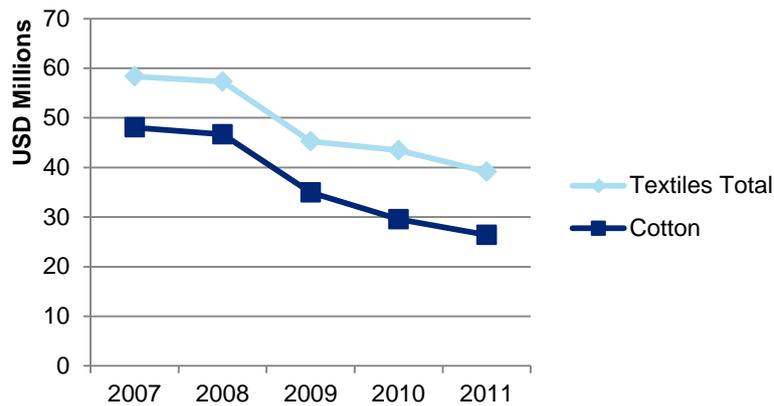
¹¹¹¹ Potential Supply Chains in Textiles and Clothing Sector in South Asian, UNCTAD, 2010

Bilateral Trade Trends

Pakistan's exports to India are largely dominated by cotton. There has been a downward trend in exports to India largely due to the ban in cotton exports in India which resulted in meeting the industry's demand by the domestically produced cotton.

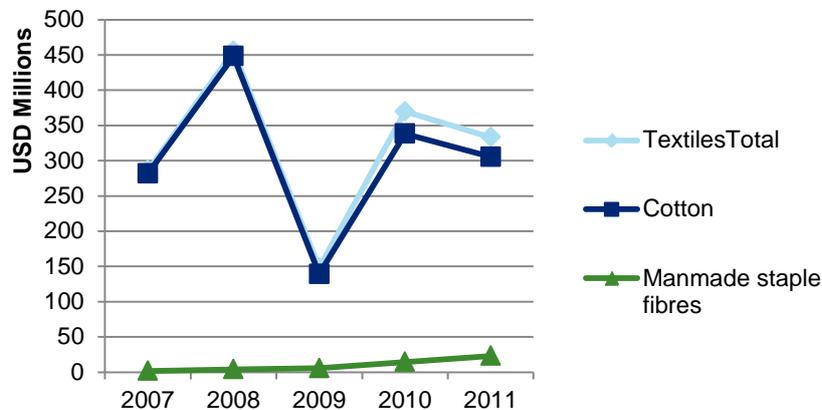
Pakistan's import of manmade fibers has been steadily increasing from India. However the imports of cotton, while substantial have been erratic, due to periodic bans in exports of cotton.

Figure 12: Trend of textile exports from Pakistan to India, 2007-2011



Source: COMTRADE

Figure 13: Trend of imports of textile from India to Pakistan



Source: COMTRADE

Trade in Cotton:

The industry in Pakistan has increased its reliance of raw cotton due to stagnant growth of domestic cotton crop and increase in mill consumption as shown in the figure. During the last decade India has gone for bio-genetic varieties and production of cotton has more than trebled, while it has fallen somewhat in Pakistan. Consequently, the ratio has diverged from about 2:1 to over 8:1. India today enjoys a substantial exportable surplus of cotton.

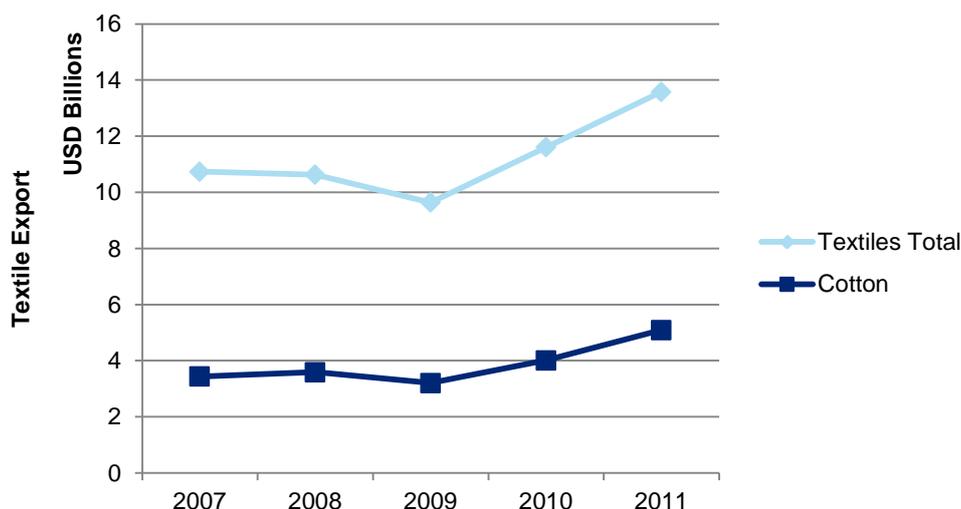
Pakistan imports long staple cotton from India to produce fine quality fabric like lawn. India imports the short staple variety from Pakistan for its domestic denim and knitwear industry.

Table 5: Production of Cotton in Pakistan
(000 Bales of 375 lbs or 170 kgs)

Years	Production	Imports	Mills & Non-Mill Consumption
2000-01	10,732	670	8943
2001-02	10,612	1,080	11,358
2002-03	10,211	1,103	11,952
2003-04	10,048	2,312	11,905
2004-05	14,265	2,249	12,986
2005-06	13,019	1,728	14,896
2006-07	12,856	2,952	15,579
2007-08	11,655	5,003	15,630
2008-09	11,819	2,456	15,378
2009-10	12,693	2,010	14,128
2010-11	11,698	2,002	14,378

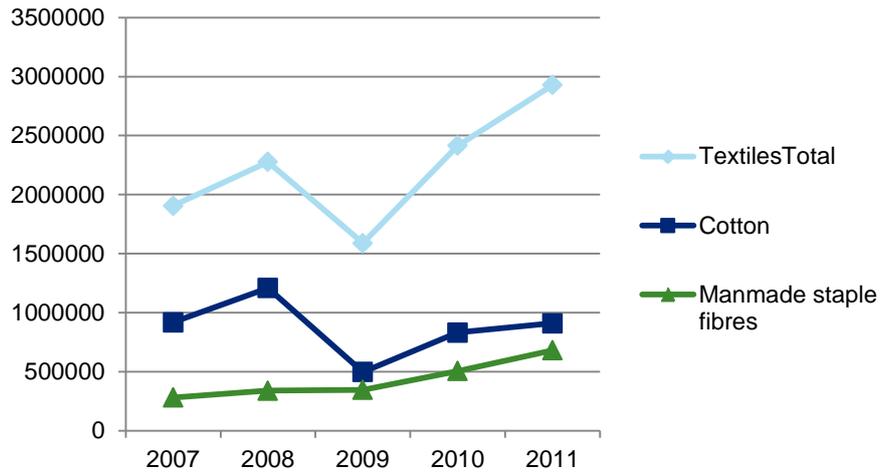
Source: APTMA

Figure 14: Trend of global textiles exports of Pakistan



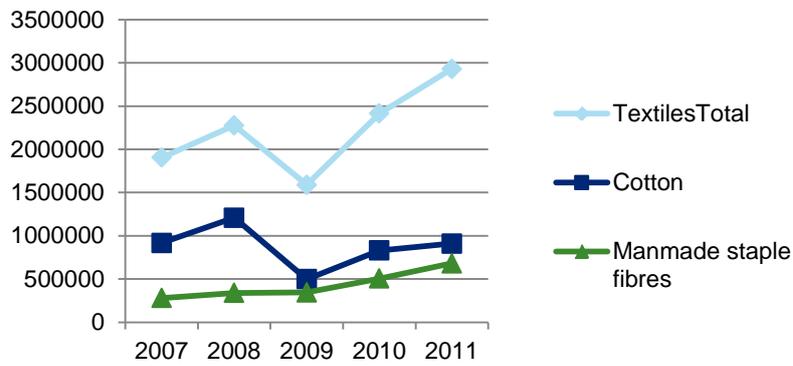
Source: UNCOMTRADE

Figure 15: Trend of global textiles imports of Pakistan



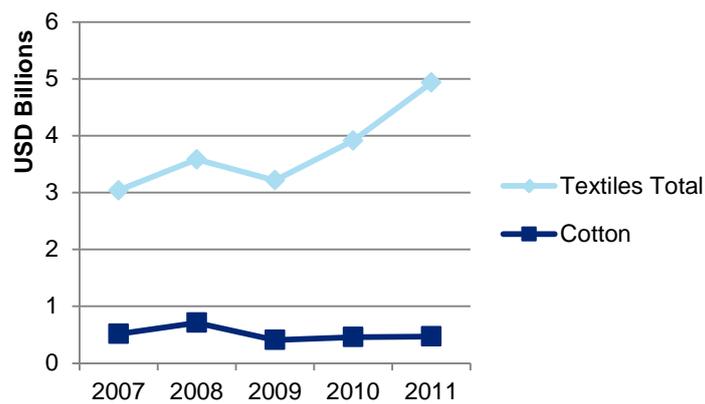
Source: UNCOMTRADE

Figure 17: Trend of global textiles exports of India



Source: APTMA

Figure 18: Trend of global textiles imports of India



Source: UNCOMTRADE

SWOT Analysis

Strengths

Complementary & Distinct Strengths

- Pakistan grows the short staple variety of cotton that is in demand for denim, towel ware and knitwear.
- Pakistan specializes in cotton based intermediate goods, primarily yarn and grey fabrics. India has developed supply chains from fiber production to garmenting and packaging.
- Although there is considerable competition between India and Pakistan in the export market, (Tewari, 2008) suggests that leading buyers see important difference in product level competitiveness of each country.
- Pakistan's advantage lies in large volumes, high quality fabric (as per coarse count needs for bed linen) and the broad gauge of widths. Indian fabric is produced in smaller volumes and India's superiority lies in the mid-range and finer counts than in the standard weave for home furnishings. Printing technologies in Pakistan are considered far superior than India's. It also has an edge in flannel and fleece (Tewari, 2008).

Table 6: Sectors with high Revealed Comparative Advantage as identified in Literature

Country	Textile Products with high RCA	Literature
Pakistan	Spun yarn	Robbani (2004) Gereffi (2003)
	Fabric	
	Bed Linen, home furnishings, carpets, basic menswear and hosiery	Tewari (2008)
India	Cotton	(Verma, 2002)
	Spun yarn	Robbani (2004) Gereffi (2003)
	Yarn, made ups and some categories of garments	(Verma, 2002)
	Cotton knit and woven women's blouses and skirts, embellished and embroidered, fine yarn	(Tewari, 2008)

Weakness

- Pakistan lags behind in innovation, design and perceived reliability
- Lack of local base of fine count yarn, long staple cotton
- Fragmented industry
- Load shedding
- Labor wages
- Inflation, interest rates

Opportunities

- India invests in Pakistan and brings know how for technical textiles
- Pakistan will gain access to EU market via India EU FTA if Pakistani firms invest in India or Pakistan integrates into India's global textile supply chain.
- Large international retailers have a requirement of contingent sourcing i.e. they prefer to source from companies that have an alternate site of production in another country. This ensures that if under emergencies the main production facility shuts down, the

order can be sourced from the alternate location. India presents an attractive location for setting up alternate facilities as there is a direct road link between the two countries.

- The duration of the summer season in India due to which lawn can be in demand throughout the year.
- Firms in South Asia are not vertically integrated and are largely privately owned and medium sized, providing opportunities to form supply chain linkages.
- There is now robust evidence that transport costs reduce tradable volumes. Under ideal circumstance, supplies procured within the region will involve lower transport cost improving competitiveness. With regard to the exports of textiles and apparels, most South Asian countries suffer from high ‘lead time’(i.e. the time spent between the receipt of export order and delivery of the order at the importer’s designated port). Regional sourcing of raw materials, particularly for apparels, will help mitigate the problem.
- India has is increasing becoming a preferred source for certain inputs by international brands which often provide strict specification with regard to the inputs to be used and nominate their sources. To be able to meet this requirement Pakistan must remove these inputs from the Sensitive List.

Threats

- Border Thickness. A survey of Bangladesh based firm reported that “it is cheaper to source raw material from PRC than India and Pakistan (Tewari, 2008)”. The reason being energy costs, bureaucratic red tape, complex tariffs, infrastructure gaps, ports costs and other NTBs.
- There is a concern in the industry that the manufacturing base in Pakistan may shift to Bangladesh or India
- There might be some apprehension about compromising the export sector’s competitiveness by using raw materials and primary inputs manufactured in India as opposed to the west.
- Apart from high tariffs and inclusion of products in countries’ Sensitive Lists, other reasons for lack of supply chains in this sector in the region could be existence of non-tariff barriers.
- NTBs and stringent standards and testing procedures impede trade.
- India’s ban of export of cotton: In April, 2010, the Indian Government placed a ban on the export of raw Indian cotton to Pakistan and suspended all export sales contracts that were already registered. However, due to the pressure of Indian farmers and exporters, the Indian government decided at a later stage to allow the export of cotton until the allocated quota of 5.5 million bales (of 170 kg) for shipment gets exhausted. Due to the unfair move of Indian Government, the buyers of Indian cotton/textile mills faced a lot of difficulties in meeting their urgent requirement of raw cotton and fulfilling their contractual obligations in the international market. (FPCCI, 2010)

Intra Industry Trade Potential

Current Intra Industry Trade in Textiles

At SITC digit level 3, the most IIT is observed in cotton, synthetic fiber, cotton yarn, cotton fabrics and woven fabrics of man-made textile materials.

Table 7: Potential of Intra Industry Trade between India and Pakistan based on Grubel Lloyd Index

Sr. No.	Product Code	Product Name	GLI	W.GLI
1	263	Cotton	0.0013018	0.1345913
2	266	Synthetic fibers suitable for spinning	0.7041252	7.341E-05
3	267	Other man-made fibers suitable for spinning; waste of man...	0.0034242	0.0125441
4	268	Wool and other animal hair (including wool tops)	0.2737132	0.0032046
5	269	Worn clothing and other worn textile articles; rags	0.4699551	0.0011815
6	651	Textile yarn	0.8519385	0.014407
7	652	Cotton fabrics, woven (not including narrow or special fa...	0.4900939	0.0091435
8	653	Fabrics, woven, of man-made textile materials (not includ...	0.0217204	0.0340213
9	655	Knitted or crocheted fabrics (including tubular knit fabr...	0.1984995	0.0003015
10	656	Tulles, lace, embroidery, ribbons, trimmings and other sm...	0.1085735	0.0007577
11	657	Special yarns, special textile fabrics and related produc...	0.4632763	0.0007608
12	658	Made-up articles, wholly or chiefly of textile materials,...	0.8075351	0.00043
13	659	Floor coverings, etc.	0.0904581	1.777E-05

Source: Author's calculations based on data from UNCOMTRADE Classification SITC V.5

High Potential Items for Intra Industry Trade

Current Intra Industry Trade

Pakistan has a high revealed comparative advantage in cotton yarn and woven fabrics while India has a higher revealed comparative advantage in filament yarn.

Table 8: Potential of Intra Industry Trade between India and Pakistan based on Grubel Lloyd Index

Product	Product Name	IIT	W. GLI	Export to Pakistan	Import from Pakistan	India RCA	Pakistan RCA
65133	Cotton yarn (other than sewing thread)	0.86	0.00972	9868.34	13012.41	12.10	102.08
65243	Other woven fabrics,>85% cotton, we	0.83	0.00206	2086.58	2935.69	2.69	63.48
65234	Other woven fabrics,>85% cotton, we	0.59	0.00064	1537.21	650.92	4.47	15.87
65221	Woven fabrics containing > 85% cotton	0.29	0.00023	1409.21	235.33	4.37	80.41
65315	Other woven fabrics, containing 85%	0.03	0.00018	182.75	13702.03	1.81	1.07
65292	Other woven fabrics of cotton, dyed	0.97	0.00017	179.81	168.97	19.62	100.31
65152	Filament yarn (other than sewing thread)	0.40	0.00011	116.39	461.67	8.19	0.37
65242	Other woven fabrics,>85% cotton, we	0.05	0.00010	4258.79	99.34	1.29	37.98
65318	Other woven fabrics, containing < 8	0.38	0.00009	415.72	96.21	6.03	1.00
65893	Life-jackets & lifebelts & others	0.51	0.00008	85.35	251.93	1.89	2.40

Source: Author's calculations based on data from UNCOMTRADE SITC V. 5IIT Potential

Potential Intra Industry Trade

At SITC level 5, the products with the highest levels of intra industry trade ($GLI > 0.3$) in both India and Pakistan are woven fabrics of synthetic materials, textile wall coverings, labels and badges, carded wool, man-made yarn and outerwear. Please see the appendix for product details.

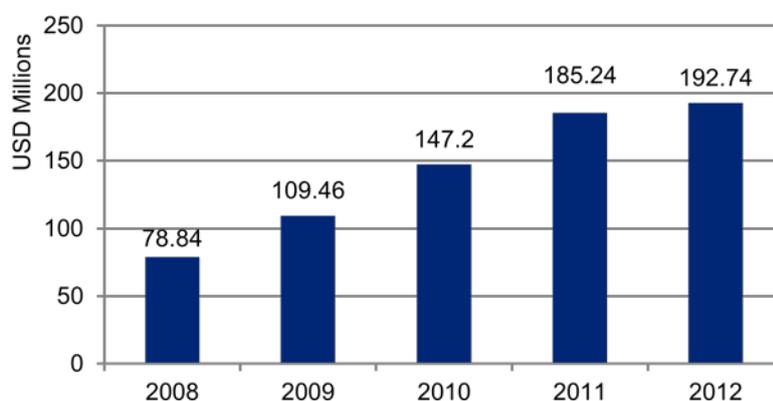
Case Study on Masood Textile Mills

Masood Textile Mills is the largest exporter of knitwear in Pakistan with an annual turnover of approximately 200 USD Million. MTM's main export market is the USA. Its major clients are JC Penny, Walmart, Macys, Sears, NFL, Dockers, V&D, The Artisan, Levis, Kohls, Lee, Fruit of the Loom, Adidas, VF, Nautica, Guess, Ralph Lauren, Footlocker, Reebok, Jockey, CHAMPS, Tom Tailor, Puma, Hollister, Under Armour, Calvin Klein, Abercrombie & Fitch, Hanes, Izod, Tommy Hilfiger among others.

The factory has a capacity of 14,400 spindles, It is equipped with dedicated a complete unit of machines for fleece fabrics with additional capability to produce heavy single jersey fabric as well. A variety of fabric such as plain, cross, sueded, textured fleece, jersyer and ribbed texture and flat knit can be produced.

The Fabric Processing Division of Masood Textiles has a capacity of dyeing 1,16,295 kgs per day. It is capable of dyeing both 100% cotton and blended fabric. The machine size selection gives the flexibility in dyeing a lot size ranging from 100 kgs to 1,000 kgs. Masood has the testing laboratory with latest equipment to check the fabric. It ensures that the fabric quality is maintained and is according to the required parameters of our customers. Apparel unit has ver 6,185 stitching machines, manned with the most skilled and expert operators. The Quality control and Quality Assurance departments are in place to make sure the company's objective of zero defect. Computerized Bar coding and Back Track systems provide Masood 100% predictability and tracking performance.

Figure 16: Annual Turnover of MTM



Source: MTM

Masood Textiles is ISO-9002 certified. It has the logo of three-accreditation bodies, ANSI RAB (USA Based), U.KAS (UK Based) and DAR/TAG (Germany Based) MTM is also WRAP (Worldwide Responsible Apparel Production) certified. The certification ensures that sewn products are produced under lawful, humane and ethical conditions

Cost Saving Analysis

Masood Textiles Mills Pvt. (MTM) is currently sourcing elastics from India as the Indian supplier is a nominated partner of MTM's international customer.

In addition to elastics, the products listed in **Table 9** were identified as potential imports from India to support the exports of knitwear garment industry in Pakistan.

Methodology

The table below given the average unit cost at which Pakistan imports a given product from the world and the average export cost that India exports the same product to the world. The savings have been computed as follows:

$$S = (C_{mp} \times Q) - (C_{xi} \times Q)$$

Where,

C_{mp} = Average unit cost of imports of Pakistan

C_{xi} = Average unit cost of exports of India

Q = Total quantity imported by Pakistan

Estimates of Cost Saving

Substantial savings are reported in all items except for zippers which can be sourced at a cheaper cost from China. Also all products are not on the sensitive list and will be traded at lower tariff rates once SAFTA is operational with the exception of printed poly bags. In addition to the items listed below chemical dyes and textile machinery and parts may be sourced from India.

Table 9: Cost Saving Analysis

HS 6	Product	Trade Flow	Top Partner	Qty Trade	Unit	Cost/unit	Import Bill Saving* (USD 1,000)	Negative List	Sensitive List	Tariff
580610	Elastics Narrow woven pile fabrics and narrow chenille fabrics	Pakistan Imports	World	18	Tons	13333	101.844	No	No	n/a
			China	16	Tons	13125				
			Germany	1	Tons	19000				
		India Exports	World	123	Tons	7675				
			Turkey	42	Tons	5548				
			USA	26	Tons	8615				
			Bangladesh	6	Tons	17667				
600290	Elastics - 600290 Knitted or crocheted fabrics, of a width of <= 30 cm, containing >= 5%	Pakistan Imports	World	71	Tons	11563	514.395	No	No	n/a
			China	68	Tons	11529				
			Hong Kong, China	1	Tons	12000				
			Chinese Taipei	1	Tons	12000				
			Republic of Korea	1	Tons	9000				
		India Exports	World	1571	Tons	4318				
			Sri Lanka	328	Tons	6037				
			Bangladesh	279	Tons	5351				

HS 6	Product	Trade Flow	Top Partner	Qty Trade	Unit	Cost/unit	Import Bill Saving* (USD 1,000)	Negative List	Sensitive List	Tariff
			Viet Nam	424	Tons	2358				
			United States of America	137	Tons	3080				
392321	Poly bags Printed	Pakistan imports	World	220	Tons	2941	1883.2	Yes	Yes	25
			China	141	Tons	2631				
			United States of America	47	Tons	3298				
		India Exports	World	32766	Tons	2085				
			United States of America	8002	Tons	2110				
			Netherlands	8544	Tons	1964				
960621	Buttons	Pakistan Imports	World	647	Tons	41294	25609.55	No	No	n/a
			China	295	Tons	42736				
			Hong Kong, China	184	Tons	44060				
		India Exports	World	10065	Tons	1712				
			Bangladesh	222	Tons	13054				
			Italy	179	Tons	12966				
			China	194	Tons	8237				
960711	Zippers	Pakistan Imports	World	1275	Tons	4113	n/a	Yes	No	20
			China	689	Tons	4237				
			Hong Kong, China	247	Tons	3721				
		India Exports	World	815	Tons	7909				
			Bangladesh	551	Tons	7481				

HS 6	Product	Trade Flow	Top Partner	Qty Trade	Unit	Cost/unit	Import Bill Saving* (USD 1,000)	Negative List	Sensitive List	Tariff
			Sri Lanka	154	Tons	7481				
			United Arab Emirates	36	Tons	6028				
			Pakistan	12	Tons	17833				
960719	Zippers	Pakistan Imports	World	4821	Tons	3784	n/a	Yes	No	20
			China	2374	Tons	3581				
			Hong Kong, China	1320	Tons	4025				
		India Exports	World	284	Tons	13313				
			Bangladesh	60	Tons	19783				
			Sri Lanka	47	Tons	15170				
			Jordan	22	Tons	18955				
			Pakistan	23	Tons	15957				
392690	Hangers	Pakistan Imports	World	9079	Tons	3358	13818.24	No	No	n/a
			China	3266	Tons	3321				
			Hong Kong, China	1029	Tons	3243				
		India exports	World	174994	Tons	1836				
			United States of America	52078	Tons	1929				
			United Kingdom	17092	Tons	1345				



Chapter 3: Intra Industry Trade in Food Processing: Case Study on Dairy Sector

Executive Summary

India is a large market for agricultural produce. It imported USD \$15 Billion worth of food products in 2011. With an over 2000 km long border, Pakistan and India are natural trading partners. Low transportation costs and short delivery time will encourage export of perishables/fresh produce. Seasonal complementarities and occasional crop failure will also encourage intra industry trade.

Pakistan has an exportable surplus in livestock, dairy and fruits. India has a larger production of pulses and vegetables. Research shows that Pakistan has a revealed comparative advantage over India in 81 categories and India has an advantage over Pakistan in 97 categories at HS level 4.¹²

Research shows that currently there are high level of intra industry trade between Pakistan and India in fresh vegetables, fruit and nuts and spices. There is a notable potential in sugars, molasses and ethanol also.

At SITC level 2 the products with the highest global IIT of both India and Pakistan are dairy products and eggs, beverages, animal/vegetable fats/oils in addition to live animals and fresh fruit and vegetables. This indicates a potential increase in these areas also once trade is liberalized.

Pakistan is the third largest producer of milk in the world out of which only 4 percent is processed. Case study on Engro Food shows that the dairy sector can benefit greatly from import of machinery, fortification additives, veterinary medicines and vaccines and packaging solutions from India. Pakistan is currently exporting small volumes of butter and is importing concentrated milk from India

Sector Overview

Pakistan's food processing market is one of the most important ones in Asia. With a population of over 170 million and an expected GDP of USD \$211.09 billion in 2011-2012¹³, Pakistan is an ever growing market. Pakistan's agro food-products contribute 21% to the country's GDP, and it is the main source of livelihood for 45% of the country's population. The food industry of Pakistan attracted USD \$954.5 million FDI over the last five years.¹⁴

The two key features of the global food industry are that most growth in the sector comes from:

- Consumer health awareness as higher income consumers in growing economies demand healthier foods (e.g. "better-for-you", organic, "nutraceutical" etc.) and
- Successful companies are highly integrated forwards and backwards to their supply chain.

In Pakistan there is a lack of understanding amongst the majority of the population regarding food nutrition. With an estimated population anywhere between 160 and 200 million and a skewed distribution of wealth, the effective demand for processed food derives mainly from the urban areas and that the total population capable of buying any kind of cheap or low quality processed food item is between 30 and 50 million. It is estimated that 5-10 million persons who require food items that conform to the standards of the industrialized countries and are willing and able to pay for this level of quality.

¹² Pasha, 2012

¹³ World Bank.

¹⁴ Federal Bureau of Statistics, State Bank of Pakistan.

Pakistan Food Sector Overview

Agriculture sector achieved a growth rate of 3.2 % against targeted 3.4 % for the year 2011-12.

The achievements of agriculture sector may be considered satisfactory in the situation of floods causing high losses to agriculture production. According to estimates, the area under cotton, rice, sugarcane and chilies was damaged by 75, 26, 34 and 98 percent respectively. Besides this, heavy losses were also incurred to vegetables, livestock and orchards especially banana.

Figure 17: Pakistan's Agriculture Profile

Source: *Economic Survey of Pakistan, Ministry of Finance, 2012*

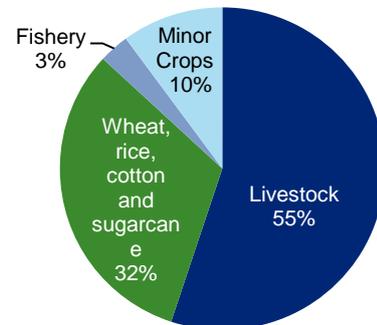


Table 10: Rate of Growth of Agriculture Sector

Agricultural Product	Rate of Growth (%)	Share in GDP (%)
Major Crops	3.2	6.7
Minor Crops	-1.3	2.1
Livestock	4.0	11.6
Fisheries	1.8	0.4
Forestry	0.9	0.2

Source: *Pakistan Bureau of Statistics and Planning Commission, 2011-2012*

Wheat

Approximately 80% of farmers in Pakistan cultivate wheat, the country ranks in the top 10 producers in the world. While there have been some gains in yield on account of better seed and fertilizer, most wheat is irrigated making it expensive to produce. Further, local demand for wheat usually outstrips supply. From time to time there is a surplus that Pakistan usually exports to Iran, Iraq and Afghanistan.

Rice

Pakistan is a leading player in the export of rice, particularly the basmati variety. It should be noted that the rice market is uncertain and unstable as most rice is manufactured locally and a very small percentage is traded internationally. Making prices speculative and volatile, potentially hurting the farmer longer-term. Additionally, it is assumed that most of the arable land for cereal crops is already under cultivation and it is unlikely that outputs will increase. This points to the fact that in the long term Pakistan may not be a net exporter of rice.

Fruit and Vegetables

Oranges and Mangoes account for 48% of all fruit produced whereas Potatoes account for 30% of all vegetables. By and large, little has changed in terms of production technology and harvesting practices over the past couple of decades. Poor production practices such as flood irrigation, inadequate pest control, insufficient harvesting & post-harvesting processes and poor infrastructure, especially cold storage render most fruit produced unfit for export. A 2005 World Bank study of the Pakistani Apple industry estimates losses of \$500 M across the value chain with a post-harvest wastage of crop in the neighborhood of 30%.



Livestock & Dairy

For the year 2011-12, the performance of livestock sector was beyond target. The production of meat at 3,232 thousand tonnes exceeded its target of 3,056 thousand tonnes. Production of all beef, mutton and poultry meat exceeded their targets. The milk production at 38,690 thousand tonnes was below its target of 45,883 thousand tonnes. Pakistan is one of the five largest milk producing countries of the world but faces post production losses of milk at 15% causing annual loss of around Rs 169 billion. The lack of infrastructure such as cooling facilities at farm or collection points as well as transportation of milk is the prime cause, which is being addressed through various development projects. A negligible fraction of the milk produced is of international standards and Pakistan is a net importer of milk and milk powder (especially for baby food).

It should be noted that there is a minimal export of processed meat products where Pakistan has a natural brand advantage as a guaranteed producer of 'halal' products. Instead, low value exports of live cattle and buffalo especially with Afghanistan are on the rise, resulting in an increase in price of these animals in the domestic market.

India Food Sector Overview

India is the second largest producer of food in the world and has the fifth largest food processing industry in the world, in terms of production, consumption, export and expected growth. It is the second largest vegetable and the third largest fruit producer in the world. The Indian food market is valued at USD 91.7 B of which USD 29.4 Billion is processed food. While the food processing industry is large in size, it presents enormous headroom for growth as currently only 2 percent of agricultural and food produce is processed. This value addition of food products is expected to increase to 25 percent by 2025.

With the growth of the Indian economy and the consequent increase in disposable incomes of the middle class there has been a shift in the Indian food basket. Staples (e.g. cereals, pulses, edible oil, sugar, salt and spices) traditionally at 45 percent of food expenditure are now 44 percent in rural India and 32 percent in urban India. The gainers in the food basket are processed foods and high expenditure class products (e.g. milk and milk products, meat, egg and fish, fruits and beverages)

A 2005 McKinsey report estimated the Indian food processing industry to be USD 155 B in 2005, with growth projections of increasing twofold (USD 310 B) by 2015. The industry contributed 7 per cent to India's GDP and employs 13 M workers directly. The Confederation of Indian Industry (CII) estimates that the food-processing sector will attract USD 33 B in investment in the next 10 years and generate additional employment of 9 million person-days.

Dairy

With a 2009-10 production of USD 1.1 B, this sector accounts for 7% of total food processing industry. It represents the highest share of produce that is processed with 37 percent of total output, however only 15 percent of the processing happens through the organized sector. The key products here are ghee, butter, cheese, ice cream, milk powder, malted milk food, condensed milk and infant food.

Fruit, Vegetables, Meat, Fish & Oils

In 2009-10 production value of this segment was USD 2.7 B. Fruit and vegetable processing in India is almost equally divided between the organized and unorganized sectors, with the unorganized sector holding 52 percent of the share. The unorganized sector has a stronghold in processed items such as pickle, sauce and squash. While products like juices and pulp concentrate are largely manufactured by the organized sector.

With regards meat, India has a livestock population of 470 M (with 205 M cattle and 90 M buffalo). Total meat production is estimated at 5 M tonnes annually. However, only about 2 percent of this



meat is converted into value added products. The rest is purchased raw and consumed at home. Poultry processing in India is also at a nascent stage.

The country produces 450 M broilers and 33 B eggs annually. In the case of poultry, export from India is mostly to Maldives and Oman. Other markets such as Japan, Malaysia, Indonesia, and Singapore are being-explored.

The growing number of fast food outlets in the country has had a significant impact on the meat processing industry in India.

India is the third largest fish producer in the world and is second in inland fish production. However a relatively small percentage of the total catch is processed into canned and frozen form. This is primarily done for the export market by small-scale proprietary/ partnership firms or fishermen co-operatives.

Grains

In 2009-10 production for this segment was valued at approximately USD 4 B. India produced more than 200 M tonnes of different food grains, the major ones being rice, wheat, maize, barley, and millets like jowar (great millet), bajra (pearl millet), & ragi (finger millet).

The country is the second largest rice producer in the world accounting for 20 percent of global production. Only 15 percent of wheat is converted into wheat products, with 75 percent of the annual pulse production being processed. Primary milling of rice, wheat, and pulses is the most important activity in food grains processing.

Other Food Products

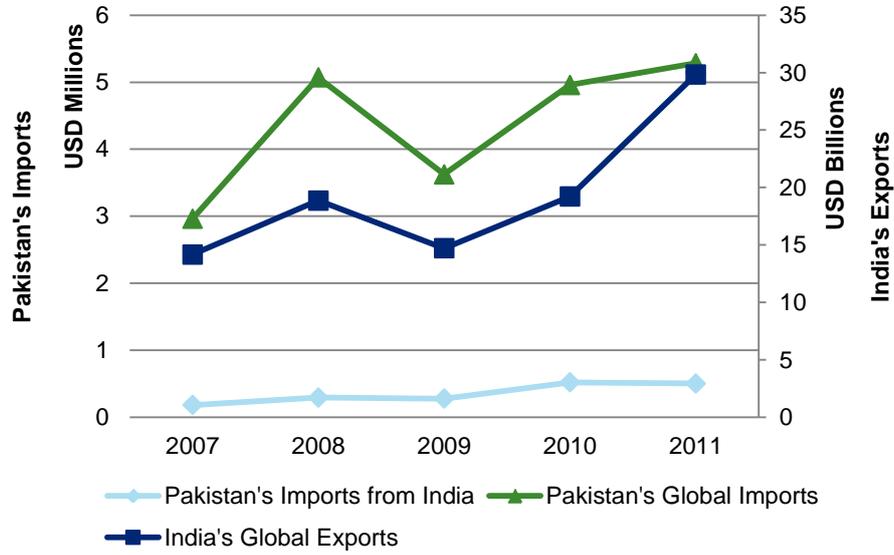
2009-10 production for this segment was valued at INR 23,664 Cr or USD 5.3 B. The segment comprises of products such as baked good, ready-to-eat snacks (chips, namkeen etc), confectionery and chocolate products and other processed foods. The market is equally divided between the organized and unorganized sectors, however the growth rate of the unorganized sector in this space is 15-16 percent per year with the organized sector growing at half that rate.

Beverages

2009-10 production for this segment was valued at USD 1.7 B. This segment comprises of aerated soft drinks, fruit-based packaged drinks and packaged water. While the aerated soft drink and fruit-based packaged drink market has grown at over 20 percent annually, it still remains a relatively urban product with penetration levels significantly lower than other developing markets. This is of course an indication of further potential for rapid growth as can be seen from the extent of advertising undertaken by the global top two in the region. The packaged water market has flourished on account of changes in customer lifestyle and periodic shortages of drinking water in large metropolitan cities.

Bilateral Trade Trends

Figure 18: Import of Agriculture from India



Source: UNCOMTRADE

Figure 19: Export of Agriculture to India



Source: UNCOMTRADE

Table 11: Fastest Growing Exports from Pakistan to India

Product	Exports	Rate of Growth 2007-2011	Share of Pakistan's Imports	Share in India's Exports
Refined sugar, in solid form	51484	467	61.3	8.8
Ginger	2354	425	4.6	9
Peppers of the genus Capsicum or of the genus Pimento, fresh or chilled	1684	342	98.2	16.9
Garlic, fresh or chilled	4973	333	8.4	73.3
Mucilage & thickeners derived from locust beans & seeds or guar seeds	1711	190	66	0.1
Potatoes seed, fresh or chilled	119	189	2.3	50.6
Ground-nuts in shell not roasted or otherwise cooked	2370	162	95.9	1.8
Tomatoes, fresh or chilled	76179	134	98.8	99
Maize (corn) seed	1991	111	5.6	2.3
Fruits, dried nuts	4015	109	78.5	19.7

Source: Author's calculations based on UNCOMTRADE data

SWOT Analysis

Strengths

- Pakistan has surplus production in livestock and dairy sectors and fruits. India has a larger production of pulses and vegetables.
- Complementary seasons: Mango season is longer in Pakistan and peaks after the India mango season.
- Pakistan has made a brand name in halal foods and spices.

Table 12: Comparison of Production of Agriculture in Pakistan and India

	2010-11 (million tonnes)		
	Pakistan	India	Ratio
Food grains	34.30	215.28	6.27
Wheat	25.21	86.87	3.44
Rice	4.82	95.98 ^b	19.91
Others	4.27	32.43	7.59
Lives stock			
Milk	38.69	121.80	3.14
Meat	2.32	4.80	2.07
Pulses	1.34	18.09	13.50
Vegetables	6.62	146.73	22.16
Potatoes	3.49	42.34	12.13
Tomatoes	0.53	16.53	31.18
Onions	1.94	15.12	7.79
Others	0.66	72.75	110.23
Fruits			
Mango	1.89	12.75	6.75
Citrus Fruits	1.98	8.61	4.35
Bananas	0.15	26.21	170.24
Sugar Cane	55.31	292.3 ^c	5.28

Source: (Pasha, 2013)

Weaknesses

The food processing value chain is fraught with issues that lead to substantial losses. While there is a lack of data on the total losses faced by the industry, a 2005 World Bank study estimates these losses to be in the region of \$70 M in the apple processing industry alone.

A value-chain analysis conducted by the CSF in 2007 suggests that there are inefficiencies across various levels in the food processing space, from the quality of raw materials, through the cost and supply to inputs to the final steps in packaging and marketing to consumers. Each of these factors contributes to making food processing in Pakistan uncompetitive at the international level. Key issues are as follows:

- **Agriculture** suffers in the area of variety improvement and the provision of seeds. These along with inconsistent access to water result in a poor quality of crop and livestock at the farm gate. Another key concern is the legacy issue relating to land holding and ownership. The issues noted are fundamental and long-term and consequently there are no quick-fix solutions possible. Initiatives such as the 2007 restructuring of the Pakistan Agricultural Research Council (PARC) are significant.
- **Intermediate processing** is impacted by wastage at the immediate post-harvest stage is a fundamental cost and competitive issue. It is seen that the market structure from the farm to the intermediate processor is inefficient. Since the technologies and processes mentioned here are well understood and can be replicated inexpensively it can be said that the driver of these issues are social, economic and technological (in that order). For e.g. the wheat crop requires a small portion of the crop to be retained and prepared for re-planting. A community of farmers could solve this issue by investing in a low-cost seed cleaner that would benefit the entire group and percolate up the entire value chain. Additionally, policy makers could provide the infrastructure e.g. milk or fruit cooling facilities or support/subsidize third-party providers of the same.
- **Food manufacturing** related issues are five-fold. Firstly there is an inability to manage raw material supply as many food manufacturers have been mis-located or have not integrated into the value chain. Erratic inputs and poor labor skills are another common issue especially when it comes to operating complex machinery such as packagers. Thirdly, there is a dearth of financial support to manufacturers both from the government and from primary lending institutions, which continue to offer short tenure loans and fail to understand the dependency of this line of business on the natural environment. A lack of innovation in products and process and poor investment choices in machinery are another limiting factor. Finally, inadequate safety standards, both for the factory worker and the end consumer are a significant driver of value erosion.
- **Packaging** is an expensive element in the total cost of the food item. While global leaders such as Tetra Pak and DuPont have a presence in Pakistan, a majority of manufacturers find them to be price prohibitive. The result of this is that a lot of the processed food is manufactured using lower quality packaging materials, impacting freshness and taste and consequently resulting in a poor value perception internationally.
- **Exports** of Pakistan have been adversely impacted via non-tariff barriers due to poor performance in the area of sanitary and phyto-sanitary (SPS) requirements. For e.g. fish and seafood exports were banned to the EU following a 2007 inspection of Karachi Fish Harbor that found unhygienic conditions. Additionally, the country was subject to 26 EU food alerts in 2004-05. The issues driving poor SPS compliance are two-fold:
 - Product standards are usually deficient because consumers are often unwilling to pay for high quality products and don't insist on adequate packaging and labelling.
 - There is a lack of enforcement (for e.g. laws dealing with adulteration or inaccurate product information) and a lack of understanding by manufacturers of compliance requirements.
- **Lack of regulation in the dairy sector** limits the export potential. The government does not recognize the milk processing as an industry and entrepreneurs are not eligible for commercial



loan. Pakistan is one of the only 3 countries in the world that do not have a minimum pasteurization laws.

The Government must develop a comprehensive framework establishing, auditing and implementing SPS standards and a mechanism to drive adoption of certification and control across all participants in the food processing value chain. In addition there are issues of water shortage, energy insufficiency and skilled labor.

Threats

The main threats to intra industry trade are as follows:

- Complex SPS regulation.
- Lack of SPS harmonization
- Protective tariff regime: India protects agriculture with the Sensitive List. Average MFN tariffs for agro produce are over 30 percent, more than two as high as the average MFN of 12 percent.
- Complex Import Procedures: This sector is regulated by import permits and licenses in India.

Opportunities

- India has a larger middle class that is nutrition conscious. India is a major importer of agricultural produce (\$ 15 Billion in 2011)
- Pakistan's food processing sector can benefit from imports of essential ingredients, additives, machinery and packaging material.
- Losses in transit of perishable food items can be reduced as the export market is only at a distance of 30 kilometers (Lahore to Amritsar). Low transportation costs and short delivery time will encourage export of perishables/fresh produce.
- There is a Pakistan has a revealed comparative advantage over India in 81 categories and India has an advantage over Pakistan in 97 categories at HS level 4.¹⁵
- Seasonal complementarities will encourage exports (e.g. mango). There is an increasing demand for fruits in India.
- Competition will encourage efficient supply chain management, and reduce post-harvest losses.
- Cost Differential and Freight Saving: Adjusting for differences in the exchange rate, food prices appear generally comparable in a range of products including pulses, atta, milk and sugar. The price of vegetable ghee and tea in India is significantly lower. Onion and tomatoes are cheaper in Pakistan. . In the event of liberalization of trade in agricultural commodities it is likely that the volume of trade in food items could expand significantly in these items. There is a price difference between Delhi and Bombay due to freight costs. As a result some items are cheaper in Delhi as compared to Lahore but more expensive in Bombay as compared to Karachi. It is possible that there would be horizontal intra industry trade in these items. Pakistan may import atta from Delhi and export atta to Mumbai.

¹⁵ Pasha, 2012

Table 13: The Price Gradient In Agricultural Items Between Cities Of India And Pakistan

	(as of 1 July 2012)			Per Kilo		(Ratio of $\frac{\text{Pakistan}}{\text{India}}$)
	Delhi (Indian Rs)	Lahore (Pak RS)	Ratio*	Mumbai	Karachi	Ratio*
Rice	24	59.0	1.471	27	51.54	1.142
Atta(Wheat)	17	30.00	1.056	26	35.00	0.805
Gram Dal	59	107.32	1.088	64	101.54	0.949
Moong Dal	68	120.43	1.060	69	123.08	1.067
Masoor Dal	57	99.29	1.042	60	103.08	1.029
Sugar	34	55.39	0.974	33	54.62	0.990
Milk	29	58.07	1.198	36	74.00	1.230
Vegetable Ghee	84	216.00	1.538	92	176.44	1.148
Tea (Loose)	172	657.90	2.289	200	710.55	2.126
Potato	19	31.79	1.000	20	21.54	0.644
Onion	14	20.86	0.892	15	23.08	0.921
Tomato	28	27.50	0.588	22	29.03	0.790

* Ratio of Prices in the Pakistani City to the Indian City with the Indian Rupee = 1.671 Pakistani Rupee

Source: (Pasha, 2013)

Intra Industry Trade Potential

Current IIT

At SITC digit level 2, the agricultural items that show significant levels of bilateral intra industry trade (measured by weighted GLI) between Pakistan and India are fresh vegetables, fruit and nuts and spices. There is a notable potential in sugars, molasses and ethanol also.

Potential IIT

At SITC level 2 the products with the highest global IIT of both India and Pakistan are dairy products and eggs, beverages, animal/vegetable fats/oils in addition to live animals and fresh fruit and vegetables. This indicates a potential increase in these areas also once trade is liberalized.

Livestock & Dairy

There is a possibility of IIT in livestock. Pakistan can import goats from India and export poultry to India. The livestock sector of Pakistan is relatively more developed. While the population ratio between India and Pakistan is close to 7:1, the ratio of milk production in 2010-11 is about 3:1 and in meat output, 2:1. (Pasha, 2013). Pakistan and India has high levels of IIT in cream.

Fruits and Vegetables Products

Production of pluses and the major vegetables like potatoes and tomatoes is relatively high. Pakistan has higher production per capita, especially in the case of mangoes and citrus fruit. However, banana production is vastly higher in India. At SITC level 5, high levels of IIT are observed in ketchup, margarine, sauces and other food preparations. Please see the appendix for product details.

Beverages

Pakistan and India also have high levels of IIT in packaged water globally.

Essential additives

Aside from the normal raw materials that form the basis of a given food item, say wheat flour or potato or fruit pulp, the manufacture of food requires certain key additives that require special mention since they impact directly on the competitiveness of the industry as a whole. Almost all cooking (for such is food processing) requires the addition of sugar, edible oil (as a frying or coating medium) and salt.

Three key inputs in food processing: sugar, oil and salt – the good news here is that Pakistan is self-sufficient in the production of salt, and its supply to the food processing industry.

The point of concern is for sugar and oil which may be imported from India also.

Emulsifiers, Pro Biotic Strains

In addition pro biotic strains and other fortification additives are imported from Holland and other EU countries which may be sourced from India instead. Pakistan can also import additives like emulsifier for confectionery¹⁶ and pectin for Ketchup¹⁷.

Packaging Products

While the leading food-packaging producers (e.g. Dupont and Tetrapak) have a presence in Pakistan, their solutions are expensive for most local processed food manufacturers. This is on account of the value-chain of the food business that operates on thin margins and is compounded by customers that demand convenience foods but are unwilling to pay the price premium that superior packaging drives. Often local manufacturers opt for good-enough local solutions that end up impacting both the flavor and the freshness of their product. In the packaged juice business it is estimated that paper in the juice carton accounts for about 70% of the total cost of production.

Innovative packaging solutions are also required for local products such as ghee and vanaspati. Around 20% of ghee is sold in plastic pouches and the remainder is sold in cans. A key concern with cans is that oil mills use old tin plates for manufacturing these, posing a health hazard. The vegetable oil industry claims that this practice is restricted to 5% of total manufacture; however taxes and a monopoly control on the import of new tin plates will likely increase this number.

Pakistan can source packaging materials from India. Pakistan can import also packaging material other than paper e.g. jars, bottle caps, corks and cans.²

Light Engineering

While Pakistan has a highly developed light engineering industry, its capabilities in the food machinery segment are not up to international standards. Globally food machinery is highly specialized and constantly evolving to ensure higher throughputs and productivity along with lower energy consumption. Also using lower grade equipment would likely result in a compromised end product that may actually cost more by way of wastages and higher energy use. Pakistan can import food processing machinery from India including rice processors, wheat sorters, milk pasteurizers and pulping and chilling machinery.

¹⁶ Interview with Candy Land

¹⁷ Interview with Mitchells

Case Study on Engro Foods

The 5 milk production countries in 2011 were India, USA, Pakistan, China and Brazil. The Top 5 milk processing countries 2011 were USA, Germany, China, France and India. Indian company Amul is the 19th largest milk processor in the world with a daily input of 4 million tonnes and an annual turnover of 2.5 billion USD. While Pakistan ranks 3rd in milk production, it trails behind in milk processing. India is the largest milk producer in the world and the 5th largest milk processor.

Table 14: Cost of Milk

Cost Range	Countries
< US \$30	Pakistan, Indonesia, Peru, Chile, Central Africa
\$30- \$40	India, South Africa, Oceania
\$40 - \$50	USA, UK, Brazil
>\$50	Western Europe, Iran, Turkey, China

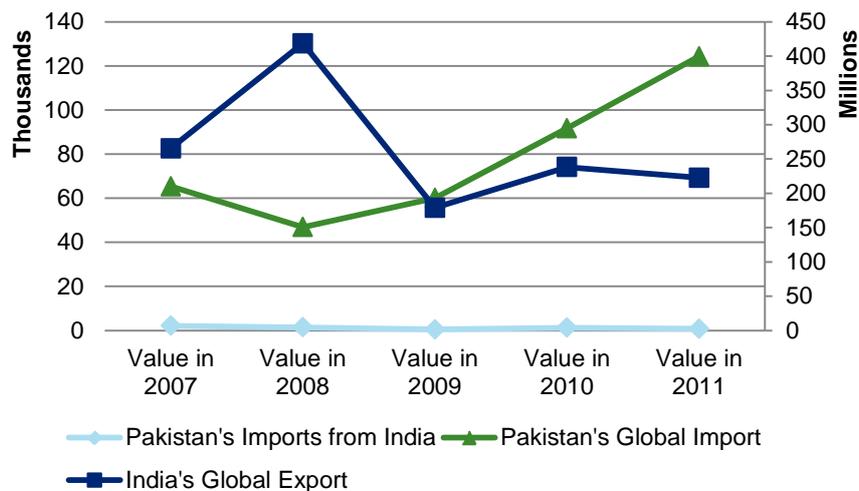
Source: IFCN, 2012

Current estimates rank Pakistan as the 3rd largest milk producer in the world, with an annual output of 33 Billion liters. Approximately 96 percent of this milk is produced and consumed in the unstructured sector i.e. loose milk consumed in rural areas or sold in cities through 'Gawallas'. A high proportion of this produce suffers from adulteration and/or unhygienic extraction or storage. Pakistan has an estimated herd size of 50 million animals across approximately 8 million farming households. Most of these farmers are not linked to the formal market and have not been able to improve their economic situation. As a result only 4 percent of the milk is processed.

Bilateral Trade Trends in the Dairy Sector

There is negligible trade in dairy between Pakistan and India. Pakistan exports a small quantity of butter to India and imports a limited quantity of milk. India's global import of dairy is USD \$150 Million out of which USD \$147 Million was imports of milk and cream (concentrated and sweetened). India has negative trade balance of USD \$135 Million in this category. The imports in this sector have grown at a rate of over 200 percent¹⁸. India is exporting the same to Pakistan. India also imports cheese and butter. India imports about USD \$273,000 worth of unsweetened, not concentrated milk from largely France and Indonesia. Pakistan also imports cheese and eggs.

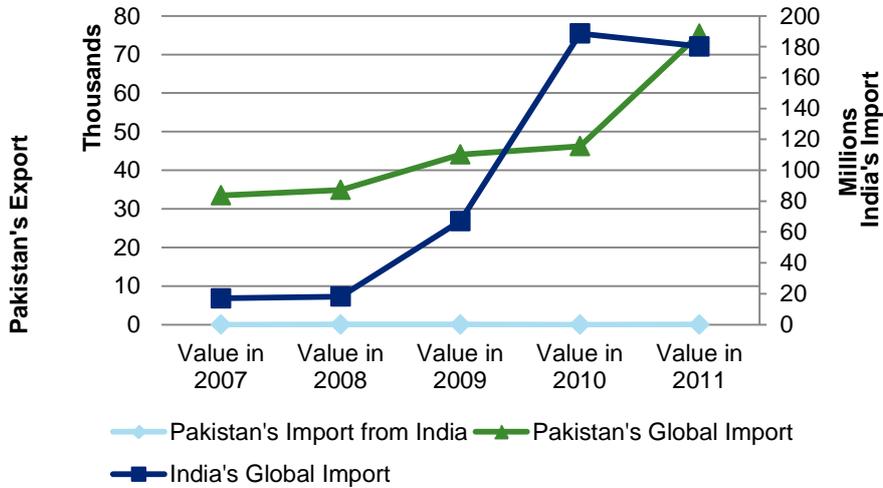
Figure 20: Pakistan's Import of Dairy from India



Source: Author's calculations based on UNCOMTRADE data

¹⁸ Calculations based on data from UNComtrade.

Figure 21: Pakistan's Export of Dairy to India



Source: Author's calculations based on UNCOMTRADE data

Engro Profile

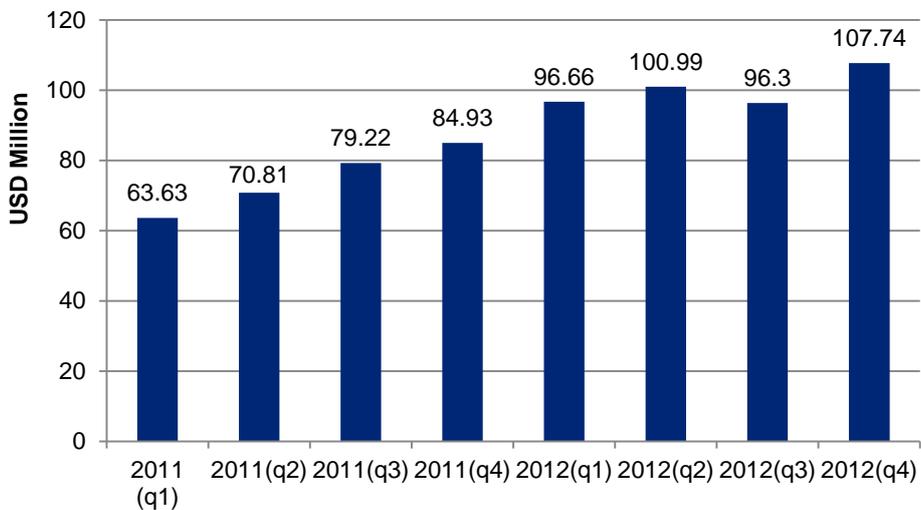
Engro Foods, being a market leader in the segment, is increasing its share as the market expands with increased urbanization, improving income levels and changing lifestyles. Since commencing business in 2006, the company has witnessed steep growth and captured market leadership in the UHT market.

The Company offers a diverse product range including ice cream, flavoured milk, juices and tea whitening powder. Initial demand for these products has shown promise and the management expects to gain market share on the back of efficient marketing and superior quality. The Company has deployed significant capital to raise awareness of its products in the local market, which has yielded great response making 'Olpers', 'Owsum', 'Omore' and Tarang' household names.



Since its inception, the Company has witnessed sales CAGR of 93.36% from 2006-10.

Figure 22: Engro Revenue Growth



Source: Engro

Engros' ambient UHT growth was 25 % in volume and 39 % in value from 2011 to 2012. The market share is 51% and has superseded Nestle as the market leader. The milk powder grew by 13 percent while juices by 57 % in value. Herd size is 3526 with an average production of 25,000 liters per day. Milk is produced in the following two mediums:

Ultra Heat Treatment (UHT)

UHT process involves flash sterilization, cooling and packing milk in sterile packaging called aseptic packaging. Aseptic packaging provides UHT milk with longer shelf (up to 9 months), which enables its distribution across the country. Aseptic packaging therefore is considered the preferred method in dairy industry to market liquid dairy products.

Spray Drying of Milk

Liquid milk is concentrated, spray dried and converted into powder form. Powder milk is then packed in aluminum based packaging material. This allows milk to be stored for extended periods (up to two years) and as such can be exported also.

Potential IIT

Currently there is no trade in this sector with India. Pakistan and India have high IIT globally in cream. Pakistan has a higher revealed comparative advantage than India in Milk and cream not concentrated or sweetened and buttermilk also. Trade may expand in this area once trade is liberalized.

The size of the milk market in Pakistan is 1.3 trillion Pakistan Rupees. Its export potential is twice the size of five major crops together and ten times larger potential than export of fruit.¹⁹

India produced 121 Million tonnes in 2011. It is projected that the demand will increase to 155 Million tonnes by 2016.²⁰

Packaging

The following products may be zero rated and removed from the Sensitive List. Rationale for seeking zero custom duty is that customs duty escalates the cost of production of formal sector of processed milk and dairy products. It renders the formal sector uncompetitive against informal sector. Except for paper and board; all the items are not manufactured locally.

Table 15: PCT Tariff on Packaging Products

HS Code	Product Description	Tariff
4819.2000	Folding cartons	15%
7607.1100	Aluminum Foil	20%
3901.1000	Low density Polyethylene	5%
3901.2000	Low density Polyethylene	5%
3901.9000	Adhesive Polymers	5%
4804.3900	Bleached Kraft Paper	20%
4804.4900	Duplex Kraft Board	20%
4804.5900	Duplex Kraft Board	20%
4810.9900	Clay Coated Duplex Kraft Board	25%

Source: Pakistan's Custom Tariff

¹⁹ CEO, Engro Foods

²⁰ Estimates from the Planning Commission, [http://www.nddb.org/ndpi/English/Publications/NDP%20Brochure-Eng-single%20page\).pdf](http://www.nddb.org/ndpi/English/Publications/NDP%20Brochure-Eng-single%20page).pdf)

Plant and Machinery Equipment

Pakistan can import livestock and dairy sector machinery from India. GoP has already provided concessions to dairy industry vide SRO 575(1)/2005 by eliminating custom duty and sales tax from dairy and agro based industries. Some examples are as follows:

Table 16: Pakistan's Tariff on Dairy Plant and Machinery

Dairy Machinery	HS Code
Milk chillers irrespective of the fact whether manufactured locally or not.	8418.6910 8418.6990
Milking machines.	8434.1000
Dairy machinery	8434.2000
Milk evaporator.	8419.3900
Tubular heat exchanger (for pasteurization).	8419.5000
Cream separators.	8421.1100
Homogenizer	8434.2000

Source: Pakistan's Customs Tariff

However, there is still some equipment, plant and machinery used by the dairy industry that has not been zero rated. This equipment, plant and machinery are not dairy specific, but are essential for dairy industry.

Table 17: Pakistan's Tariff on Plant and Machinery that is used in related services in the Dairy Industry

Item	HS Code	Tariff
Conveyors	8428.3900	5
Desecrator	8421.3990	5
Labelling machine	8422.3000	5
Homogenizer	8434.2000	5
Laboratory ovens	8516.5000	25
Milko Scans	9027.3000	5
Laboratory glassware	7017.0000	10-15
Boilers	8402.0000	5-20
Generators	8502.0000	20

Source: Pakistan's Customs Tariff

Dairy Farming and Extension Services

In addition to above, there are items that are required to improve the quality of dairy farming and extension services. Veterinary instruments and medicines may be imported from India.

Animal care is central all dairy activity. Easily available imported vaccines will support the farmer by ensuring healthy animals and hence improved productivity. It is important to note that Indian vaccines are the most suitable vaccines for the local herd. Hence, cost effective good quality Indian vaccines allowed to be imported at 0%.

Cost Saving Analysis

Import saving are indicated in livestock hormone supplements, machinery e.g. deaerators and packaging material like kraft paper.

Table 18: Cost Saving Analysis

HS 6	Product	Trade Flow	Top Partner	Quantity Trade	Unit	Cost/unit	Import Bill Saving* (USD 1000)	Negative List	Sensitive List	Tariff
300432	Adrenal cortex hormones, in dosage	Pakistan Imports	World	206	Tons	21,408	2482	Yes	No	
			Belgium	199	Tons	21,447				
			China	7	Tons	20,286				
		India Exports	World	481	Tons	9,358				
			Russian Federation	81	Tons	15,506				
			Sri Lanka	84	Tons	9,048				
			Canada	117	Tons	5,838				
300439	Product : 300439 Hormones nes, not containing antibiotics, in dosage ,o/t contraceptive	India Exports	World	2,243	Tons	29,700	n/a	Yes	No	10
			Russian Federation	254	Tons	111,110				
			United States of America	132	Tons	45,000				
			United Kingdom	157	Tons	30,102				
			Nigeria							
		Pakistan Exports	World	1,505	Tons	14,726				
			Philippines	474	Tons	14,903				

HS 6	Product	Trade Flow	Top Partner	Quantity Trade	Unit	Cost/unit	Import Bill Saving* (USD 1000)	Negative List	Sensitive List	Tariff
			Viet Nam	302	Tons	14,520				
			Sri Lanka	270	Tons	14,633				
			World	1,200	Tons	19,468				
		Pakistan Imports	Egypt	554	Tons	18,018				
			Germany	189	Tons	20,683				
			Italy	98	Tons	23,245				
			France	62	Tons	26,758				
			China	83	Tons	15,145				
842111	Cream Separators	Pakistan Imports	World	45	Tons	48,333	n/a	No	No	
			United Arab Emirates	20	Tons	48,150				
			Japan	15	Tons	48,400				
			Germany	7	Tons	51,143				
		India Exports	World	19	Tons	51,737				
			United Arab Emirates	4	Tons	50,000				
			Sudan	3	Tons	43,667				
			Bangladesh	2	Tons	49,500				
841939	Milk Evaporator	India Exports	World	713	Tons	22,088	n/a	No	No	
			Thailand	129	Tons	22,016				
			Viet Nam	96	Tons	22,094				

HS 6	Product	Trade Flow	Top Partner	Quantity Trade	Unit	Cost/unit	Import Bill Saving* (USD 1000)	Negative List	Sensitive List	Tariff
			United States of America	87	Tons	21,954				
		Pakistan Imports	World	181	Tons	22,895				
			Italy	59	Tons	22,932				
			China	51	Tons	23,176				
			Belgium	19	Tons	22,421				
			Germany	18	Tons	22,333				
			United States of America	5	Tons	22,800				
8421399	Deaerator	Pakistan Imports	World	667	Tons	26,106	1865	No	Yes	25
			United States of America	108	Tons	26,157				
			Italy	99	Tons	26,111				
			China	90	Tons	26,033				
			Germany	87	Tons	26,092				
		India Exports	World	1,809	Tons	23,310				
			Iran (Islamic Republic of)	478	Tons	23,297				
			Belgium	165	Tons	23,333				
			Egypt	150	Tons	23,267				
			United Arab Emirates	77	Tons	23,312				

HS 6	Product	Trade Flow	Top Partner	Quantity Trade	Unit	Cost/unit	Import Bill Saving* (USD 1000)	Negative List	Sensitive List	Tariff
			United States of America	58	Tons	23,190				
480439	Kraft Paper	India Exports	World	7,618	Tons	648	1549	Yes	Yes	20
			Nepal	3,818	Tons	649				
			Sri Lanka	2,013	Tons	632				
			Maldives	597	Tons	593				
		Pakistan Imports	World	3,122	Tons	1,144				
			Sweden	2,254	Tons	1,259				
			United States of America	180	Tons	1,089				
			China	197	Tons	868				

Source: Author's calculations based on UNCOMTRADE data



Key Players

Foreign direct investment (FDI) is close to USD 3 B in the food processing sector in India. About 30 percent of this investment comes from EU countries such as the Netherlands, Germany, Italy and France, in the form of companies like Perfetti, Cadbury, Godrej-Pilsbury, Nutricia International, Manjini Comaco.

The major players in the Indian food and beverages industry include Amul, Mother Dairy, Dabur India Limited, Godrej Industries Limited, Hindustan Lever Limited, Britannia Industries Limited, ITC Limited, Nestle SA, Coke, PepsiCo, Inc, Cadbury Schweppes PLC, Future Group, RPG Enterprise and Godrej Agrovet Limited.

With the diversification in tastes of the consumer specialized products like probiotic milk have also entered the market; Yakult Danone has made a USD 25 M investment in the country and plan to double this over the next three years.

Chapter 4: Intra-Industry Trade in Chemicals: Case Study on Soda-Ash

Executive Summary

Pakistan's organic chemical industry could not flourish due to unavailability of basic building blocks such as Ethylene, Propylene, Butylenes & BTX (Benzene, Toluene, Xylene) used for the production of most of the organic chemicals that are employed as a raw material for a number of chemical sub-sectors. Once trade is normalized, Pakistan may source these building blocks from India. Pakistan may import polypropylene, xylene and polyethylene from India. (Taneja, 2013)

There is a great potential to import high quality dye-stuff from India. The dye stuff sector is one of the most important segments of the chemical industry in India with linkages in textiles, leather, paper, plastics, printing ink and food stuffs. India accounts for 6 percent of the world production of dyes. Similarly Pakistan can import agri-chemicals and pharmaceuticals from India.

Most of the organic chemicals that are further employed as a intermediates for a number of chemical sub-sectors such as Pharmaceuticals, Pesticides, Dyes & Pigments, Soaps & Detergents, Paints & Varnishes, Synthetic Fiber, Glass, Plastics & Resins, Rubber Tyres & Tubes, Textiles Auxiliaries, Essential Oils & Perfumes. By importing these inputs from India, Pakistan can make its plastics, glass and textile industries more competitive thus boosting the export levels to India further.

Pakistan is currently exporting significant volumes of inorganic chemicals (Caustic Soda, Soda Ash and Hydrogen Peroxide) and hydrocarbons (ethylene di-chloride) to India.

A case study was conducted on Azko Nobel for potential of intra industry trade in the Soda Ash industry.

Sector Overview

Pakistan

Chemical industry in Pakistan is widespread, in organized & unorganized sector. It is estimated that the total to date investment in chemical sectors ranges between USD. 5.5 – 6 billion.²¹ The chemical related imports constitute about 17% of the total import bill. The Engineering Development Board of Pakistan classifies chemicals into three following categories:

- Basic chemicals: This includes both inorganic and organic chemicals such as acids, alkalis, salts, ethylene, propylene, benzene, toluene and xylene.
- Intermediate chemical: These are used in further manufacturing such as pure terephthalic acid and phthalic anhydride
- Finished chemical products: These products are for end use or ultimate consumption and include: synthetic fibers i.e. polyester; Polyvinyl Chloride (PVC); polyethylene; polypropylene; and polystyrene etc.

Basic Inorganic Chemicals

The basic inorganic chemicals sector has shown considerable growth in Pakistan as indicated in **Error! Reference source not found..** Chemicals like Soda Ash, Caustic Soda, Sulphuric Acid and Chlorine are being produced in surplus quantities which are then exported. Pakistan is currently a substantial exporter of Caustic Soda, Soda Ash and Hydrogen Peroxide to India.

Basic Organic Chemicals

Pakistan's organic chemical industry could not flourish due to unavailability of basic building blocks such as Ethylene, Propylene, Butylenes & BTX (Benzene, Toluene, Xylene) used for the production of most of the organic chemicals that are employed as a raw material for a number of chemical sub-

²¹ 2030 Chemical Vision, Engineering Development Board, 2010

sectors. It is expected that Pakistan will import polypropylene, xylene, synthetic fiber, and polyethylene from India. (Taneja, 2013)

These petrochemical building blocks can be derived from a petrochemical complex, which generally consist of a naphtha cracker, whereas naphtha is a product of oil refineries and currently its production in the country is around 1,000,000 Metric Ton per annum. The investors have till now held back from this project in Pakistan due to the cost intensive investment and sophisticated technologies involved.

Petro Chemicals

Engro Asahi Polymers (EAPCL) is the only local manufacturer of PVC. It was established in 1999. The plant capacity was enhanced to 150,000 metric tons in 2009 for the manufacture of various grades of PVC. Engro has also installed the facilities of Vinyl Chloride Monomer (VCM) / Ethylene dichloride (EDC) through backward integration based on ethylene as a feedstock.

While domestic PVC consumption has grown at a reasonably high rate of 8 % per annum, it is still much lower than the regional growth rate of 14%. During the last decade (2002 – 2012), the total PVC consumption has been increased from 84,380 M. Tons, in 2000-01 to 121,900 M. Tons in 2008-09. Single major consumption (58%) of PVC in Pakistan is in pipes & fittings; second largest (13%) is in film.²²

Dyes & Pigments

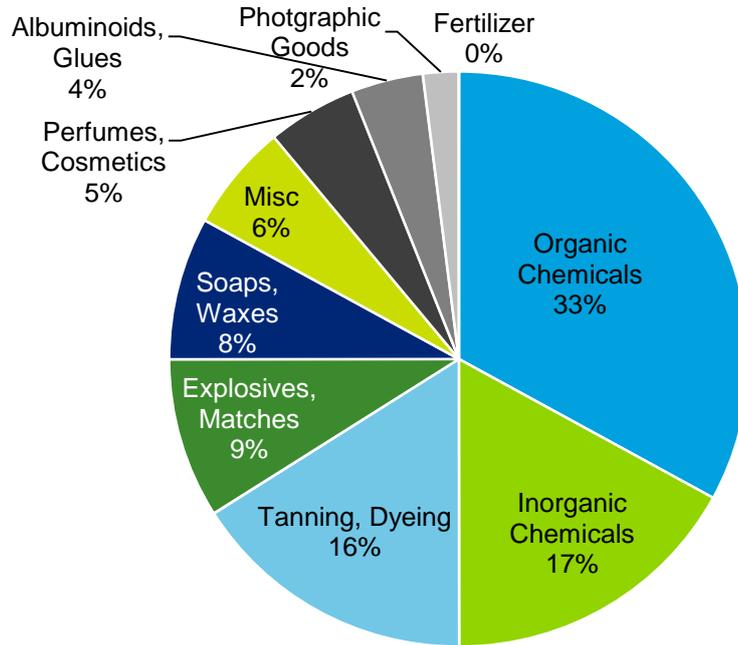
Clariant Pakistan and Sandal Dyestuff are major manufacturers of dyes & pigments in Pakistan. The Pakistan textile industry is traditionally based on the manufacture and export of spinning yarn and threads. Today around two hundred large and medium sized processing mills exist along with thousands of small dye houses. It is estimated that this industry consumes over 22,000 tons of dyestuff and pigments annually.

There are 9 units in organized sector and multiple units at cottage level involved in the production of dyestuff.

²² 2030 Chemical Vision, Engineering Development Board, 2010

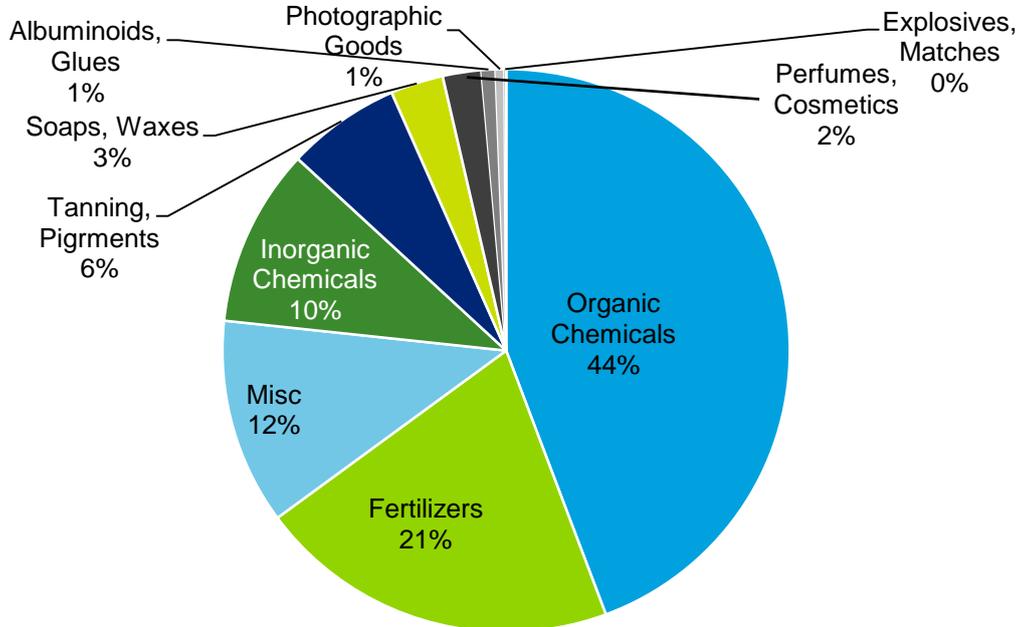
Pakistan Trade Profile

Figure 23: Pakistan's Export Profile of Chemicals, 2011



Source: UNCOMTRADE

Figure 24: Pakistan's Import Profile of Chemicals, 2011



Source: UNCOMTRADE data

India

The Indian chemical industry ranks 12th in the world, by volume. The annual turnover is USD \$30.8 billion. The chemical industry consumes 33 percent of the production in downstream chemicals.²³

Basic Organic and Inorganic Chemical Industry

Key chemicals are Soda Ash, Caustic Soda, Liquid Chlorine and Calcium Carbide amongst other. These are raw materials for industries like detergents, toothpaste, plastics, drugs and petroleum refining. 10 percent of the Chlor caustic plants use the energy efficient.

Drugs and Pharmaceuticals

India has emerged as one of the world's largest and cheapest producers of pharmaceuticals in the world, accounting for nearly 8.5 percent of the world's drug requirements in terms of volume. The pharmaceutical industry in India is stated to be valued at approximately USD \$12.26 billion as per industry estimates. This industry is growing at 10-11% per annum on compounded growth rate basis. Although total annual turnover of pharmaceutical industry is estimated at USD \$21.04 billion, about 65% of this revenue is from exports.

There are 10,000 manufacturing units of which 290 units are in the large scale sector. 45 multinational companies are based in India. The industry today can boast of producing the entire range of pharmaceutical formulations, ranging from medicines ready for consumption by patients to about 350 bulk drugs, i.e., chemicals having therapeutic value and used for production of pharmaceutical formulations. India is a world leader in the export of basic drugs such as ibuprofen and ethambutol. Through the introduction of a system of product patents since 2005, Indian industry has today become a worldwide exporter of high quality generic drugs. India exports pharmaceuticals to many countries across the world, including the US, Germany, France, Russia and UK

Pesticides and Agrochemicals

Indian industry produces 1,000 tons of pesticides annually. India is the 13th largest exporter of pesticides in the world in terms of volume.

Petrochemicals

Petrochemical industry mainly comprises synthetic fibers, polymers, elastomer, synthetic detergents and performance plastics. It covers basic chemicals like Ethylene, Benzene and Xylene. Major components are the intermediates like monoethylene glycol (MEG), phthalic anhydride (PAN) and synthetic fibers like nylon, PSF and Polymers like PVC, Polyester and polyethylene terephthalate (PET) etc. and synthetic rubber. Major Players are Reliance, Indian Petrochemicals Ltd. National Organic Chemical Industry Ltd. and Gas Authority of India Ltd. (GAIL).

The main sources of feedstock and fuel for petrochemicals are natural gas and naphtha. There are three types of naphtha based and gas based cracker complexes in the country with a combined annual ethylene capacity of 2.9 million Metric Tons (MT). During the year 2011-12, Indian Oil Corporation's Naphtha Cracker at Panipat commenced commercial production with an annual Ethylene capacity of 0.85 million MT.

Dyes & Pigments

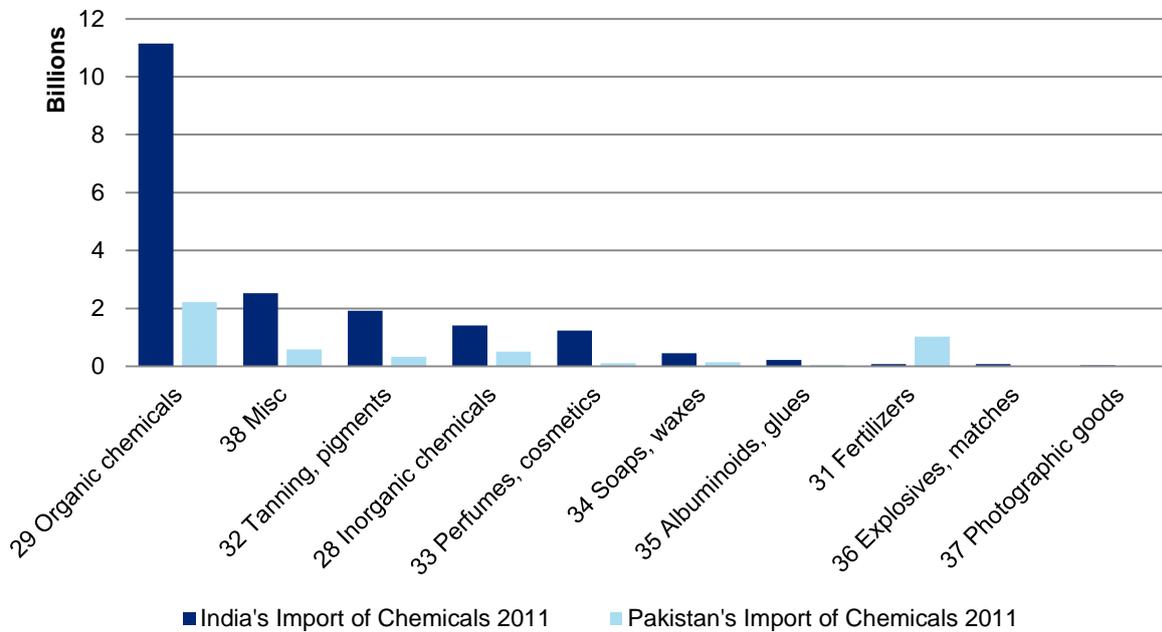
There are 50 manufacturing units in the organized sector and 900 units in the small scale sector for dyes and pigments. Nearly 80 are utilized by the textile industry and the remaining by paints, inks, rubber and leather. India is a major exporter of dyes. Major players are Color Chem(Hoechst), Clariant, IDI, Atul and Mardia.

²³ India Invest

The dye stuff sector is one of the most important segments of the chemical industry with linkages in textiles, leather, paper, plastics, printing ink and food stuffs. India accounts for 6 percent of the world production of dyes.

Bilateral Trade Trends

Figure 25: Comparison of Imports of Chemicals in India and Pakistan by Sector (HS Level 2)

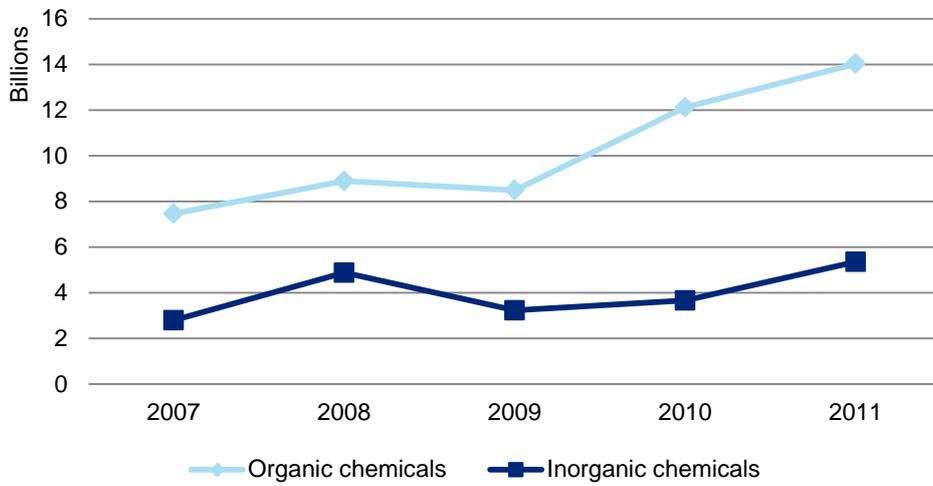


Source: Author's calculations based on UNCOMTRADE data

Table 19: Trend of Bilateral Trade in Chemicals between India and Pakistan					
HS Digit Level 2	Product Label	Pakistan's exports to India			
		Value in 2011 (USD \$ thousand)	Annual growth (in value 2007-2011, %)	Share in Pakistan's exports (%)	Equivalent ad valorem tariff applied by India to Pakistan
TOTAL	All products	272,864	-4	1.1	n/a
	Chemicals	42,179	n/a	n/a	0
'29	Organic chemicals	25,993	105	34.7	6.4
'28	Inorganic chemicals, precious metal compound, isotopes	14,813	398	39.3	6.4
'35	Albuminoids, modified starches, glues, enzymes	592	32	6.6	13.2
'36	Explosives, pyrotechnics, matches, pyrophorics, etc	315	sss	1.5	10
'32	Tanning, dyeing extracts, tannins, derivs, pigments etc	257		0.7	9.1
'38	Miscellaneous chemical products	140	59	1	7.9
'34	Soaps, lubricants, waxes, candles, modelling pastes	54	-17	0.3	9.6
'33	Essential oils, perfumes, cosmetics, toileteries	14	16	0.1	10.2
'37	Photographic or cinematographic goods	1		0	10
'31	Fertilizers	0		0	7.1

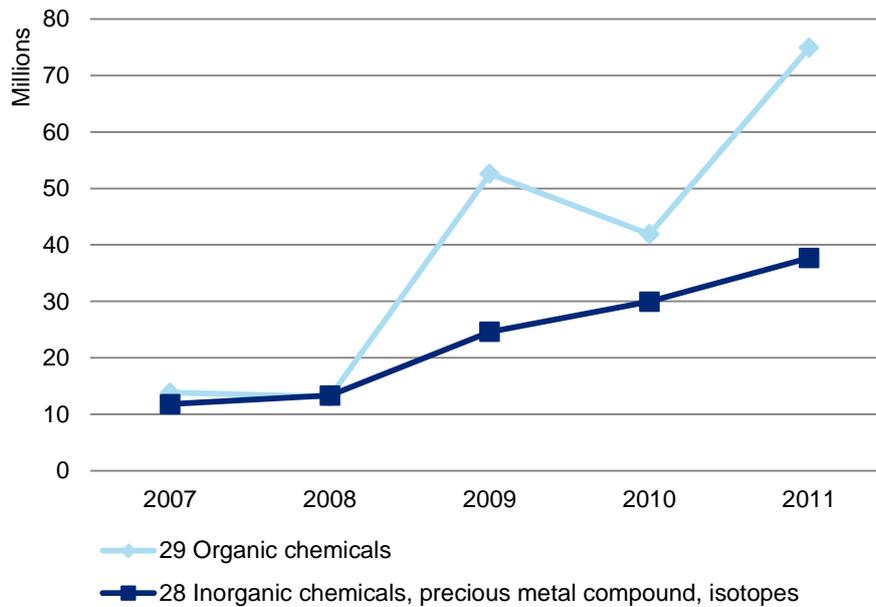
Source: Author's calculations based on UNCOMTRADE data

Figure 26: Global Imports of Organic and Inorganic Chemicals into India



Source: Author's calculations based on UNCOMTRADE data

Figure 27: Global Exports of Organic and Inorganic Chemicals from Pakistan

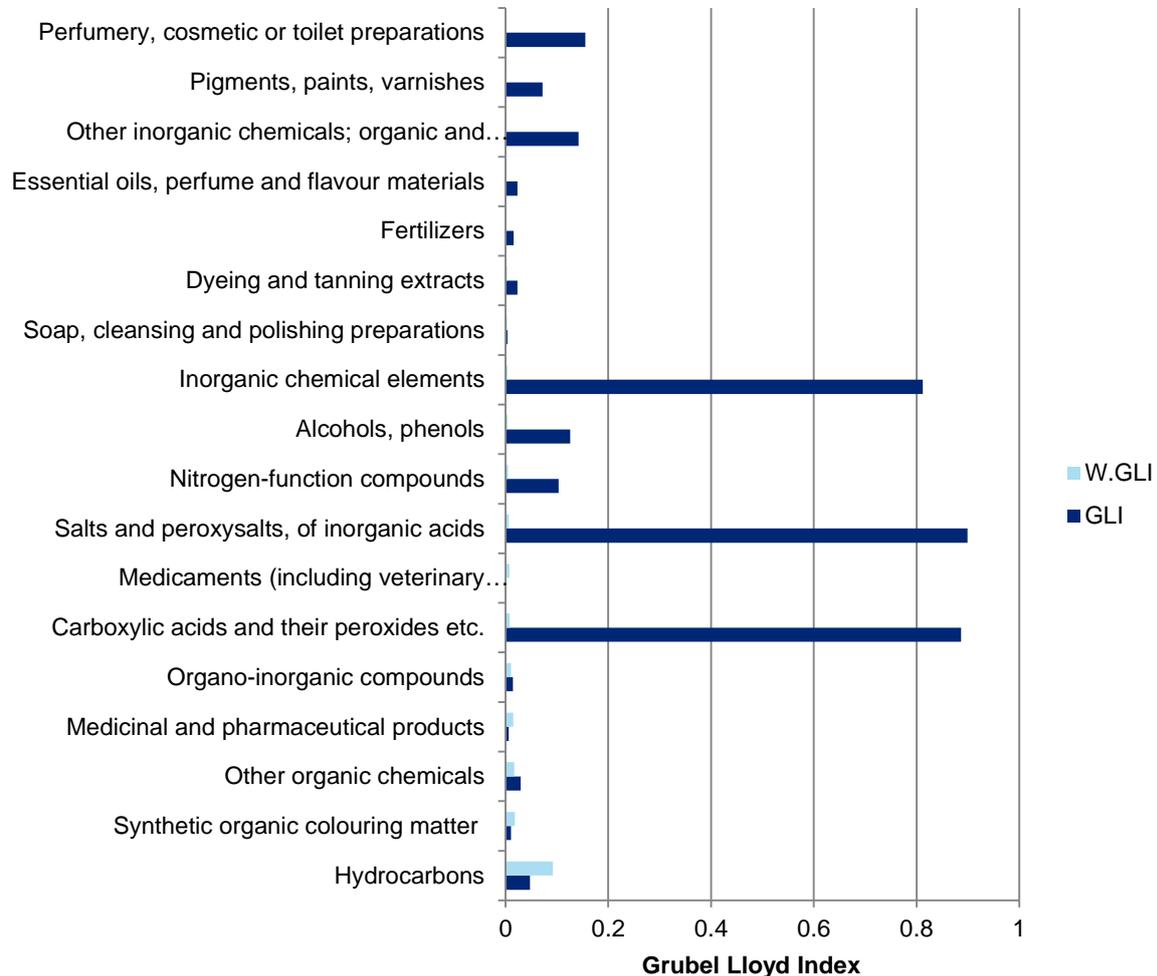


Source: Author's calculations based on UNCOMTRADE data

Intra Industry Trade Potential

Products with high current levels of IIT are as follows. The level of IIT is observed in salts of inorganic acids and inorganic chemical elements.

Figure 28: Current Intra Industry Trade in Chemicals, 2011



Source: Author's calculations based on UNCOMTRADE data

High Potential Items for Intra Industry Trade

Table 20: Products with a High Potential of Intra Industry Trade		
Type of Chemical	Inputs/ Source of Raw Material for Pakistan	Potential of Intra Industry Trade with India
i. Synthetic Fibers ii. Polyvinyl chloride iii. Various Polymers iv. Pesticides v. Pure phthalic acid vi. Plastics and Resins vii. Paints and Varnishes viii. Organic Chemicals ix. Dyes and Pigments x. Textiles and Tannery Chemicals xi. Drugs, pharmaceutical chemicals, fine and specialty chemicals	Imported petrochemical Intermediates; Locally available Coal; Renewable Feed stocks consisting of Bio-mass and molasses.	Potential import of petrochemical intermediates from India
i. Soda Ash and Sodium Bicarbonate ii. Caustic Soda and Chlorine Sulphuric and Other Inorganic Acids.	Local raw material	Potential export to India

Source: Pakistan's Chemical Vision, 2030

Potential Imports from India

Due to unavailability of basic building blocks such as Ethylene, Propylene, Butylenes & BTX (Benzene, Toluene, Xylene) used for the production of most of the organic chemicals. It is expected that Pakistan will import polypropylene, xylene, synthetic fiber, and polyethylene from India. Taneja, 2013

There is a great potential to import high quality dyestuff from India. The dye stuff sector is one of the most important segments of the chemical industry in India with linkages in textiles, leather, paper, plastics, printing ink and food stuffs. India accounts for 6 percent of the world production of dyes.

Potential Exports to India

Most of the organic chemicals that are further employed as a intermediates for a number of chemical sub-sectors such as pharmaceuticals, pesticides, dyes & pigments, soaps & detergents, paints & varnishes, synthetic fiber, glass, plastics & resins, rubber tyres & tubes, and textiles Auxiliaries. By importing these inputs from India, Pakistan can make its plastics, glass and textile industries more competitive thus boosting the export levels to India further.

Pakistan is already exporting significant amounts of inorganic chemicals (Caustic Soda, Soda Ash and Hydrogen Peroxide) and hydrocarbons (ethylene di-chloride) to India.

Please see the appendix for details on products with a high potential for IIT.

High tariffs and in adequate storage and handling procedures may impede intra industry trade in the chemical sector. Currently a large subsection of chemicals are protected by the negative list of Pakistan and are included in the SAFTA sensitive lists of both India and Pakistan.

Case Study on ICI-Azko Nobel

SODA ASH & SODIUM BICARBONATE, commonly known as dhobi soda or washing soda is used in the manufacture of glass, soaps, detergents, sodium silicate, paper, caustic soda, paint, petroleum refining and inorganic chemicals.

Box 1: Profile Of Azko-Nobel

There are two Soda ash plants with production capacity of 470,000 MTPY. Both the plants producing soda ash are located in the Salt Range area of Pakistan.

The Akzonobel (former ICI) plant is the oldest and largest operating plant in Pakistan. It was established in 1944 with a capacity of 18,000 MTPY. The capacity has been progressively increased to 350,000 MTPY in 2009.

Sector Overview

Global Scenario

Worldwide, soda ash is manufactured synthetically and is also available as a mineral (Trona) in some countries such as the USA and Kenya. World production capacity is about 58.7 Million Metric Tons while production is about 44 Million Metric Tons. Leading producers of soda ash are China, USA, and India.

Globally, glass industry accounts for around 53% the total consumption of soda ash followed by detergents & soap (13%), chemicals (11%), metal & mining (5%) and paper (1%).

Figure 29: Downstream Applications of Soda Ash



India's Soda Ash Industry

Production of soda ash grew from 2.046 Million Metric Tons in 2007 to 2.4 Million Metric Tons in 2011 showing of 4.3 percent in production. Production was adversely impacted by increasing imports from China which led to the imposition by the Government of India of safeguard duty on import of Chinese soda ash. This duty was also imposed on Pakistani exporters to India (AzkoNobel and Olympia).

Soda ash production is expected to grow by 5.6% during 2012-13. Glass manufacturers consume around half of India's soda ash production.²⁴ The growth in production is likely to come on the back of an increase in demand from major user industries like aluminium and paper which is likely to rise by 4% each during the year.²⁵

Pakistan's Soda Ash Industry

Domestic Production

Production of soda ash in the country was about 218,000 Metric Tonnes during 2000-01 which has been increased to 365,000 Metric Tonnes during 2008-09. Production increased from 2000-01 to 2007-08 with an annual growth rate of 7.64%.

There are two soda ash plants with an annual production capacity of 470,000 Metric Tonnes. Both the plants producing soda ash are located in the Salt Range area.

The Akzonobel (former ICI) plant is the oldest and largest operating plant in Pakistan with an annual capacity of 350,000 Metric Tonnes. The Olympia Chemicals started operation in 2000 and has an annual capacity of 120,000 Metric Tonnes. Among the two local players Akzonobel has major share (70%) in the local market; whereas Olympia Chemicals accounts for 28% of the market share. Imports account for the remaining 2% of the market share.

Domestic Consumption

Locally, glass and silicate industry accounts for around 43% of the total consumption of soda ash followed by textiles (28%), detergents & soap (7%), chemicals (2%), baking powder (9%) and paper (11%).²⁶

Major difference in the retail channel of soda ash in Pakistan is in the additional "Bazaar" segment, whereby distributors are involved to move product in the open market. Largest consumption of product in the "Bazaar" segment is in the "Generic Detergents" category, whereby Soda Ash, Sulphonic Acid and water are mixed in carefully calibrated formulations to yield cheap detergents, which our comparatively large, low disposable income segment of the population can afford.

Bilateral Trade in Soda Ash

It is used in the production of Detergents, paper, and glass etc. It is primarily used in glass manufacturing in Pakistan. However, currently the production is limited to energy crisis. The potential for regional trade exists and should be explored. Regional trade is important as freight costs play an important role in its trading over long distances.

Pakistan currently exports little amount of Soda Ash to India and is primarily exported in solid form.

India produces large quantities of Soda Ash, in the South West specifically in Gujarat province. Due to India's large size, the northern part of the country could be served by supplies from Pakistan.

²⁴ [Centre for Monitoring Indian Economy](#)

²⁵ [Centre for Monitoring Indian Economy](#)

²⁶ Chemical Vision of Pakistan, 2030

However, due to infrastructure problems at the Wagah border currently very little Soda Ash is exported to India. Last year India imported 40,000 tons from China and 1000 tons from Pakistan.

Metallurgic coke is a raw material used in the production of Soda Ash which is currently being imported from Poland. This raw material could possibly be imported from India if allowed.

India has recently imposed anti-dumping duty on Soda Ash, imported from all countries. India is the largest user of Anti-dumping laws in the world. Although exports from Pakistan increased to just US \$ 9.4 Million in 2010 and constituted a small percentage of the total imports of Soda Ash to India which were US \$ 83.5 Million. India started anti-dumping investigations, which led to a levy of US \$5.6 per tonne on the Pakistani exporter, ICI. This was despite the fact that Pakistan's export prices were the highest compared to other countries exporting to India during the POI and its share in total imports was the lowest amongst all exporting countries. Pakistani soda ash manufactures filed a case for imposing anti-dumping duties on the imports of Pakistan from the Magadi subsidiary of Tata in Kenya. However, due to capacity constraints of NTC, there has been no progress on the case.

Box 2: Anti-dumping duties on Exports of Soda Ash from Pakistan to India

Product Name: Soda Ash (HS Code: 28362000)

Application: Sodium Silicate, Detergents, Glass, Soap, Paper, Textiles, Chemicals.

Current Status: On the SAFTA Sensitive List of Pakistan. Ant-dumping Duties of US \$ 5.6/ tons have been imposed by India on exports from ICI.

Potential of Export to India: Pakistan's capacity of Soda Ash is about 470,000 tons per year while local demand is 360,000 tons. Pakistan has a current surplus of over 130,000 tons to export as the domestic market is in a slump and has been contracting by 2 per cent a year. However, Pakistan has not been able to export more than 10 per cent of its export surplus.

Pakistan's exports of Soda Ash amounted to US \$ 9.4 Million in 2010. This constitutes a low share in the overall imports of US \$ 83.5 Million total in the Indian market which is rapidly growing at a rate of 7 to 8 percent. It is estimated that given its surplus capacity and abundance of raw material, Pakistan can supply more than 100,000 tons of Soda Ash to India annually.

Pakistan has a significant price advantage over India as the main manufacturers are located in the South of India. The freight cost from South to Delhi is US \$ 30 per ton while the freight cost from Pakistani Manufacturers (ICI, Olympia) is US \$ 7-14 per ton. As a result India offers a promising market for Pakistan.

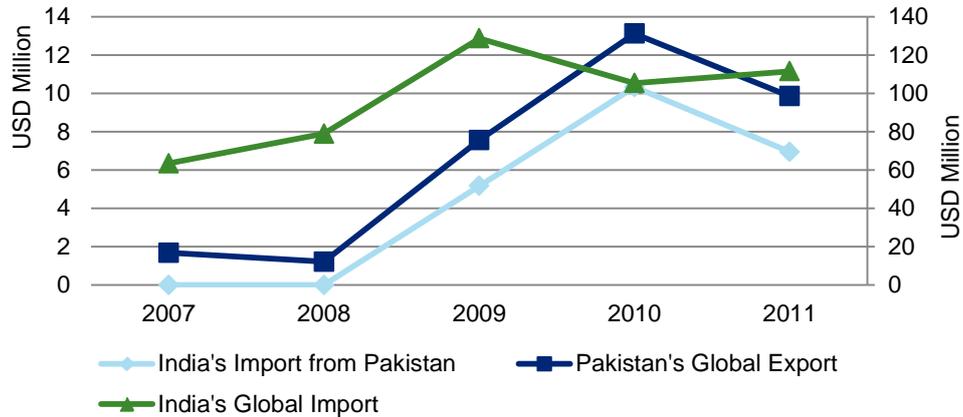
Anti-Dumping Duties on Soda Ash in India and its Implications on Pakistan:

India started anti-dumping investigation on imports of Soda Ash from Pakistan and other countries including China, EU, Kenya, Iran, Ukraine & USA. The notification was released to this effect in February, 2012. The fact that the petition for imposition of Anti-Dumping duties was filed on 96% of all the Soda Ash exporters to India shows that this was more of a protectionist measure rather than a genuine case of Anti-Dumping. Pakistani exporter ICI Soda Ash was handed an Anti-Dumping duty of US \$ 5.6/ton. Pakistan's export price to India during the POI (April 2009-March 2010) was the highest amongst all the alleged dumping countries. The exporting company fully cooperated with the anti-dumping investigation agency throughout the course of the investigation through their legal counsel in India, M/S Trilegal Law Associates.

The soda ash industry in Pakistan is based in remote areas and provides employment to thousands of people directly and indirectly in remote towns as Khewra (District Jhelum) and Warcha (District Khushab). Adverse impact of imports, leading to closure of these industries will have serious socio – political implications.

IIT Potential with India

Figure 30: Pakistan's Export of Soda Ash to India, 2007-2011



Source: UNCOMTRADE

Key Raw Materials

- Limestone
- Salt
- Coke
- Furnace Oil
- Gas
- Diesel
- Ammonia
- Sodium Sulphide
- Ammonium Sulphate

Our major raw materials are Limestone and Salt, which are already readily available in Pakistan.

Cost Saving Analysis

Major inputs that can be sourced more cheaply from India are:

1. Metallurgical Coke (HS Code 2704)
2. Ammonia (HS Code 2814)
3. Ammonium Sulphate (HS Code 3102.2100)

ICI has imported metallurgical coke from India in the past.

Table 21: Cost Saving Analysis of Inputs in the Soda Ash Process									
HS 6	Product	Trade Flow	Top Partner	Quantity Trade	Unit	Cost/unit	Import Bill Saving* (USD 1000)	Negative List	Sensitive List
270400	Metallurgical Coke	Pakistan Imports from	Poland	47100	Tons	318	9691.3	No	No
			India	27250	Tons	194			
281420	Ammonia Aqueous Solution	Pakistan Imports from	Germany	10	Tons	1600	11.478	No	No
		India Exports to	Sri Lanka	728	Tons	238			
310229	Ammonium Sulphate	Pakistan Imports from	Italy	3479	Tons	248	111.328	No	No
		India exports to	Oman	385	Tons	418			
			Bangladesh	148	Tons	216			
283010	Sodium Sulphide	Pakistan imports from	China	15304	Tons	669	0	No	No
		India exports to	Bangladesh	21	Tons	1810			

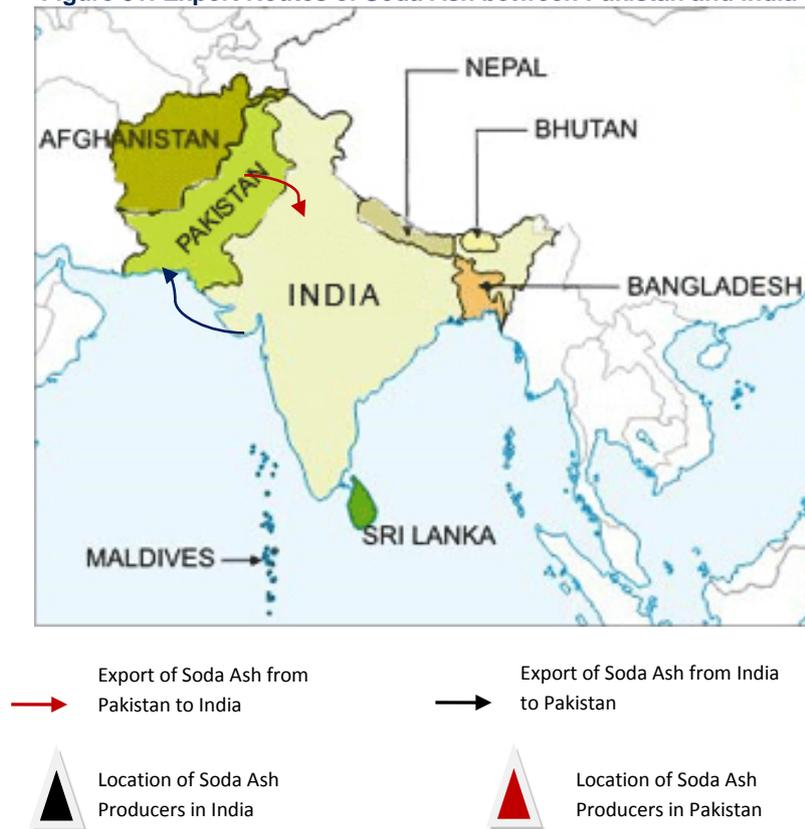
Source: Author's calculations based on UNCOMTRADE data

Geographical Advantage for Intra Industry Trade

Soda Ash has a strong production linkage to geographic proximity due to its raw material of salt and lime stone. In Pakistan, key production facilities are located in the north in Punjab along the Khewra salt range, while in India, the factories are in the south along the coastline.

As per Azko-Nobel's estimates, in the international market its price ranges from \$250 to \$300 per ton. As it is a heavy substance, distance and hence freight form a major part of its cost. Pakistani producers supplying to Indian consumers in the north have the a freight cost advantage over the Indian producers that are located further south. Likewise Indian producers have a cost advantage over Pakistani producers in supplying to companies located in the industrial area around Karachi.

Figure 31: Export Routes of Soda Ash between Pakistan and India



Key Players

Tata Chemicals

Tata Chemicals is the world's second largest producer of **soda ash** and the most geographically-diversified soda ash company. It has manufacturing facilities in India, the UK, the US and Kenya and an efficient supply chain that can service customers across the globe.

The company has a global capacity of around 5.5 million tonnes of soda ash per annum, of which 60 per cent is from natural deposits at Wyoming, USA and Lake Magadi, Kenya. Besides, the company owns 35 per cent of the global low-cost and sustainable natural soda ash capacity.

Gujrat Heavy Chemicals Ltd

GHCL India is one of the largest manufacturers of Soda Ash in India. Our Soda Ash Plant has a production capacity of 8,50,000 MT per annum, equally divided for producing Light and Dense Soda Ash. As a Chemical company following international standards, the GHCL India plant has been set up with technical know-how from M/s. AKZO Nobel BV, Netherlands.

Appendix A: IIT for all Sectors (at SITC Digit Level 2) as Compared with SAARC Countries

SITC4 Digit 2		Global India W. GLI	Global Pakistan W. GLI	Pakistan India W. GLI	Pakistan Bangladesh W. GLI	India Bangladesh W. GLI	Pakistan Sri Lanka W. GLI	India Sri Lanka W. GLI
Food and Live Animals								
0	Live animals other than animals of	0.0000	0.0005	0.0000	0.0000	-	-	0.0000
1	Meat and meat preparations	0.0000	0.0003	0.0000	-	-	-	0.0004
2	Dairy products and birds eggs	0.0004	0.0021	-	-	0.0000	0.0000	-
3	Fish (not marine mammals), crustace	0.0003	0.0001	0.0011	0.0000	0.0036	0.0000	0.0001
4	Cereals and cereal preparations	0.0002	0.0043	0.0000	-	0.0008	0.0002	0.0001
5	Vegetables and fruit	0.0074	0.0182	0.0757	0.0000	0.0222	0.0222	0.0045
6	Sugars, sugar preparations and honey	0.0003	0.0021	0.0001	0.0003	0.0002	0.0004	0.0000
7	Coffee, tea, cocoa, spices, and man	0.0016	0.0017	0.0030	0.0020	0.0002	0.0256	0.0306
8	Feeding stuff for animals	0.0006	0.0015	-	-	0.0018	0.0016	0.0142
9	Miscellaneous edible products	0.0003	0.0007	0.0000	0.0000	0.0001	0.0001	0.0004
Beverages & Tobacco								
11	Beverages	0.0005	0.0003	-	-	0.0000	-	0.0000
12	Tobacco and tobacco manufactures	0.0001	0.0006	-	0.0002	0.0000	-	-
Crude Materials, Inedible except Fuel								
21	Hides, skins and fur skins, raw	0.0000	0.0000	-	-	0.0004	-	0.0000
22	Oil-seeds and oleaginous fruits	0.0002	0.0008	0.0002	-	-	0.0008	-
23	Crude rubber (including synthetic)	0.0008	0.0002	0.0012	0.0000	0.0003	0.0000	0.0067
24	Cork and wood	0.0001	0.0000	0.0001	-	0.0000	0.0000	0.0004
25	Pulp and waste paper	0.0000	0.0000	0.0000	-	-	-	0.0000
26	Textile fibres (other than wool top)	0.0035	0.0142	0.0077	0.1325	0.0508	0.0004	0.0001
27	Crude fertilizers, other than those	0.0042	0.0032	0.0012	-	0.0053	0.0017	0.0016
28	Metalliferous ores and metal scrap	0.0148	0.0061	0.0027	-	0.0137	0.0001	0.0001
29	Crude animal and vegetable material	0.0008	0.0028	0.0037	0.0007	0.0003	0.0047	0.0015
Mineral Fuels								
32	Coal, coke and briquettes	0.0015	0.0000	0.0000	-	0.0000	-	0.0001
33	Petroleum, petroleum products and r	0.1461	0.0381	0.0054	-	0.0169	-	0.0110

SITC4 Digit 2		Global India W. GLI	Global Pakistan W. GLI	Pakistan India W. GLI	Pakistan Bangladesh W. GLI	India Bangladesh W. GLI	Pakistan Sri Lanka W. GLI	India Sri Lanka W. GLI
34	Gas, natural and manufactured	0.0005	0.0000	-	-	0.0000	-	0.0000
Animal and vegetables oils, fats, waxes								
41	Animal oils and fats	0.0000	0.0000	-	-	-	-	0.0000
42	Fixed vegetable fats and oils, crud	0.0024	0.0001	0.0004	-	0.0001	0.0002	0.0000
43	Animal or vegetable fats and oils,	0.0000	0.0020	-	-	-	-	0.0000
Chemicals and related products								
51	Organic chemicals	0.0269	0.0094	0.0150	-	0.0001	0.0001	0.0020
52	Inorganic chemicals	0.0029	0.0011	0.0086	0.0001	0.0045	0.0005	0.0017
53	Dyeing, tanning and colouring mater	0.0037	0.0011	0.0003	-	0.0000	0.0000	0.0004
54	Medicinal and pharmaceutical	0.0072	0.0044	0.0001	0.0000	0.0000	0.0002	0.0004
55	Essential oils and retinoid	0.0019	0.0008	0.0001	0.0000	0.0012	0.0004	0.0015
56	Fertilizers	0.0002	0.0000	0.0000	-	-	-	0.0033
57	Plastics in primary forms	0.0078	0.0123	0.0058	0.0001	0.0011	0.0003	0.0015
58	Plastics in non-primary forms	0.0026	0.0011	0.0002	0.0000	0.0003	0.0001	0.0003
59	Chemical materials and products	0.0066	0.0008	0.0012	0.0000	0.0000	0.0008	0.0008
Manufactured goods classified by material								
61	Leather, leather manufactures, n.e.	0.0012	0.0018	0.0005	0.0000	0.0025	0.0002	0.0002
62	Rubber manufactures, n.e.s.	0.0033	0.0002	0.0001	-	0.0001	0.0000	0.0045
63	Cork and wood manufactures	0.0005	0.0015	0.0000	0.0000	0.0002	0.0015	0.0003
64	Paper, paperboard and articles of p	0.0023	0.0008	0.0002	0.0000	0.0002	0.0005	0.0025
65	Textile yarn, fabrics, made-up	0.0089	0.0363	0.0283	0.0050	0.0625	0.0169	0.0140
66	Non-metallic mineral manufactures,	0.0910	0.0063	0.0070	0.0000	0.0055	0.0011	0.0137
67	Iron and steel	0.0274	0.0044	0.0005	0.0000	0.0001	0.0009	0.0017
68	Non-ferrous metals	0.0119	0.0015	0.0172	-	0.0037	0.0025	0.0091
69	Manufactures of metals, n.e.s.	0.0112	0.0063	0.0007	0.0002	0.0002	0.0000	0.0044
Machinery and transport equipment								
71	Power-generating machinery	0.0075	0.0007	0.0000	0.0004	0.0001	0.0000	0.0023
72	Machinery specialized	0.0088	0.0021	0.0019	0.0005	0.0006	0.0004	0.0035
73	Metalworking machinery	0.0012	0.0004	0.0001	-	0.0000	0.0000	0.0005
74	General industrial machinery	0.0127	0.0018	0.0010	0.0000	0.0010	0.0000	0.0093
75	Office machines	0.0019	0.0000	0.0004	0.0000	0.0002	0.0000	0.0000

SITC4 Digit 2		Global India W. GLI	Global Pakistan W. GLI	Pakistan India W. GLI	Pakistan Bangladesh W. GLI	India Bangladesh W. GLI	Pakistan Sri Lanka W. GLI	India Sri Lanka W. GLI
	and automatic data-							7
76	Telecommunications and sound-recording	0.0135	0.0002	0.0000	0.0000	0.0007	-	0.0016
77	Electrical machinery, apparatus and	0.0143	0.0015	0.0015	0.0001	0.0029	0.0000	0.0159
78	Road vehicles	0.0132	0.0014	0.0001	-	0.0007	0.0000	0.0024
79	Other transport equipment	0.0137	0.0003	0.0000	-	0.0000	-	0.0318
Misc. manufactured articles								
81	Prefabricated buildings; sanitary,	0.0008	0.0002	0.0000	0.0004	0.0000	-	0.0000
82	Furniture and parts thereof	0.0019	0.0008	0.0000	-	0.0002	0.0000	0.0002
83	Travel goods, handbags and similar	0.0005	0.0005	0.0000	-	0.0000	0.0000	0.0000
84	Articles of apparel and clothing accessories	0.0010	0.0025	0.0007	0.0017	0.0125	0.0057	0.0116
85	Footwear	0.0008	0.0022	0.0003	0.0000	0.0000	0.0004	0.0003
87	Professional, scientific	0.0031	0.0086	0.0014	0.0000	0.0001	0.0001	0.0009
88	Photographic apparatus, equipment and	0.0010	0.0001	0.0002	-	0.0001	-	0.0004
89	Miscellaneous manufactured articles	0.0159	0.0157	0.0066	0.0006	0.0022	0.0034	0.0045
Commodities & transactions not classified elsewhere								
93	Special transactions	0.0306	0.0000	0.0002	0.0000	0.0021	0.0001	0.0003
96	Coin (other than gold coin)	-	-	-	-	-	-	-
97	Gold, non-monetary	0.0012	0.0000	-	-	-	-	-

Appendix B: Industry Classification

SITC classification may also be grouped into the following broad categories: ²⁷

- Natural resource intensive goods : SITC 0, 2 (ex.26), 3 (ex.35), 4, 56
- Labor intensive goods: SITC 26, 6 (ex.62, 67, 68), 8 (ex. 87, 88)
- Capital intensive goods: SITC 1, 35, 53, 55, 62, 67, 67, 78
- Easy-to-imitate research-intensive goods: SITC 51, 52, 54, 58, 59, 75, 76
- Difficult-to-imitate research-intensive goods: SITC 57, 7(ex.75,76,78), 87, 88

Natural resource intensive products are primary products e.g. meat, dairy, cereals, fruit, coffee, minerals, and oil. Natural-resource intensive products include leather, wood, pig iron, and copper etc. Unskilled-labour intensive products include textiles, clothing, ships, and footwear etc. and human-capital intensive products are perfumes, cosmetics, cars, and watches etc. Technology intensive products include chemicals, electronics, tools, and aircraft etc.

²⁷ Measuring vertical and horizontal intra industry trade: Case for Turkey

Appendix C: IIT at Product Level (SITC Digit Level 5) For Selected High Potential Sectors

The following table gives products in which Pakistan and India have a high levels of IIT globally (GLI>0.3). Both India and Pakistan have comparable RCAs in fresh/chilled vegetables, mangoes, onions, fruit and vegetable juice and can observe higher levels of industry trade once relations are normalized. (Note: The tables may be resorted as per high RCAs for Pakistan)

TEXT Code	Product Description	Pakistan Export to World	Pakistan Import from World	Pakistan's Export to India	Pakistan's Import from India	India's Export to the World	India's Imports from the World	India's RCA	Pakistan's RCA	Pakistan India IIT	Global India IIT	Pakistan Global IIT
Fruit and Vegetables												
5896	Fruits/edible parts of plants	773.814	343.68	0	24.63	13014.4	3718.7	0.2416	0.1709	0	0.444	0.615
5799	Fruit, dried, n.e.s., & mixtures	24349.845	8266.37	219	6223.3	31570.1	9136.3	0.8246	7.5662	0.159	0.449	0.507
5798	Fresh fruit other than headings 057	5101.825	2040.79	0	4013.6	45326.5	10573	0.6085	0.8148	0	0.378	0.571
5752	Grapes, dried (e.g., raisins)	112.731	31.373	260.8	0	12018.6	8275.3	0.4234	0.0472	0	0.816	0.435
5672	Tomatoes prepared/preserved	3.693	2.03	0	0	218.899	1026.6	0.009	0.0018	0	0.352	0.709
5619	Dried vegetables, n.e.s.; mixtures	232.582	885.812	0	0	7705.84	4730.8	0.2319	0.0832	0	0.761	0.416
Dairy												
02213	Cream, not concentrated/sweetened	291.005	73.794	0	0	131.765	239.305	0.0026	0.0685	0	0.710	0.405
02211	Milk, not concentrated/sweetened	4117.306	142.075	0	0	421.725	0	0.0386	4.4857	0	0.000	0.067
02212	Milk & cream, not concentrated/sweet	33756.292	8.296	0	0	4844.065	33.393	0.051	4.2255	0	0.014	0.000
02221	Milk, concentrated/sweetened,	1819.137	89127.859	0	1934.872	9133.97	123213.46	0.0666	0.1579	0	0.138	0.040
02222	Milk & cream, concentrated/sweetened	11940.959	6885.32	0	86.561	1983.284	20367.247	0.0114	0.8149	0	0.177	0.731

TEXT Code	Product Description	Pakistan Export to World	Pakistan Import from World	Pakistan's Export to India	Pakistan's Import from India	India's Export to the World	India's Imports from the World	India's RCA	Pakistan's RCA	Pakistan India IIT	Global India IIT	Pakistan Global IIT
02223	Milk & cream, concentrated	137.097	334.98	0	0.145	48.625	0	0.0017	0.0583	0	0.000	0.581
02224	Milk & cream, concentrated	115.141	944.858	0	0.003	343.337	3628.713	0.0226	0.09	0	0.173	0.217
02231	Yogurt	123.816	111.958	0	340.719	1.517	308.163	0	0.0382	0	0.010	0.950
02232	Buttermilk, curdled milk & cream	10075.113	11.974	0	0	851.743	23.985	0.0236	3.3166	0	0.055	0.002
02233	Ice-cream & other edible ice	1093.889	177.739	0	0	786.671	918.795	0.0135	0.2241	0	0.923	0.280
02249	Products consisting of natural milk	5.703	1782.758	0	0	107.253	15.407	0.0048	0.003	0	0.251	0.006
02491	Fresh cheese, including whey cheese	3.085	2212.608	0	0	2415.789	2172.944	0.0251	0.0004	0	0.947	0.003
Manufactures of Metals												
69659	Articles of cutlery, n.e.s.	780.617	245.84	2.31	0	912.687	1693.943	0.1776	1.8074	0	0.700	0.479
69119	Other structures	59870.63	42527.547	0	0	279599.21	598201.89	0.4991	1.2737	0	0.637	0.831
69523	Pliers (including cutting pliers)	2861.99	1164.344	4.34	1.522	26502.627	11439.688	0.8398	1.0789	0.519276 7	0.603	0.578
69976	Articles of lead, n.e.s.	608.269	358.92	0	108.889	2280.722	1449.604	0.2552	0.8095	0	0.777	0.742
69549	Sets of articles of two/more	296.896	390.639	0	0	1558.659	2367.57	0.1714	0.5692	0	0.794	0.864
69753	Sanitary ware & parts thereof, n.e.	248.303	58.532	0	0	2674.58	2920.979	0.5153	0.5691	0	0.956	0.382
69733	Parts, of iron/steel	845.637	317.069	0	0	1532.007	4213.04	0.062	0.4071	0	0.533	0.545
69546	Other hand tools (including glazier	1946.024	1783.425	0.043	11.257	47579.849	17158.412	0.7804	0.3822	0.007610 6	0.530	0.956
69241	Tanks, casks, drums, cans, boxes &	2204.089	5942.278	0	0	39315.604	52398.454	0.3371	0.3374	0	0.857	0.541
69978	Articles of tin, n.e.s.	156.762	50.016	0	0	2918.054	3125.31	0.3377	0.2158	0	0.966	0.484
69751	Sanitary ware & parts thereof, n.e.	899.581	1295.169	1.043	0.34	14107.324	23816.63	0.282	0.2139	0.491684 7	0.744	0.820

TEXT Code	Product Description	Pakistan Export to World	Pakistan Import from World	Pakistan's Export to India	Pakistan's Import from India	India's Export to the World	India's Imports from the World	India's RCA	Pakistan's RCA	Pakistan India IIT	Global India IIT	Pakistan Global IIT
69961	Anchors, grapnels & parts thereof	69.423	190.607	0	0	1812.164	5549.136	0.3871	0.1764	0	0.492	0.534
69311	Stranded wire, ropes, cables	1140.058	6076.037	1.308	1.226	99140.836	130949.17	0.7873	0.1077	0.967640 ₁	0.862	0.316
69781	Mechanical appliances, hand-operated	58.372	161.824	0	0	833.407	425.021	0.1147	0.0955	0	0.675	0.530
69312	Stranded wire, ropes, cables, plait	278.05	225.088	0	0	11848.889	5435.842	0.3133	0.0875	0	0.629	0.895
69731	Domestic cooking appliances	668.485	1111.426	0	0	6523.481	13121.749	0.0654	0.0797	0	0.664	0.751
69211	Reservoirs, tanks, vats	280.474	501.899	0	0	19844.447	14618.368	0.2552	0.0641	0	0.848	0.717
69782	Statuettes & other ornaments	158.796	166.611	0	0	3334.709	5875.118	0.0934	0.0529	0	0.724	0.976
69114	Equipment for scaffolding	332.87	771.697	10.24	0	78352.911	24548.008	0.9972	0.0504	0	0.477	0.603
69662	Other sets of assorted articles	92.235	165.637	0	0	1393.835	729.784	0.0638	0.0502	0	0.687	0.715
69922	Other chain	101.758	573.387	0	2.581	6467.676	17278.165	0.1898	0.038	0	0.545	0.301
69954	Sign-plates, name-plates	29.237	110.485	1.43	0	5212.344	11262.965	0.4014	0.0268	0	0.633	0.419
69732	Domestic stoves (other than cooking)	68.004	310.016	0	0	1907.616	1213.493	0.0439	0.0186	0	0.778	0.360
69987	Zirconium, wrought	6.423	26.233	0	0	341.895	480.915	0.0623	0.0139	0	0.831	0.393
69921	Skid chain	4.086	4.61	0	0	170.328	441.705	0.0255	0.0073	0	0.557	0.940
Manufactures of Minerals												
66134	Marble, travertine & alabaster	3279.734	1474.549	20.681	1054.398	44217.956	120837.65	2.0795	1.8351	0.038473 ₅	0.536	0.620
66139	Other monumental/building stone	255.402	485.457	0	148.837	39203.72	7412.723	0.3932	0.0305	0	0.318	0.689
66231	Bricks, blocks, tiles & others	121.504	75.249	0	1.452	4692.307	2611.772	2.8829	0.888	0	0.715	0.765

TEXT Code	Product Description	Pakistan Export to World	Pakistan Import from World	Pakistan's Export to India	Pakistan's Import from India	India's Export to the World	India's Imports from the World	India's RCA	Pakistan's RCA	Pakistan India IIT	Global India IIT	Pakistan Global IIT
66241	Ceramic building bricks	254.219	260.262	0	0	599.768	1710.445	0.0378	0.1907	0	0.519	0.988
66332	Building blocks & bricks	303.229	224.433	0	26.333	3101.035	4090.451	0.0925	0.1076	0	0.862	0.851
66334	Other articles of cement	311.935	102.451	0	0	2897.866	2139.676	0.0669	0.0857	0	0.849	0.494
66399	Ceramic articles, n.e.s.	465.682	87.199	0	0	9422.851	33328.852	0.2564	0.1507	0	0.441	0.315
66431	Glass, coloured throughout the mass	4.314	7.175	0	0	530.455	1817.934	0.6059	0.0586	0	0.452	0.751
66441	Non-wired float glass	6782.011	10510.056	123.468	0	85907.598	70921.432	0.738	0.6931	0	0.904	0.784
66493	Glass envelopes (including bulbs	31.943	130.317	0	0	73219.316	19994.006	7.1653	0.0372	0	0.429	0.394
66521	Glassware of glass-ceramics	1632.035	425.708	0	0	1176.85	5175.623	0.1582	2.6096	0	0.371	0.414
66613	Ceramic tableware, kitchenware	313.251	102.842	0	5.97	3500.693	19260.294	0.1344	0.1431	0	0.308	0.494
66729	Diamonds (other than industrial)	2.833	10.579	0	2.86	31106098	19977908	17.4772	0	0	0.782	0.422

Appendix D: High Potential Textiles for IIT

SITC Code	Product Description	Pakistan Export to World	Pakistan Import from World	Pakistan's Export to India	Pakistan's Import from India	India's Export to the World	India's Imports from the World	India's RCA	Pakistan's RCA	Pakistan India IIT	Pakistan Global IIT	India Global IIT
65382	Fabrics, woven, <85% of artificial	10.12	9.85	0.00	0.00	90.84	456.31	0.06	0.07	0.00	0.99	0.33
65735	Textile wall coverings	18.01	15.41	0.00	0.00	346.61	388.05	0.15	0.09	0.00	0.92	0.94
65621	Labels, badges of textile, cut to s	6738.66	10103.66	6.76	122.56	6056.72	17651.53	0.33	4.32	0.10	0.80	0.51
26871	Carded wool; combed wool in fragmen	557.51	951.17	0.00	0.00	174.90	451.16	0.16	6.25	0.00	0.74	0.56
84111	Overcoats, raincoats, car coats, ca	43.48	25.22	0.00	0.00	718.83	294.95	0.05	0.04	0.00	0.73	0.58
65819	Sacks & bags, of textile for packin	1752.67	974.10	1.25	0.00	4496.74	1995.50	1.97	9.15	0.00	0.71	0.61
65641	Tulles & other net fabrics	23.08	43.40	0.00	0.00	1575.52	3090.93	0.15	0.03	0.00	0.69	0.68
65178	Man-made filament yarn (other than	14.84	28.37	0.00	0.00	1198.00	1021.55	0.72	0.11	0.00	0.69	0.92
65143	Sewing thread of man- made fibers,	599.57	310.67	0.00	0.00	10651.21	4458.64	0.57	0.39	0.00	0.68	0.59
65335	Fabrics, woven, of a weight exceedi	100.56	197.99	0.00	0.00	702.47	1425.22	0.32	0.55	0.00	0.67	0.66
84552	Girdles, corsets, braces, suspender	1058.50	517.74	0.00	4.10	2522.18	1705.84	0.10	0.52	0.00	0.66	0.81
26721	Waste (incl. noils, yarn waste & ga	66.94	145.18	19.34	0.00	26120.97	13767.72	4.80	0.15	0.00	0.63	0.69
65731	Textile fabrics coated with gum/amy	1354.44	2944.01	0.00	0.00	5153.33	2086.49	0.55	1.73	0.00	0.63	0.58
65233	Other woven fabrics,>85% cotton, we	7251.53	3112.70	151.21	36.66	75746.35	86440.30	1.14	1.30	0.39	0.60	0.93

SITC Code	Product Description	Pakistan Export to World	Pakistan Import from World	Pakistan's Export to India	Pakistan's Import from India	India's Export to the World	India's Imports from the World	India's RCA	Pakistan's RCA	Pakistan India IIT	Pakistan Global IIT	India Global IIT
84821	Articles of apparel & clothing acce	905.81	2144.68	4.98	11.78	3364.82	16863.66	0.05	0.17	0.59	0.59	0.33
84849	Headgear, n.e.s., of materials othe	692.02	275.57	0.00	0.00	1607.87	1674.40	0.33	1.70	0.00	0.57	0.98
65751	Twine, cordage, ropes & cables, whe	663.85	2118.89	18.37	59.42	141008.37	26096.18	3.48	0.20	0.47	0.48	0.31
65293	Other woven fabrics of cotton, of y	37.80	157.06	0.00	0.00	2968.56	952.51	2.04	0.31	0.00	0.39	0.49
84699	Made-up clothing accessories, n.e.s	4104.16	978.70	0.00	3.09	6949.68	3212.35	0.32	2.28	0.00	0.39	0.63
65529	Knitted/crocheted fabrics, n.e.s.	36165.16	7405.52	436.31	60.75	183983.52	181019.94	0.65	1.53	0.24	0.34	0.99
84843	Hats & other headgear, knitted/croc	201.18	995.35	0.05	0.00	5951.87	2755.77	0.08	0.03	0.00	0.34	0.63
84219	Other outer garments, n.e.s., women	546.63	106.28	0.01	0.00	2173.85	964.09	0.02	0.05	0.00	0.33	0.61
65942	Carpets, tufted, whether/not made u	1212.70	6253.83	0.00	0.00	18575.19	23990.67	0.35	0.27	0.00	0.32	0.87
84522	Men's & boy's garments made up of f	970.82	183.99	0.13	0.00	5285.71	2406.07	0.06	0.13	0.00	0.32	0.63

Appendix E: High Potential Dairy Items for IIT

TEXT Code	Product Description	Pakistan Export to World	Pakistan Import from World	Pakistan's Export to India	Pakistan's Import from India	India's Export to the World	India's Imports from the World	India's RCA	Pakistan's RCA	Pakistan India IIT	India Global IIT	Pakistan Global IIT
02213	Cream, not concentrated/sweetened,	291.005	73.794	0	0	132	239.3	0.0026	0.0685	0	0.710	0.405
02211	Milk, not concentrated/sweetened, o	4117.306	142.075	0	0	422	0	0.0386	4.4857	0	0.000	0.067
02212	Milk & cream, not concentrated/swee	33756.29	8.296	0	0	4844	33.39	0.051	4.2255	0	0.014	0.000
02221	Milk, concentrated/sweetened, in so	1819.137	89127.859	0	1935	9134	1E+05	0.0666	0.1579	0	0.138	0.040
02222	Milk & cream, concentrated/sweetene	11940.96	6885.32	0	86.6	1983	20367	0.0114	0.8149	0	0.177	0.731
02223	Milk & cream, concentrated, not in	137.097	334.98	0	0.15	48.6	0	0.0017	0.0583	0	0.000	0.581
02224	Milk & cream, concentrated, not in	115.141	944.858	0	0	343	3629	0.0226	0.09	0	0.173	0.217
02231	Yogurt, whether/not concentrated/co	123.816	111.958	0	341	1.52	308.2	0	0.0382	0	0.010	0.950
02232	Buttermilk, curdled milk & cream, k	10075.11	11.974	0	0	852	23.99	0.0236	3.3166	0	0.055	0.002
02233	Ice-cream & other edible ice, wheth	1093.889	177.739	0	0	787	918.8	0.0135	0.2241	0	0.923	0.280
02249	Products consisting of natural milk	5.703	1782.758	0	0	107	15.41	0.0048	0.003	0	0.251	0.006
02491	Fresh cheese, including whey cheese	3.085	2212.608	0	0	2416	2173	0.0251	0.0004	0	0.947	0.003

Appendix F: High Potential Chemicals for IIT

SITC	Product Description	Pakistan Export to World	Pakistan Import from World	Pakistan's Export to India	Pakistan's Import from India	India's Export to the World	India's Imports from the World	India's RCA	Pakistan's RCA	Pakistan India IIT	India Global IIT	Pakistan Global IIT
51382	Phthalic anhydride	2839.657	866.112	2015.6	0	36077.599	54900.653	2.3954	2.2428	0.000	0.793	0.467
52229	Calcium, strontium & barium; rare e	10.237	44.758	0	0.483	45761.064	19619.002	2.2283	0.0059	0.000	0.600	0.372
52232	Sulphuric acid; oleum	136.107	57.723	0	0	27740.2	82032.084	1.1702	0.0683	0.000	0.505	0.596
52239	Inorganic oxygen compounds of non-m	128.391	192.038	0	19.86	1207.537	3655.782	0.1061	0.1342	0.000	0.497	0.801
52251	Zinc oxide; zinc peroxide	1174.236	2094.917	0	201.087	25629.961	9510.818	1.3188	0.7188	0.000	0.541	0.718
52262	Sodium hydroxide (caustic soda), so	3495.436	635.296	1480.5	0	32674.984	7217.505	3.0142	3.8357	0.000	0.362	0.308
52322	Calcium chloride	2155.914	616.116	0	6.408	889.3	707.428	0.1338	3.859	0.000	0.886	0.445
52361	Phosphinates (hypophosphites) & pho	58.941	225.434	0	0	9588.34	2212.445	2.8623	0.2093	0.000	0.375	0.415
52372	Neutral sodium carbonate (disodium	9855.375	10205.428	6944.2	0	66218.277	111506.01	1.546	2.7372	0.000	0.745	0.983
52373	Sodium hydrogencarbonate (sodium bi	583.61	993.99	13.73	0	1911.378	4284.677	0.2557	0.9289	0.000	0.617	0.740
52383	Silicates; commercial alkali metal	2047.947	755.593	0	28.392	15646.391	25466.486	1.2558	1.9553	0.000	0.761	0.539
53317	Colouring matter & other preparatio	1151.336	2992.621	0	303.631	35640.624	67339.493	0.7145	0.2746	0.000	0.692	0.556
53342	Paints & varnishes (including ename	21923.44	19116.057	27.802	448.881	23436.818	127510.18	0.0898	0.9989	0.117	0.311	0.932
54191	Wadding, gauze, bandages & similar	31444.61	6825.627	0.005	0	63160.674	20429.547	0.4942	2.9266	0.000	0.489	0.357
54213	Medicaments containing penicillins/	2664.922	8776.563	0	334.201	376394.62	167912.86	5.7044	0.4804	0.000	0.617	0.466
54229	Medicaments containing other hormone	22161.68	23360.586	0	23.303	66616.933	46171.306	0.203	0.8032	0.000	0.819	0.974

55359	Depilatories & perfumery, cosmetic/	309.231	301.263	0	2.501	11333.255	5491.257	0.2561	0.0831	0.000	0.653	0.987
55415	Soap & organic surface-active produ	12806.53	2630.996	0	0.001	13888.009	9683.846	0.5216	5.7216	0.000	0.822	0.341
55422	Surface-active washing/cleaning pre	804.866	4286.874	0	165.406	20261.185	38341.811	0.0782	0.0369	0.000	0.691	0.316
55431	Polishes, creams & similar preparat	184.394	923.35	0	0	4848.162	4583.003	0.6585	0.2979	0.000	0.972	0.333
55432	Polishes, creams & similar preparat	5.509	29.651	0	0	113.717	604.704	0.0305	0.0176	0.000	0.317	0.313
57434	Other polyesters, unsaturated	127.659	584.71	0	1.469	19506.685	83416.138	0.3942	0.0307	0.000	0.379	0.358
57541	Urea resins; thiourea resins	180.867	563.918	0	0	2575.097	5649.714	0.1363	0.1144	0.000	0.626	0.486
59215	Other starches	108.852	186.194	0	0	1887.853	4472.264	0.6032	0.4138	0.000	0.594	0.738
59865	Activated natural mineral products;	654.935	1161.825	37.309	0	9748.557	19576.95	0.7967	0.6367	0.000	0.665	0.721



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