

Opening India's Garments sector to South Asia

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Abstract: This paper examines the competitiveness of the Indian garments industry vis-à-vis the other South Asian countries Bangladesh, Pakistan and Sri Lanka. Under the SAFTA agreement, many of the garment items were on India's sensitive lists and did not face concessional treatment. Though many of the items have been subsequently removed from India's sensitive list, the imports of these items to India have not increased significantly. The paper uses secondary data to examine the revealed comparative advantage (RCA) of the four South Asian countries and finds that they are not competing internationally in the same segment of the garments sector. The imports of India in garments from each of these countries are concentrated in a few products. The paper uses a primary survey on five garments clusters in India to understand the nature of imports of garments from these countries and the effect of removal of these items from India's sensitive list on its imports. This helps in understanding how the process of elimination of items of the sensitive list will affect the competitiveness of Indian manufactures. The survey reveals that competitiveness of the Indian garments industry is not affected by competition from the South Asian countries but by technological changes. The econometric exercise corroborates the findings of the survey in terms of the competition from South Asia.

Keywords: Competitiveness, garment, cluster, South Asia

JEL Classification: F14, L67, L23

1. Introduction

India has followed an inward looking policy till the 1980s. The trade policy followed by India was one of import substitution (Bhagwati, 2003) with import controls and high tariffs. Subsequent to 1991, India has dismantled its protective regime with a reduction in its tariffs, phasing out its non tariff barriers and allowing the imports of most goods barring a few. However, India still follows a protectionist approach in its regional trading arrangements and continues to maintain a large number of items on its sensitive list. This is particularly true of the South Asian Free Trade Agreement (SAFTA) where India maintains a negative list of 480 items for LDCs and 868 items for NLDC. The negative list maintained by India for all the three countries has a large number of items in the textiles. This is not surprising since all the countries have competencies in the textiles sector. However, there are two issues worth examining in this context: are the South Asian countries competitive in the same six –digit segment of textile and garments and if not, can some of these items be removed from India’s sensitive list? The paper uses secondary data to examine the revealed comparative advantage (RCA) of the four South Asian countries and finds that they are not competing internationally in the same segment of the garments sector. The imports of India in garments from each of these countries are concentrated in a few products.

India has subsequently given concessions on readymade garments to Sri Lanka under its bilateral agreement with Sri Lanka. Similarly, Bangladesh has also been given a concession of 164 items (Taneja et al. 2011). What are likely to be the implications of this removal and in what way will it affect our imports from South Asia? Therefore, it becomes imperative to examine the impact of the removal of these items from the sensitive list and the subsequent increased imports from South Asian countries. The paper uses a primary survey on five garments clusters in India to understand the nature of imports of garments from these countries and the effect of removal of these items from India’s sensitive list on its imports. An econometric exercise has been conducted using the survey data to understand if the process of elimination of items of the sensitive list has affected the competitiveness of Indian manufactures.

The paper is organized in the following manner: the next section reviews the literature with respect to clusters and economic performance. We turn in section 3 to a discussion of the issue of comparative advantage in the context of the South Asian garments. Section 4 presents a brief description of the garments clusters in India. Section 5 discusses the findings of the survey while section 6 is devoted to a discussion of the econometric exercise. Section 7 concludes with the policy implications of the study.

2. Literature review

Agglomeration of related economic activity is a central feature of economic geography (Marshall, 1920; Porter 1990; Krugman 1991; Ciccone and Hall, 1996). In his *Principles of Economics*, Marshall (1920) showed why clustering would especially help small enterprises compete. While he noted that agglomeration of firms engaged in similar or related activities generated a range of localized external economies that lowered costs for clustered producers, subsequent work has focused on deliberate effects of collective action (Brusco, 1990; Tandler and Amorin, 1996 etc.). Clusters are defined as sectoral and spatial concentration of firms.

Agglomeration economies arise from interdependencies across complementary economic activities that give rise to increasing returns. The literature has tended to contrast two potential types of agglomerating forces: localization (increasing returns to activities within a single industry) and urbanization (increasing returns to diversity at the overall regional level). Agglomeration may arise from the specialization of a region in a particular industry where firms share common inputs or knowledge (localization economies). On the other hand, agglomeration may be the result of exploiting the overall diversity of industries in a regional economy (urbanization economies).

Economists have tended to highlight at least three drivers of agglomeration: input-output linkages, labour market pooling and knowledge spillovers. Each of these mechanisms is associated with cost or productivity advantages to firms that result in increasing returns to geography. Another agglomeration driver has emerged in the literature is the role of local demand, structure of regional business and social networks (Porter, 1990, 1998; Saxenian 1994; Markusen 1996).

Delgado et al. (2010) move beyond the issues of localization and urbanization and examine the agglomeration forces arising among closely related and complementary industries. Industries within a cluster benefit by sharing common technologies, knowledge, inputs and cluster specific institutions. They evaluate the impact of clusters on regional economic performance, which includes growth in employment, wages, business creation and innovation. Although there have been many studies on clusters in the context of developed countries, the studies in the context of developing countries are more recent and have grown out of the role of small scale industry to industrialization (Schmitz, 1989). Summarizing the literature on clusters in the context of developing countries, Schmitz and Nadvi (1999) point out that industrial clustering is significant in developing countries. Clusters are common in a wide range of countries and sectors (Nadvi and Schmitz, 1994). However, the growth experiences of clusters widely vary. Studies on clusters have shown that some clusters have been able to deepen their inter-firm division of labour, raise their competitiveness and break into international markets (Nadvi, 1999; Schmitz, 1995). Clustering is particularly relevant in the early stages by helping small enterprises grow. However, clusters could also be mature and comprise of large and medium firms. Internal heterogeneity is pronounced (Knorringer, 1996; Rabelotti and Schmitz, 1997). Except in rudimentary clusters, medium and large firms have emerged and play an important role in the governance of these clusters. In this respect while the developed country experiences (especially the Italian experience) were widely different from the developing countries experiences in the 1970s and 1980s, it was not so different in the 1990s (Rabelotti, 1997).

Many of the studies in the context of clusters are based on case studies and help identify the differences between success and failures. The ability of clusters to cope with global competitive pressures has been examined in the context of India by Tewari (1999) and in the case of Mexico by Rabelotti (1999). Tewari examined the experience of the Ludhiana cluster in surviving the loss of its largest export market and the simultaneous opening of the domestic to free trade. In both cases, the cluster recovered within a short time and moved to more competitive export markets. The process of adjustment was however uneven for firms but provide lessons for coping with the pressures of adjustment.

Rabelotti examines the impact of trade liberalization on cooperative behavior of the Mexican cluster of Guadalajara. The empirical exercise showed that cooperation increased among the firms and cooperation positively affected the firms' performance. This along with a favorable market environment contributed to the cluster's recovery.

Rodriguez-Clare (2007) argue that if a developing country has a comparative advantage in a sector with Marshallian externalities (due to which firms benefit from the production and innovation activities of neighbouring firms in the same or related industries) temporary import substitution can work. However, Marshallian externalities are not intrinsic to any sector but depend on the way production is organized, and in that case import substitution does not work. He develops a theoretical model to show that the best policy in such a case is not import substitution but the direct promotion of clustering in a sector in which the country has a comparative advantage. This establishes the causal link between clustering, comparative advantage and import substitution. We turn to the issue of comparative advantage in the next section.

3. South Asia's garments competitiveness

Textiles is an integral part of the South Asian economies and export of textiles accounts form a very large part of the total trade for each of these countries. With the exception of India, the share of textile in total trade for the other South Asian countries ranges between 40 and 80 percent. For India, this was close to 26 percent in 1995 but has been declining in recent times and was around 13 percent in 2009 (UN COMTRADE). In the case of garments, data from WTO reveal that the share of India and Bangladesh in total exports of the world was 4 and 3 percent respectively in 2009, while the share of Pakistan was 1.1 percent in 2008.

It has been found that one of the reasons for low intra- SAARC trade is that each Member country maintains a large sensitive list of items that are not given any tariff concessions. A large part of these sensitive lists comprise of items in the textile category. One of the reasons for protecting the textile sector has been the perception that items of this sector may not be able to withstand competition from the neighboring countries. However, it is possible that countries have comparative advantage in different categories and not necessarily

in competing products e.g. Sri Lanka has emerged as a major exporter of innerwear and swimwear in which none of the other South Asian countries are competent.

The table in Appendix A gives details of items on India's sensitive list in garments (chapter 61 and 62) in the year 2007 at the 6 digit level (from UN COMTRADE). This lists only those items where India's revealed comparative advantage¹ (RCA) is less than one and so it is more likely to be affected by competition and import substitution is also likely. It gives details of India's imports from the world, RCAs of Bangladesh, Pakistan and Sri Lanka and imports by India from each of these countries. Pakistan has comparative advantage in 35 of the 72 products, Sri Lanka in 42 and Bangladesh in 43 of the products. Pakistan alone has comparative advantage in 6 items, while Sri Lanka alone has comparative advantage in 2 items and Bangladesh alone has comparative advantage in 3 items. All three have comparative advantage in 18 items. None of the countries have comparative advantage in seven items. Pakistan and Sri Lanka both have comparative advantage in 5 items, Pakistan and Bangladesh in 6 items and Sri Lanka and Bangladesh in 15 items. India imports only 23 out of the 72 items presented in the appendix from Bangladesh, Pakistan or Sri Lanka (these items have been highlighted in the table). Of these 23 items, 18 are imported from Sri Lanka though in two cases Sri Lanka does not have comparative advantage (HS 610712 and HS 621040). 6 items are imported from Pakistan: of this four items are gloves, mittens etc. (HS611610, HS 611692, HS 611693 and HS 611699). One item (HS 621790) is imported from Pakistan though it does not have a comparative advantage in that item. 7 items are imported from Bangladesh and it does not have a comparative advantage in only on item (HS 621790). We can infer from this table that India imports only a few items from the South Asian countries. The impact of these imports on competitiveness of the Indian garment industry is likely to be quite small.

¹ RCA is computed using the following formula

$$IRCA_{ij} = (X_{ij} / X_i) / (X_{wj} / X_w)$$

where X_{ij} represents country i 's export of commodity j , X_{wj} represents world exports of commodity j , X_i represents the total exports of country i , and X_w represents total world exports.

4. Description of India's garments cluster

The maximum value addition to textiles is done by the apparel sector, which is the last stage of the textile value chain. The process of manufacturing a garment comprises of several steps: cutting, stitching, embroidery, fixing of accessories, dyeing etc. The garments industry in India was worth \$ 30 billion of which 10 billion was exported (AEPC Study, 2009). India's position in the world exports of garments improved from 3 percent in 2008 to 4 percent in 2009. In India, the clothing industry is fragmented and dominated by small scale enterprises. India's garments industry is concentrated in manufacturing clusters which account for 95 percent of the garments production and exports. Nearly 80 percent of the national production of garments is concentrated in ten clusters: Kolkata, Mumbai, Tirupur, Ludhiana, Indore, Bellary, Jaipur, Bangalore, Chennai and Okhla. The clusters are specialized in terms of types of garments (either woven or knitted) and the variety of the products produced (men's, women's or children's). 55 to 60 percent of the cost of production of a garment is incurred in the raw materials which include fabric, accessories, sewing thread etc.

5. Description of the survey

In order to examine the extent of competition to India from products manufactured in the other South Asian countries we conducted a survey of apparel manufacturers in India. Tirupur, Kolkata, Ludhiana, and Bangalore emerge as the leading centres while the combined sales of the NCR region make it one of the top business centres for apparel products. The survey of these clusters of the apparel industry of India was conducted over a span of 30 days in September 2010. While Kolkata specializes in kid's garments and men's inner wear and shirts, the Delhi cluster manufactures products mainly for women. Both Bangalore and Tirupur are largely export oriented while the Kolkata cluster caters largely to the domestic market. Ludhiana specializes in winter wear. The clusters are categorized in terms of 2 aspects: (a) type

of garments (i.e. knitting or woven) and; (b) variety of products (men, women, kids wear). A brief description of each cluster surveyed is given:

1. **Kolkata:** This cluster is the oldest knitting cluster of India catering primarily to the domestic market with limited exports to the Middle East. The production consists mainly of traditional items like undergarments and kids wear. It is the birthplace of hosiery industry of India and the principal hub for interlock fabric. Additionally, it is the only centre for production of work wear. This cluster has a turnover of Rs. 12,200 crores.
2. **Bangalore:** It is one of the oldest and the most organized apparel hub of India with a turnover of more than Rs. 50,000 crore. It contributes extensively towards domestic market as well as exports. Its main strength lies in its close proximity to the sources of raw material, rendering to its strong supply chain link. The production is organized on a unique model of outsourcing operations on FOB basis and consists of mainly cotton based menswear and daily wear garments.
3. **Tirupur:** Tirupur is the leading export hub of India for knitted garments. It is well integrated with units specializing in different activities like fabricating, dyeing, knitting etc. The local availability of raw material and skilled labour force are the biggest strengths of the cluster. Production is concentrated in menswear, kids wear and undergarments.
4. **Ludhiana:** This cluster has a rich heritage in production of a wide variety of winter wear garments using a range of raw materials. Total annual production of the cluster is 14 lakh pieces and the turnover is estimated to be Rs. 7000 crore. Majority of the goods are meant for domestic consumption with exports estimated as only 20 percent. The products manufactured include sweaters, cardigans, jackets, mufflers, t-shirts & polo shirts, and gloves.

5. Delhi:

Around 70% of production in this cluster is of fashionable ladies wear like blouses, tops, skirts, dresses, etc. Apart from this, several units are also engaged in manufacturing shorts, skirts, frocks, etc for children and trousers and shirts for men. The Okhla cluster has an annual turnover of approximately Rs. 800 crore with an annual production of 3.20 crore pieces. A large share of products manufactured in the cluster is exported to EU and USA with buying houses playing a crucial role in sourcing the products.

127 firms were interviewed with approximately 25 respondents in each cluster. The following table shows that sampling frame of the survey in terms of the respondents per cluster.

Table 1: Cluster Coverage

CLUSTER	NUMBER OF RESPONDENTS PER CLUSTER
Kolkata	24
Bangalore	25
Tirupur	27
Ludhiana	25
Delhi	25
Total	126

Source: Author's calculations based on survey

In terms of the product categories surveyed, the following table shows the share of firms producing men's, women's and kids wear in the sampling frame. Some firms manufacture all three types of garments.

Table 2: Category Coverage

	Men's Wear	Women's Wear	Kid's Wear
Total number of firms making	143	174	45
Share in Sample (%)	40	48	12

Source: Author's calculations based on survey

The following table shows the kind of firms interviewed in terms of their turnover, whether they were producing for the domestic market or were exporting, how many of them were using imported machinery and whether there was a size correlation with this technology usage, and the age of the firms in terms of the number of years in operation. We have categorized the sample in terms of size which has been captured through sales turnover.

The small scale sector is defined in India either in terms of the number of employees or in terms of investment in plant and machinery. There are problems categorizing size in terms of both of the above criteria. While we have information on the number of employees in our sample, firms use contractual labour as well and such employees are not usually counted as the formal employees of the firm. On the other hand most firms typically outsource a large part of their production to 'job workers' and the only employees they report are administrative personnel who are not production workers.² This presents a problem in enumerating the firm size based on the number of employees. The second relates to the use of plant and machinery in defining the size of the firm. Again due the practice of outsourcing by firms, investment in plant and machinery is low for typically small firms. Some of the respondents have said that only stitching is done in house while the rest of the activities are outsourced. Hence we have used the sales turnover as a measure of the size of the firm.

Table 3: Key Characteristics of the Sample

Firm Size (in terms of Turnover for 2009)	Frequency	Market Segment			No. of Firms Importing Machinery	Age (years)	
		Domestic	Export	Domestic and Export		<10	>10
Small (Up to Rs. 30 crore)	105 (83.3%)	38 (36.2%)	40 (38.1%)	27 (25.7%)	67 (64.8%)	35 (33.34%)	70 (66.7%)
Large (> Rs. 30 crore)	21 (16.7%)	0 (0.0%)	10 (47.6%)	11 (52.4%)	20 (95.2%)	5 (23.8%)	16 (76.2%)
Total	126	38	50	38	87	40	86

Source: Author's calculations based on survey. Figures in parenthesis are as a percentage of firm size.

**The total size of the sample is 127. However, one firm refused to give details of its turnover and hence, could not be categorised in terms of size.*

² 108 firms out of 120 firms in our sample outsource some part of their production activity.

The categorization of the firms (shown in Table 1) in terms of large and small has been done in the following manner: a firm with sales turnover of more than Rs. 30 crore has been categorized as large while a firm with sales turnover of less than 30 crore has been defined as small. This definition should then be interpreted with the caveat that this is strictly not the definition used by the Annual Survey of Industries and we will use the terms ‘larger’ and ‘smaller’ to highlight this aspect. We notice from the table that larger firms are not catering to the domestic market exclusively – all of them are also exporting. A significant proportion of the smaller firms are producing only for the domestic market and a large number of these firms belong to the Kolkata cluster. A very significant number of firms are using imported machinery, though the proportion is higher for the large firms. We examine this issue in greater detail below. Looking at the age of the firms in terms of the number of years in operation, we see that most of the firms are more than ten years old.

Turning to the most important question in this study regarding the nature of competition faced by the Indian firms we find most firms said that they face no competition from the South Asian countries. As shown in the table below, we have categorized firms by the market segment, to which they are catering, as domestic, export and both. None of the larger firms are catering to the domestic segment only – they are either exporting or serving both the domestic and export market as already mentioned above. Firms that are exporting only, face very little competition from the South Asian countries. This is mainly due to the fact that Indian products involve a higher value addition such as embroidery etc vis-à-vis products of other South Asian countries and lie somewhere in between the products manufactured by Turkey and other South Asian countries in terms of quality. They are thus, catering to different segments of the export market. As far as the domestic market is concerned, the competition is not coming from South Asia but mainly from other countries such as China, Cambodia, and Vietnam etc. This is evident from the table below: the number of firms reporting facing any competition from South Asia (comprising of Bangladesh, Sri Lanka and Pakistan) is 23 against 40 from other countries. Moreover, most of the competition faced by the firms in the domestic segment is coming from

other firms in the domestic segment. This implies that the domestic market in itself is highly competitive and doesn't face any significant competition from South Asian products. It thus mitigates the fear that opening up the sector will swamp the Indian market with products from South Asia.

Table 4: Competitiveness of all firms

Market Segment	No. of Firms	Firm Size (in terms of Turnover for 2009)		No. of Firms Facing Competition from		No. of Firms Facing Competition from	
		Small (<= Rs. 30 crore)	Large (> than Rs. 30 crore)	Large Firms	Small Firms	South Asia	Other Countries
Domestic	38	38	0	23	32	5	10
Export	50	40	10	0	0	2	7
Domestic and Export	38	27	11	28	28	16	23
Total	126	105	21	51*	60*	23*	40*

Source: Author's calculations based on survey

Note: *does not add up due to overlapping responses.

There is a distinction that has to be made, however, in the nature of the competition faced by the firms from South Asia. This is shown in Table 5. The smaller firms have reported that some of them do face competition from the South Asian countries, especially in some products like swimwear from Sri Lanka. From the table below we see that of the firms catering to the domestic sector and as well as exporting, 65 of them are smaller while 11 of them are larger. A smaller number of firms in the 'smaller' category report competition from abroad and mainly from China: 44 out of 65 while for the 'larger' group it is 9 out of 11. Competition from South Asia was similar: 15 out of 65 for the smaller group against 6 out of 11 for the larger group. Only 3 smaller firms reported facing any competition from South Asia, against 4 from other countries in the sample of 38 firms.

Table 5: Competitiveness of Firms Catering to Domestic and Domestic & Export Market

Sl. No.	Firm Size (in terms of Turnover for 2009)	No. of Domestic and Domestic -Export Firms	No. of Firms Facing Competition from		No. of Firms Facing Competition from	
			Large Firms	Small Firms	South Asia	Other Countries
1	Small (Up to Rs. 30 crore)	64	42	50	7	29
2	Large (Greater than Rs. 30 crore)	11	8	9	4	3
Total		75	50	59	11	32

Source: Author's calculations based on survey

One of the reasons for maintaining a sensitive list is that there are sensitivities in such sector especially where smaller firms are concerned. However this does not seem to be borne out by the data in our survey. To the extent that the product of the larger firms is qualitatively superior to similar products from South Asia, the overall impact is likely to be negligible. The fear that removal of items from the sensitive list may drive some firms out of the market may thus be unwarranted. Alternatively since some of the larger firms are expanding their production bases to other countries in the region, and especially Bangladesh to take advantage of the labour regulations, this could have an impact on the employment potential of the sector.

In the case of increased competition, how should the firms cope with the increased imports? Technology is the key to facing the challenge of greater imports and competition. Turning to the role of imported machinery we note that, 8 of the 38 domestic segment firms use imported machinery, while the corresponding figure for the export segment is 42 out of 50. 37 of the 39 firms belonging to the both domestic and export segment use imported machinery. This is not surprising since export product are of better quality than domestic products and the values addition using imported machinery can be far greater. 67 of the 105 smaller firms use imported machinery while 20 of the 21 larger firms use imported machinery. This is due to the fact that imported machines are far costlier than the corresponding domestic machines, and hence, are

unaffordable by the smaller firms. Most of the imported machines were imported from Japan, Taiwan, China, Singapore and EU for the processes of dyeing, knitting, cutting and stitching.

Table 6: Technology

Sl. No.	Imported Machinery Proportion Range (%)	Frequency	Small Firms	Large Firms	Domestic Market Firms	Export Market Firms	Both Domestic and Export Market Firms
1	1-20	1	1	0	1	0	0
2	21-40	6	5	1	1	1	4
3	41-60	31	27	4	5	11	15
4	61-80	30	22	8	0	18	12
5	81-100	19	12	7	1	12	6
Total		87	67	20	8	42	37

Source: Author's calculations based on survey

6. Econometric exercise

Using the data obtained from the primary survey we have tried to capture whether the South Asian countries are exerting any influence on the Indian firms. One problem encountered in understanding clusters is that statistical significance in industrial production is hard to determine as economic regions do not respect administrative boundaries and industrial classifications often fail to capture the existing specialization (Krugman, 1991). Thus the design of the empirical exercise has to be done with caution keeping the nature of data in mind.

The dependent equation in the regression is sales of the firm. The independent variables are the age of the firm (Age), the cluster to which the firm belongs (Clust), whether the firm is selling exclusively to the domestic market (Mkt), foreign market or the both, the effect of competition from South Asia (SA Comp), and the technology used by the firm (Tech). Complete information on all the variables was available for 126 firms. The following table presents the descriptive statistics of the data used for the survey in terms of each cluster.

Table 7: Descriptive Characteristics

Variables	Kolkata	Bangalore	Tirupur	Ludhiana	NCR
Total Number of Firms	24	25	27	25	25
Age					
Less than-equal to 10 years	5	13	10	6	10
More than 10 years	18	12	17	19	15
Technology					
Domestic	16	10	5	4	4
Imported		1			12
Domestic and Imported	8	14	22	21	11
Market Segment					
Domestic	17	9	1	10	2
Export	3	7	21	0	19
Domestic and Export	4	9	5	15	4
Competition from South Asia					
Yes	2	3	3	0	3
No	22	22	24	25	22

Source: Author's calculations based on survey

We note several points from the table: the number of older firms is greater in Kolkata and Ludhiana. The number of firms using domestic technology only is largest in Kolkata. As also noted earlier, the garments manufactured by the Kolkata cluster are mainly for the domestic market and require very little value addition. From the table we see from the table above, the number of firms catering only to the domestic segment is highest in Kolkata. None of the firms surveyed in the Ludhiana cluster were exporting and also none of them are facing any competition from South Asia.

The data point is available only for one year: 2009. Hence the OLS regression has been run for the cross section of firms on which the survey was conducted.

Empirical specification:

Hence the regression equation can be written as:

$$S_i = f \{ \text{Age, Clust, Mkt, SA Comp, Tech} \} + \varepsilon_i \quad (i= 1, \dots, 126)$$

Variables:

Sales: this variable measures the performance of the firms. The objective of the regression exercise is to see whether this measure of performance has been affected by competition from South Asia. Rabelotti (1999) has used sales as one measure of performance in her analysis of the Mexican cluster. We do not have information on the other variable used in her exercise: profits, or production. We do have information on the employees. However, as discussed earlier the data on employees may not be reflecting the actual number of workers used in the production since a large part of the production is outsourced. We have tried a version of the regression exercise with employees as the dependent variable. This also tests the robustness of the regression model.

Age of the firm: this variable captures the effect of older or younger firms on the ability to sell in the market. A positive sign is expected since it would mean that older firms are able to effectively sell in the market through established networks. However the ability to sell in an export market may depend on variables other than age.

Competition from South Asia: this variable is a dummy based on the responses of the firm as to whether they face any competition from South Asia, or from any other country. The expected sign of this variable is negative since competition from South Asia (or from any other country) should adversely affect sales.

Cluster: As discussed previously, the survey was conducted in five clusters of India. The effect of the cluster has been examined in two ways: first we have tried running the regression on each cluster separately. The degree of freedom is very low in each case. All the respondents of the Ludhiana cluster reported that they did not face any competition from South Asia. The results indicate that for the Kolkata cluster, the variable competition from South Asia is negative and significant. In none of the other clusters has this been the case; in fact in the case of the Delhi and the Bangalore cluster, this variable is positive. Hence we have tried another version of our equation with a dummy for Kolkata as zero and the other clusters as one. This is reported as equation 4 in the table below. The variable cluster should reflect the fact that the linkages in the cluster are aiding or hampering sales. We should thus expect a

positive sign if the cluster linkages are aiding the sales. We have also tried controlling for the effect of clusters in general by including four dummies for the five clusters in the regression exercise (reported in equation 1-3 in the table below). However, the sign in this case has been negative.

Market: this variable is a dummy variable capturing the effect of selling in the domestic or export market or both. According to Tewari (1999) who surveyed the Ludhiana cluster in 1998, reported that there was a strong simultaneous presence in the exports and the domestic market. In her paper she has found that this simultaneous presence of firms in the export and the domestic markets has helped the firms to spread risks more broadly across the two markets, has served as a market enlarging capacity and also as a learning strategy. We have run the market variable taking zero for domestic, and one for exports. We have also run the regression separately for each of the three categories: export, domestic or both.

Technology: this variable captures the role of domestic or imported machinery in the performance of the firms surveyed. The expected sign of this variable is positive. As reported in the discussion of the survey, EU and US markets have stringent quality norms. As a result, the exporters are obliged to invest in better quality machines which are generally imported. (this is contrary to that reported by Tewari (1999) in the context of the Ludhiana cluster). However, as noted also by Tewari, the usual assumption that exports generally are of higher quality holds in our case.³ Moreover, to meet the growing demands of Indian consumers and compete with imports, the firms catering to domestic market also employ latest technology and frequently engage in technical up gradation. To examine the role of imported machinery in the sales, ideally the value of the imported machinery should be used. However, we do not have information on that. Alternatively, we have tried looking at whether the proportion of imported machinery has any significant effect on the sales. This variable though insignificant (not reported), has revealed the role of the cluster in the context of technology. The variable changes sign depending whether or not the cluster variable is included in the regression.

³ The sign of the technology variable will be interesting to observe in the context of the Ludhiana cluster and whether the reversal in the role of the exports and the domestic still holds good in that case.

We do not have information on the value of the raw materials used by the firms. However, as noted before raw materials constitute a significant cost. In recent times, there has been a huge increase in the raw material costs especially due to the increase in the price of cotton.

Results

The results of the regression exercise are presented in Table 8.

Table 8: Results of the regression

Dependent variable: Sales of the firm

White Heteroskedasticity –Consistent Standard Errors and Covariance

Independent Variables	Equation 1	Equation 2	Equation 3	Equation 4	Equation 5
Constant	1430.98 (1.65)	914.60 (1.22)	1172.73 (1.35)	-459.17 (- 0.71)	-1859.18 (- 1.07)
Age	92.89 (2.22)*	78.014 (1.85)**	95.66 (2.31)*	90.46 (2.14)*	79.01 (1.70)
Cluster	-1240.08 (- 2.60)*	-1463.62 (- 2.40)*	-1171.12 (- 2.41)*		4004.96 (1.06)
Technology	1902.52 (2.84)*	1900.71 (2.85)*	1798.86 (2.51)*	1221.74 (2.28)*	1832.67 (1.79)***
Market		1379.77 (1.23)			249.08 (0.31)
Competition from SA			2323.45 (0.99)	3116.63 (1.35)	2634.39 (0.96)
Adjusted R ²	0.08	0.10	0.09	0.05	0.07
Number of observation	126	126	126	126	126

Note: * significance at 5%, ** significance at 10 %

Equation 1 uses the age of the firm, source of technology employed (whether imported, domestic or both) and the cluster (location of firm with each cluster represented as a dummy) as independent variables. From the table, we note that all three variables are significant though the 'cluster' variable has the wrong sign. In equation 2, one more independent

variable 'market' has been added to the variables of equation 1. The market variable is insignificant in most versions of the equation and can be dropped from the regression. This does not change the results much. This implies that sales are not affected by the market to which the firm caters. The Indian domestic market is increasing at a phenomenal rate which has made it as attractive as the export market. We have run the regressions separately for the domestic, export market or both, (not reported in the table) but only for the category exports and domestic the variable competition from South Asia has the correct sign (though it is insignificant).

In equation 3, the variable competition from South Asia has been added to the variables used in equation 2. The coefficient of Competition from South Asia is positive but insignificant. In equation 4, we drop the variables cluster (and market variable) and note the overall impact of the cluster variable to the adjusted R^2 as a result. Equation 5 has been run with an alternative cluster variable – a dummy where Kolkata is one and the rest are zero. This captures the differential impact of the role of competition from South Asia in Kolkata as opposed to the other clusters. When the regression was run separately for each cluster, the coefficient of competition was negative and significant only for the Kolkata cluster. This is so because its product basket is closely aligned to that of Bangladesh and Sri Lanka. Kolkata specializes in manufacturing low value added products mainly for men and kids. Moreover, its geographical proximity with Bangladesh leads to an influx of imports into its market. We thus see in equation 4, that the cluster variable then takes the expected sign though it is not significant. The results of the equation show that except for Technology, the coefficients for none of the variables are significant.

From the table we observe that the variable competition from South Asia is insignificant in all versions of the regression and often has the wrong sign. This corroborates with our findings of the survey that each of the South Asian country specializes in different categories of apparel products and hence, do not pose a threat to each other. While Bangladesh manufactures simple apparel such as t-shirts, shirts and alike in bulk, Sri Lanka is engaged in production of swimwear and ladies undergarments. Pakistan is primarily a supplier of fabrics

especially denims and manufactures bed linen and other household apparels. India, on the other hand, manufactures superior quality woven and knitted products. The firms usually take up small orders and deliver products with value additions such as embroidery, sequencing, printing, etc. One of the interviewees pointed out that to meet the changing demands of the Indian buyer, large retail stores like Shoppers Stop and Pantaloon replace their old stock every 15-20 days with new designs and cuts. This given an edge to the domestic manufacturers who can meet this requirement of value added apparel more easily as compared to South Asian manufacturer.

The sign of the technology variable is positive and significant in all versions of the regression except for Tirupur where it is insignificant and for NCR where it is negative and insignificant. The negative sign of the coefficient in case of NCR is unexpected as the exporting units catering to US and EU buyers are required to invest in latest imported technology to meet the stringent quality norms. The interviewees mentioned that with the TUFs scheme in place, they are able to upgrade their technology easily. The variable age also has the right sign and is significant in most versions of the equation.

The variable cluster, however, is very interesting. The coefficient of the variable is negative and significant in three out of four equations. This negative sign does not corroborate with the findings of the survey. The firms interviewed pointed out that the proximity of their production unit with other processing units leads to cost efficiency and hence, allows them to sell their product at a competitive price. This also does not conform to the literature which states that agglomeration results in better firm performance. However, the sign of the variable changes to positive in equation 5 where Kolkata is assigned a value 1 and the other clusters as zero. This indicates that Kolkata cluster is driving the results for the variable. The variable 'cluster' must be interpreted with a caveat that the results depend on how the variable is modeled in the equation.

We have also run the above equations with employees as the dependent variable. We have information on full time workers, and contractual workers. We have run the regressions separately on the full time, contractual and total workers. However from our data we do not

have information on the number of production workers. The results from this exercise broadly confirm the results obtained in the exercise with sales as the dependent variable, though most of the variables except technology are insignificant. We have also used sales as another explanatory variable in the employees regression. Sales also captures the size of the firm and in the version of the regression with employees as the dependent variable, the effect of size on the performance of firms is being controlled. However, with the inclusion of the sales in the equation, technology becomes insignificant.

7. Conclusion and policy implications

This paper examines the prospects of opening up India's garment trade vis-à-vis the other South Asian countries Bangladesh, Pakistan and Sri Lanka. At the time of inception of the SAFTA agreement, many of the garment items were on India's sensitive lists and did not face concessional treatment. Though many of the items have been subsequently removed from India's sensitive list, the imports of these items to India have not increased significantly. The paper examines the competitiveness of the four South Asian countries through the use of revealed comparative advantage and finds that they are not mostly competing internationally in the same segment of the garments sector. This indicates that in spite of South Asian countries having a comparative advantage in products where India does not, their exports to India are minimal. The paper uses a primary survey on five garments clusters in India to understand the nature of garment production in these countries and the effect of removal of these items from India's sensitive list on the domestic market. The survey reveals that competitiveness of the Indian garments lies in its designing capabilities, and the technology employed in production. Countries like Bangladesh manufacture basic products with negligible value addition while India specializes in delivering creative and designer apparel. Using the data from the survey, the paper examines whether the South Asian countries are exerting any influence on the sales of Indian firms. From the regression exercise we see that South Asian countries are not exerting any influence on the sales of Indian firms, thus corroborating the findings of the survey.

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Appendix

Product	Product Name	Ind M World	India RCA	Pak RCA	Ind M Pak	Pak X World	SL RCA	Ind M SL	SL X World	Bdesh RCA	Ind M Bdesh	Bdesh X World
610322	Men's/boys' ensembles, of cotton	1.84	0.69	4.88	0.00	6160.85	0.06	0.00	32.27	1.90	0.00	1831.01
610323	Men's/boys' ensembles, of synth. Fibres	2.55	0.17	1.65	0.00	1474.20	0.01	0.00	2.20	0.13	0.00	90.95
610333	Men's/boys' jackets & blazers, of synth. Fibres	166.45	0.18	7.46	0.00	6083.42	20.33	9.25	7130.71	32.17	0.00	20064.52
610343	Men's/boys' trousers, bib & brace overalls, breeches & shorts	286.63	0.29	3.14	0.00	7946.90	3.24	0.00	3528.03	4.22	0.00	8159.48
610422	Women's/girls' ensembles, of cotton	4.46	0.90	0.29	0.00	524.81	0.11	0.00	82.18	0.57	0.00	774.64
610423	Women's/girls' ensembles, of synthetic fibres	6.15	0.15	0.08	0.00	78.82	0.01	0.00	4.65	0.33	0.00	266.43
610433	Women's/girls' jackets & blazers, of synthetic fibres	132.88	0.21	1.32	0.00	1727.56	26.34	0.00	14850.44	6.44	0.00	6454.18
610453	Women's/girls' skirts & divided skirts, Of synthetic fibres	37.72	0.62	0.31	0.00	182.22	7.04	0.00	1787.13	2.22	0.00	1001.60
610463	Women's/girls' trousers, bib & brace overalls, breeches &	341.85	0.32	0.94	0.00	2072.33	4.29	0.00	4074.01	3.42	0.00	5760.27
610712	Men's/boys' underpants & briefs, Of manmade fibres	46.61	0.33	0.93	0.00	584.11	0.36	4.58	98.43	6.25	0.00	2997.55
610799	Mens, boys bathrobes, dressing gown of other textile materials	13.34	0.42	6.86	0.00	957.11	26.45	0.00	1588.02	8.41	0.00	897.60
610822	Women's/girls' briefs & panties, Of manmade fibres	772.47	0.06	0.05	0.00	136.78	37.21	13.05	46456.80	4.30	0.00	9542.89
610829	Women's/girls' briefs & panties, Of other textile materials	27.24	0.52	3.59	0.00	1379.18	465.31	9.53	76891.55	119.86	0.00	35215.44
610832	Women's/girls' nightdresses & pyjamas, roched Of	92.23	0.23	0.27	0.00	363.28	15.26	44.57	8882.48	3.62	0.00	3747.27
610891	Women's/girls' nTgIIGTs, bathrobes, dressing gowns & sim.	32.64	0.71	1.90	0.00	1795.07	15.54	0.00	6322.61	3.52	0.00	2544.76
610892	Women's/girls' nTgIIGTs, bathrobes, dressing gowns & sim.	35.88	0.01	0.19	0.00	206.85	17.55	0.00	8327.98	1.60	0.00	1353.25
610899	Women's/girls' nTgIIGTs, bathrobes, dressing gowns & sim.	10.09	0.07	1.62	0.00	657.77	7.82	0.00	1361.57	774.12	0.00	239585.04
611020	Jerseys, pullovers, cardigans, waist-coats & sim. arts., knitted or	1660.51	0.72	1.66	0.00	38665.25	9.47	0.00	94948.67	13.28	0.38	236659.22
Product	Product Name	Ind M World	India RCA	Pak RCA	Ind M Pak	Pak X World	SL RCA	Ind M SL	SL X World	Bdesh RCA	Ind M Bdesh	Bdesh X World
611030	Jerseys, pullovers, cardigans, waist-coats & sim. arts., knitted or	1574.66	0.07	0.20	0.00	3534.88	1.57	0.00	11972.65	20.12	177.81	273499.29

611090	Jerseys, pullovers, cardigans, waist-coats & sim. arts., knitted or	272.35	0.29	6.76	0.00	27966.09	20.50	0.00	36494.43	219.11	0.00	693347.03
611130	Babies' garments & clothing accessories, knitted or crocheted	95.68	0.40	0.24	0.00	164.25	10.83	0.00	3220.35	8.92	0.00	4717.89
611211	Track suits, of cotton	162.05	0.37	10.76	0.00	13069.12	0.21	0.00	110.03	2.20	0.00	2041.18
611212	Track suits, of synthetic fibres	6.30	0.05	7.50	0.00	6941.81	0.03	0.00	11.91	2.05	0.00	1452.34
611231	Men's/boys' swimwear, Of synthetic fibres	6.63	0.00	0.13	0.00	47.17	44.03	0.00	6747.79	10.30	0.00	2806.11
611239	Men's/boys' swimwear, Of other textile materials	47.64	0.01	0.31	0.00	27.31	6.89	0.00	264.00	13.65	0.00	929.60
611241	Women's/girls' swimwear, of synthetic fibres	88.89	0.00	0.03	0.00	76.90	38.73	0.00	41780.28	4.68	0.00	8981.32
611249	Women's/girls' swimwear, Of other textile materials	218.88	0.14	2.11	0.00	597.46	9.75	0.00	1188.44	3.84	0.00	832.36
611300	Garments made up of 59.03/59.06/59.07	56.92	0.16	0.91	0.00	790.98	0.22	0.00	80.58	1.66	0.00	1096.23
611430	Garments, n.e.s., of man-made fibres	24.86	0.21	3.39	0.00	6780.47	0.80	0.00	684.38	0.06	0.00	84.63
611490	Garments, n.e.s., of textile mats. other than wool/fine animal	170.53	0.63	7.74	0.00	9329.22	1.24	0.54	641.57	0.80	0.00	735.60
611511	Panty hose and tights :- Panty hose and tights :- Of synthetic	102.15	0.18	0.07	0.00	138.73	0.27	0.00	233.81	0.01	0.00	8.64
611512	Panty hose and tights :- Panty hose and tights :- Of synthetic	#N/A	0.04	0.09	0.00	37.01	9.07	0.00	1562.08	0.00	0.00	1.31
611610	Gloves, mittens & mitts, impregnated/coated/c	641.49	0.10	10.05	356.91	14333.65	185.54	79.05	113764.34	0.03	0.00	35.25
611692	Gloves, mittens & mitts, other than those	66.77	0.59	77.38	5.96	34429.36	18.68	5.14	3572.97	0.00	0.00	0.18
611693	Gloves, mittens & mitts, other than those	99.74	0.65	3.22	9.74	2556.15	21.18	0.00	7228.71	0.05	0.00	29.04
611699	Gloves, mittens & mitts, other than those	1231.04	0.29	37.94	3.85	5990.53	0.09	8.26	6.17	0.37	0.00	44.38
611790	knitted or crocheted parts of garments/clothing	1079.53	0.08	1.31	1.22	1425.62	4.53	13.86	2125.40	0.01	0.00	6.46
620119	Men's/boys overcoats, raincoats, car coats, capes, cloaks & sim.	50.46	0.24	7.26	0.00	1553.91	12.72	0.00	1171.04	3.91	0.00	640.65
620199	Men's/boys', anoraks (incl. ski-jackets), wind-cheaters, wind-	485.25	0.36	2.73	0.00	1225.21	0.24	0.00	46.23	9.49	0.00	3263.14
Product	Product Name	Ind M World	India RCA	Pak RCA	Ind M Pak	Pak X World	SL RCA	Ind M SL	SL X World	Bdesh RCA	Ind M Bdesh	Bdesh X World
620213	Women's/girls' overcoats, raincoats, car-coats, capes,	54.43	0.06	0.48	0.00	1027.19	0.07	0.00	64.46	0.64	0.00	1052.87

620219	Women's/girls' overcoats, raincoats, car-coats, capes,	118.11	0.75	2.46	0.00	838.16	2.95	0.00	431.24	5.90	0.00	1536.38
620293	Women's/girls' anoraks (incl. ski-jackets), wind-	32.12	0.02	0.00	0.00	1.77	0.23	0.00	501.02	1.59	0.97	6071.71
620299	Women's/girls' anoraks (incl. ski-jackets), wind-	162.24	0.15	2.96	0.00	1115.02	0.18	0.00	29.02	0.91	0.00	263.13
620329	Men's/boys' ensembles (excl. knitted or crocheted),	19.60	0.19	1.79	0.00	2524.81	0.08	0.00	48.47	0.79	0.00	847.29
620339	Men's/boys' jackets & blazers (excl. knitted or crocheted), of oth.	394.22	0.92	18.41	0.00	17291.14	24.92	0.00	10061.87	73.86	0.00	53025.35
620341	Men's/boys' trousers, bib & brace overalls, breeches & shorts	210.48	0.89	3.52	0.00	5746.57	2.13	0.02	1495.31	141.01	0.00	176146.90
620429	Women's/girls' ensembles (excl. knitted or crocheted),	37.94	0.75	0.27	0.00	347.10	0.81	0.00	448.04	0.96	0.00	942.95
620433	Women's/girls' jackets & blazers (excl. knitted or crocheted), of	366.65	0.64	0.54	0.00	1600.94	8.44	0.00	10739.75	18.59	0.00	42043.70
620439	Women's/girls' jackets & blazers (excl. knitted or crocheted), of	159.65	0.86	1.90	0.00	3708.81	12.15	0.00	10218.60	17.05	0.00	25488.93
620463	Women's/girls', trousers, bib & brace overalls, breeches &	919.94	0.77	1.18	0.00	6169.93	21.64	11.43	48473.82	13.95	25.45	55544.38
620469	Women's/girls', trousers, bib & brace overalls, breeches &	644.63	0.37	8.12	0.00	34355.79	96.32	11.28	175324.29	50.00	2.00	161823.07
620729	Men's/boys' nightshirts & pyjamas (excl. knitted or	0.56	0.43	86.99	0.00	2663.20	9.22	0.00	121.35	221.61	0.00	5186.61
620899	Women's/girls' singlets & oth. vests, briefs, panties,	106.45	0.72	4.52	0.00	2486.95	14.53	18.50	3438.57	10.67	0.00	4491.19
620930	Of synthetic fibres	121.29	0.77	0.28	0.00	143.54	2.61	0.00	571.33	13.67	44.03	5325.20
621010	Of fabrics of heading 56.02 or 56.0	166.87	0.04	0.01	0.00	19.42	0.15	0.00	126.73	0.29	0.00	423.40
621020	Garments made up of fabrics of 59.03/59.06/59.07, of the type described in 6201.11-6201.19	43.98	0.35	0.57	0.00	266.20	0.63	0.00	125.44	2.30	0.00	818.52
621040	Other men's or boys' garments	628.34	0.06	0.33	0.00	1142.38	0.03	1.78	40.88	0.44	0.00	1146.82
621050	Women's/girls' garments made up of fabrics of	0.64	0.05	1.31	0.00	3548.89	0.06	0.00	75.09	0.59	0.00	1219.45
621111	Swimwear (excl. knitted or crocheted), men's/boys'	28.12	0.75	0.94	0.00	348.84	49.94	0.00	7952.74	138.79	0.00	39290.77
Product	Product Name	Ind M World	India RCA	Pak RCA	Ind M Pak	Pak X World	SL RCA	Ind M SL	SL X World	Bdesh RCA	Ind M Bdesh	Bdesh X World
621139	Track suits (excl. knitted or crocheted), men's/boys'; oth.	111.30	0.16	3.20	0.00	2586.07	4.48	0.00	1555.83	2.04	0.00	1257.83

621210	Brassières	1838.14	0.39	0.00	0.00	34.37	64.41	254.50	227002.31	8.20	0.00	51377.39
621220	Girdles and pantygirdles	83.97	0.00	0.09	0.00	31.49	3.77	0.11	574.22	13.20	0.00	3573.85
621790	Parts	2506.73	0.42	0.18	5.49	222.22	3.21	14.43	1715.39	0.64	31.30	608.36

Source: UN COMTRADE