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INDIA'S REVEALED COMPARATIVE ADVANTAGE IN MERCHANDISE TRADE

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Documentation Sheet	
Title: INDIA'S REVEALED COMPARATIVE ADVANTAGE IN MERCHANDISE TRADE	
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WP. No.: UDE28/6/2008 *Date of Issue:* August 2008	*Contents:* 36P, 11T, 4F, 27R. *No. of Copies:* 100

Abstract

With the withering away of 'protectionist' policies, the trade pattern of India is likely to march in the direction of its comparative advantage. The paper attempts to assess India's revealed comparative advantage (RCA) in merchandise trade. The study evaluates the structure of comparative advantage in India and the change in the scene over a 10-year period from 1996 to 2005. Data as per the HS classification is used to compute the index of RCA. The index is constructed for various levels of aggregation for exports as well as for imports. As per the HS-classification, India enjoys comparative advantage in the exports of labour-intensive items like textiles and scale-intensive items such as chemicals and iron and steel.

The paper also attempted to evaluate India's RCA in exports and imports in different *type* of goods categorized on the basis of their production. These include, 'Ricardo', 'Heckscher-Ohlin' (HO), 'Product-cycle' (PC) goods and 'Others'. Results suggest that India enjoys a comparative advantage in the exports of Ricardo and HO goods. PC goods in contrast have not displayed any improvement in the RCA universe. On the import front, it is essentially Ricardo goods where India enjoys comparative advantage. All production of goods requiring standard technology is shifting to developing economies like India as reflected in the absence of RCA in imports of HO goods.

Key Words: Revealed Comparative Advantage, Merchandise Trade, Export, Import, Product-cycle goods, Ricardo goods, Heckscher-Ohlin goods.

JEL Code(s): F10, F14

INDIA'S REVEALED COMPARATIVE ADVANTAGE IN MERCHANDISE TRADE

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1. INTRODUCTION:

International trade thrives on the comparative advantage that economies offer, as proactive players in the world market. While Ricardo laid down the basic tenets of comparative advantage, Balassa (1965) developed the concept of *revealed comparative advantage* (RCA). The term thus connotes the idea, that countries specialize and export items, which they can produce at lower cost in comparison to the world. In Balassa's (1986) view, the comparative advantage that a country enjoys primarily depends on its physical and human capital endowments. Moreover, trade orientation also impacts an economies advantage, vis-à-vis the other countries. Hence, as a country traverses the road to development, its comparative advantage is expected to 'shift'. Accumulation of human and physical capital and a change in the trade policies alters the comparative advantage of the various sectors of the economy.

India embraced the path of liberalization in the early nineties. A gradual opening of the economy and withdrawal of trade barriers were the natural offshoots of the policy option hitherto chosen. With the withering away of 'protectionist' policies, the trade pattern of India is likely to march in the direction of its comparative advantage. Thus, this forms the basic motivation for the study. The paper attempts to assess the RCA scene of India. Has the country's RCA undergone any change and if so, which sectors are the front-runners in this change? This analysis assumes importance from a trade policy perspective. Policies should thus be designed so as to promote exports of items, where the comparative advantage truly lies. Coupled with this, the composition of goods where India enjoys comparative advantage indicates the structure of the economy.

The concept and measure of the index of revealed comparative advantage as put forth by Balassa (1965), has been employed by various economists. Chow (1990) assessed the shift in comparative advantage of Japan and the Asian NICs (Newly Industrialized Countries). As opposed to conventional belief, Chow (1990) put forth the argument that comparative advantage had not shifted from Japan. Examining the

RCA index for the Asian NICs, in case of manufactured exports for the period between 1966 and 1986, Chow (1990), revealed that the post 1970 period, saw these countries compliment Japan's exports, rather than compete with them. On the other hand, Leu (1998) presented a fairly contrasting view to that of Chow (1990). He assessed the shift in the comparative advantage from Japan to the other East Asian economies in the 1980s using the RCA index. His analysis focused on exports of these countries to the US market for the period between 1980 and 1994. The results supported the belief that much of the comparative advantage had moved away from Japan to Taiwan, Korea and Singapore.

Lim (1997), attempted to illuminate the characteristics of the North Korean economy by examining her foreign trade. He categorizes goods into 'Ricardo', 'Heckscher-Ohlin' (HO) and 'Product-cycle' (PC) goods. Based on the RCA index of these three categories, he elucidates the level of development achieved by North Korea. A progress from Ricardo to HO and then to PC goods, is an apt indicator of the development of the country. Results suggest that while North Korea's comparative advantage had moved up from Ricardo goods to HO goods, it would be difficult for the country to move into the terrain of PC goods. The author did not foresee this shift to PC goods, since the economic structure of the country was not being upgraded to produce goods requiring advanced technology.

Li and Bender (2003) however argued that instead of complimenting or substituting exports, the change in comparative advantage of the country, leads to gain as well as loss for the country. They studied the RCA of manufacture exports over the period 1981-1999 of eight country groups incorporating 40 economies and put forth the view that a pattern of relative comparative advantage existed.

Proceeding a step further, Ferto and Hubbard (2002) used modifications of the RCA index as developed by Vollrath (1991, namely, the *Relative Trade Advantage*, the *logarithm of the Relative Export Advantage* and *Reveled Competitiveness*. Infact, they explore the competitiveness of Hungarian agriculture with the EU as its comparator. They use four different measures of the RCA indices for the period 1992 to 1998, for agro-based products, using the 4-digit level of SITC classification. Results suggest that inspite of changes in the agriculture scene of Hungary; the pattern of revealed comparative advantage had been stable.

Smyth (2005) analyzed the change in Irelands RCA over the period 1997 to 2002. The study sheds light on the changing structure of the Irish economy as indigenous industries lose their comparative advantage to high tech sectors driven by FDI. Widgren (2005) focused on the comparative advantage of a sample of Asian, American and European countries between 1996 and 2002. His study examined the basis of RCA for the sample countries using the Harmonised System (HS) classification at the 4-digit level. In his view the factor content of comparative advantage had some similarity in the Asian countries. While the RCA for the US was based on highly skilled labour that of the EU had moved towards use of human as well as physical capital.

Adding yet another dimension to the theory of revealed comparative advantage, Brackman, Garretsen and Marrewijk (2005), explain that even mergers and acquisitions follow comparative advantage. This occurs because a firm, which has a cost advantage, is often keen to acquire another firm which is less stronger than itself. On the other hand, Faustino (2008) draws a relation between intra-industry trade (IIT) and RCA. Thus, IIT, vertical intra-industry trade (VIIT) and horizontal intra-industry trade (HIIT) formed the dependent variable in the regression, with RCA being the explanatory variable. Based on conventional theory, the author argues that VIIT should have a positive correlation with RCA, while the reverse should be true for HIIT. However, while the relation between VIIT and RCA was in line with expectations, the same could not be said for HIIT. Therefore, segregating the determinants of VIIT and HIIT was not that simple and the author has his reservations about separating the components of IIT.

In the Indian context, Batra and Khan (2005) assessed the RCA index at the 2 and 6-digit level of HS classification. They compared India's comparative advantage with that of China, and also studied the RCA for each of the countries individually. The study constructed the RCA index of India and China for the years 2000 and 2003, thereby enabling it to focus on the change in the structure of comparative advantage in the latter period. The authors also examined comparative advantage of the two countries according to factor intensity using the Standard International Trade Classification (SITC). This was done with the aim of assessing whether India's comparative advantage is in labour and resource-intensive items or in technology and

science based manufactures. The study does not find any structural change in the comparative advantage of the two countries, except for some sectors within manufacturing. India and China enjoyed a competitive relationship in chemicals and mineral and metal manufactures, while a complimentary relation was observed in labour and resource intensive items such as textile yarn and apparel.

The present study differs in terms of assessing the comparative advantage of India for a considerable period of time. Apart from analyzing the RCA at a particular point in time, studying comparative advantage over a period of time gains importance. This is especially so since India's exports/imports are evaluated from a relative point of view. Hence, a change in world exports/imports in a particular year will have an effect on India's comparative advantage. Thus, a time-series study will provide information on sectors, which have displayed a continuous trend in comparative advantage. The above introductory section briefly reviewed the concept and literature on RCA. Section two of the paper, dwells on the methodology employed. The third section focuses on the analysis of the RCA scene of India while the fourth section comprises the conclusion.

2. METHODOLOGY:

The study utilizes the Balassa (1965) measure of computing the RCA index. As per the measure comparative advantage is 'revealed' by the relative export performance of individual product categories. Thus,

$$RCA_{ij} = \frac{x_{ij}/x_{wj}}{X_i/X_w} \quad \text{... (1)}$$

where,

RCA_{ij} = Revealed comparative advantage of the ith country's, j^{th} industry,

x_{ij} = Merchandise exports of the jth industry by the ith country,

X_i = Total merchandise exports of the ith country,

x_{wj} = World merchandise exports of the jth industry,

X_w = Total merchandise world exports.

However, the Balassa index can be modified to arrive at the following equation (2).

$$RCA_{ij} \quad = \quad \frac{\frac{x_{ij}}{X_i}}{\frac{x_{wj}}{X_w}} \quad \text{……………………………………………………….. (2)}$$

In order to get a complete picture of India's comparative advantage the import counter-part is also computed following (Lim 1997). Hence,

$$RCA_{ij} \quad = \quad \frac{\frac{m_{ij}}{M_i}}{\frac{m_{wj}}{M_w}} \quad \text{……………………………………………………….. (3)}$$

where,

RCA$_{ij}$ = Revealed comparative advantage of the ith country's, j[th] industry,

m$_{ij}$ = Merchandise imports of the jth industry by the ith country,

M$_i$ = Total merchandise imports of the ith country,

m$_{wj}$ = World merchandise imports of the jth industry,

M$_w$ = Total merchandise world imports.

If the RCA index for a particular industry is greater than 1, it implies that the country has a revealed comparative advantage in the exports/imports of that industry and vice-versa.

The study is based on export and import data as per the HS (HS 1996) classification. The RCA is calculated at the Section, Chapter (2-digit) and 6-digit level of HS classification. The entire data is sourced from UNCOMTRADE and covers a 10-year period from 1996 to 2005. To identify the 'shift' in comparative advantage, the study uses the approach set out by Lim (1997). Thus, the Hufbauer and Chilas (1974) classification of Ricardo (RIC), Heckscher-Ohlin (HO) and Product-cycle (PC) goods is updated as per SITC Rev.3 and used in the paper. A concordance is drawn between HS (96) and SITC (Rev.3) classification as provided by UNCOMTRADE classification registry. The reclassified HS data is then used to construct the RCA for each of the 3 categories mentioned above. Thus,

$$RCA_{iG} \quad = \quad \frac{\frac{x_{iG}}{X_i}}{\frac{x_{wG}}{X_w}} \quad \text{…………………………………..…………………….. (4)}$$
where,

x$_{iG}$ = Merchandise exports of the Group 'G' having a particular property by the ith country,

x$_{wG}$ = World merchandise exports of the Group 'G'.

Similarly,

$$RCA_{iG} = \frac{\frac{m_{iG}}{M_i}}{\frac{m_{wG}}{M_w}} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (5)$$

where,

  m_{iG} = Import of the Group 'G' having a particular property by the ith country,

  m_{wG} = World import of the Group 'G'.

Here Equations (4) and (5) reflect the RCA of the three categories of goods. 'Ricardo' goods are based on natural resources. 'HO' goods on the other hand use standard technology for their production. The production of 'PC' goods draws upon the use of advanced technology, where improvement in technology is an on-going process. Information plays a crucial role in case of PC goods. The remaining goods are classified as 'Other' goods (OTH).

3. TRENDS IN INDIA'S RCA:

As mentioned above, the analysis of India's RCA is spearheaded in two directions. The first part of this section focuses on India's RCA as per the HS classification. The second part on the other hand, looks at the RCA scene in terms of the type of goods traded.

3.1 India's Comparative Advantage:

This section is further classified into two sub-sections. The former sub-sections analyses the RCA in exports, while the latter focuses on the import scene. This will thus enable a complete picture of the RCA scene over a period of time. An analysis of RCA in imports gains importance due to the policies of liberalisation adopted by India. The RCA index of imports is usually not computed, since restrictive policies of the government have an impact on the pattern of imports of the country.

3.1.1 India's Revealed Comparative Advantage in Exports:

At the most aggregated level of the Sections, one observes that India enjoyed comparative advantage in the exports of 9 out of the total 21 Sections in 1996 (Table 1). By 1998, the number of Sections had climbed down to 7. This is attributed to the

loss in the comparative advantage of prepared foodstuffs (S-4) and animal and vegetable fats (S-3). However, in the later years, the figure went up marginally to 10. Natural pearls (S-14) and textiles (S-11) enjoyed the maximum comparative advantage throughout the period of study. Infact, textiles (S-11) lost its second position to works of art (S-21) only in 2003. Textiles, has been India's largest export earners since time-immemorial. The availability of a variety of raw materials has enabled the industry to produce a range of natural and artificial fibres. So also, the prevalence of cheap labour and domestic availability of fabrics have enhanced India's advantage vis-à-vis the rest of the world. India is thus, one of the best candidates for a thriving textile industry since the sector requires only semi and unskilled labour to mass produce many of its items. Thus, a developing country like India with a rich tradition is bound to enjoy a comparative advantage. However, China is fast over-taking India and hence domestic policies need to be spruced up if India has to compete with China (Prasad and Chandra 2005).

The RCA index of vegetable products (S-2) and raw hides and skin (S-8) declined in the last few years of the study, yet they managed to maintain their rank in most of the years. Apart from these Sections, live animals (S-1), chemicals (S-6) and footwear (S-12) have displayed comparative advantage in exports throughout the period of the study. The new entrants essentially include base metals (S-15) and mineral products (S-5). India is gradually gaining advantage in mineral products on the back of increasing refining capacity. Moreover, India also enjoys a geographical advantage, since the western coast of the country is in close proximity with the production centers of the Persian Gulf. Hence, low transportation costs coupled with lower labour costs will further enhance India's comparative advantage in the future (Sud 2005).

One does not see much increase in the RCA index of chemicals (S-6), and its rank too has been in the lower half of the top 10 Sections enjoying RCA. While, the section may not have boosted its position during the 10 year period, yet it features among the foremost sections offering comparative advantage. In order to lower costs, companies throughout the world are looking at India and China to supply intermediaries at lower costs. So also, the reforms of the 1990s such as the removal of investment barriers and free access to foreign technology have played a vital role in augmenting production, by exploiting economies of scale. This in turn led to greater

Table 1: India's Revealed Comparative Advantage in Merchandise Exports

Section no./Description	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
1. Live Animals	1.69	2.01	1.75	1.80	2.07	1.73	1.67	1.34	1.19	1.22
2. Vegetable Products	3.39	3.62	4.31	3.57	3.31	3.06	3.10	2.67	2.67	2.33
3. Animal and Vegetable Fats	1.51	0.99	0.97	1.60	1.66	1.22	0.73	0.77	0.94	0.69
4. Prepared Foodstuffs	1.50	1.31	0.81	0.73	0.86	1.02	0.75	0.85	0.63	0.78
5. Mineral Products	0.75	0.51	0.46	0.31	0.63	0.75	0.89	0.90	1.33	1.23
6 Products of Chemical and Allied Industries	1.05	1.20	1.11	1.18	1.24	1.18	1.16	1.13	1.07	1.17
7. Plastic and Rubber Articles Thereof	0.51	0.50	0.45	0.48	0.60	0.66	0.71	0.74	0.80	0.72
8. Raw Hides and Skin	3.32	3.75	4.18	3.74	3.94	3.57	3.07	3.03	2.70	2.57
9. Wood and Articles of Wood	0.10	0.07	0.06	0.06	0.07	0.07	0.08	0.09	0.09	0.10
10. Pulp of Wood	0.15	0.13	0.14	0.17	0.22	0.23	0.25	0.24	0.25	0.27
11. Textiles	4.21	4.19	4.37	4.54	4.65	4.19	3.89	3.63	3.12	3.54
12. Footwear, Headgear	1.61	1.54	1.90	1.87	1.82	1.77	1.44	1.54	1.48	1.49
13. Articles of Stone, Plaster and Cement	0.72	0.76	0.73	0.87	1.06	1.02	1.02	1.01	0.78	0.92
14. Natural and Cultured Pearls	7.49	7.89	9.02	10.85	8.87	9.11	8.99	8.62	9.15	7.76
15. Base Metals	0.85	0.90	0.77	0.99	1.10	1.06	1.28	1.36	1.39	1.24
16. Machinery and Mechanical Appliances	0.20	0.20	0.18	0.17	0.20	0.22	0.21	0.24	0.22	0.24
17. Vehicles, Aircraft and Transport Equipment	0.22	0.21	0.17	0.17	0.20	0.19	0.20	0.24	0.28	0.36
18. Optical, Photographic Precision Equipment	0.12	0.13	0.14	0.18	0.20	0.22	0.23	0.24	0.22	0.21
19. Arms and Ammunitions	0.03	0.11	0.01	0.02	0.06	0.20	0.05	0.08	0.03	0.04
20. Miscellaneous Manufactured Products	0.22	0.22	0.21	0.22	0.23	0.24	0.22	0.27	0.29	0.29
21. Works of Art	0.03	0.04	0.04	0.04	0.03	0.04	0.06	5.25	3.04	2.95
No. of Sections with RCA>1	**9**	**8**	**7**	**8**	**10**	**11**	**9**	**10**	**10**	**10**

exports. Moreover, there have been significant improvements in quality, pricing and packaging, which has enabled India to stand in competition against China (Atkinson 2004). Nevertheless, 7 out of the total 21 Sections have displayed comparative advantage throughout the study period.

At a slightly disaggregated level of Chapters, India displayed RCA in 38 chapters, out of the total 97 in 1996. By 2000, about 43 chapters enjoyed comparative advantage. However, as is evident from appendix Table A.1, since 2004, the number of chapters enjoying comparative advantage did not exceed 40. In fact, out of these, it is primarily 29 chapters, which have maintained comparative advantage through out the period of the study. A look at Table 2 suggests that the top 10 chapters have witnessed some reshuffling in their position during the 10-year period. Prior to 2000, lac, gum and resin (C-13), displayed the maximum advantage with an RCA index ranging between 15 and 22. However, it was overtaken by silk (C-50) in the later years of 2000. India is the second largest producer of silk in the world. The industry is vibrant and prospering owing to the infrastructure created by the national sericulture project, a wide base and growing research and training capabilities. Along with these, India enjoyed the maximum comparative advantage in the exports of carpets (C-57), other made-up textile articles (C-63), cotton (C-52) and ores, slag and ash (C-26). In case of made-up textile articles (C-63), the closure of manufacturing units of home textiles in the developed world opened new vistas for Indian manufacturers and exporters. International retailers thus turned their gaze towards India and China as important sources of imports for home furnishings.

India has not only managed to maintain its RCA in natural and cultured pearls (C-71), through-out the study period, but the chapter also pushed its way ahead to become one of the top five chapters since 2001. It is essentially non-industrial worked diamonds from India which command a unique position in the world. India has carved out a place for itself in the international market for diamonds. The country has earned a name in the art of cutting and polishing rough diamonds and the industry employs a huge workforce, which far exceeds the number of people employed in any other country. Moreover, the introduction of the Diamond Dollar Account and the Green Card for exporters of polished diamonds has also facilitated trade (Krishnan

Table 2: Top 10 Chapters Enjoying Comparative Advantage in India's Merchandise Exports with their Ranks

Years	1996		1997		1998		1999		2000		2001		2002		2003		2004		2005	
Chapter no./Description	RCA	Rank	RCA	Rank	RCA	Rank	RCA	Rank	RCA	Rank	RCA	Rank	RCA	Rank	RCA	Rank	RCA	Rank	RCA	Rank
13. Lac, Gum and Resin	15.86	1	20.13	1	22.7	1	22.05	1	17.27	1	14.59	2	12.35	2	10.57	2	11.67	2	11.65	1
9. Tea and Coffee	13.15	2	10.12	3	10.45	4	9.41	6	8.95	6	7.82	7	6.92	7	6.02	7	5.45	8	4.56	10
52. Cotton	12.51	3	12.27	2	10.12	5	10.76	5	10.32	3	8.51	6	7.78	6	6.7	6	4.98	9	6.35	6
57. Carpets	10.46	4	8.73	5	10.86	3	11.53	3	10.31	4	9.9	3	8.88	4	8.58	4	7.87	5	9.29	3
63. Made-up Textile Articles	7.55	5	8.52	7	7.95	7	8.28	7	9.28	5	8.64	5	7.8	5	7.17	5	6.84	6	6.82	5
53. Textile Fibres	7.53	6	8.93	4	6.5	-	5.3	10	6.71	9	4.93	9	4.79	10	4.46	10	4.82	10	4.57	9
71. Precious Stones	7.49	7	7.89	8	9.02	6	10.85	4	8.87	7	9.11	4	8.99	3	8.62	3	9.15	3	7.76	4
23. Residues and Waste	7.32	8	6.2	9	3.67	-	3.08	-	3.23	-	3.2	18	1.68	-	3.3	-	2.66	-	3.63	-
14. Vegetable Products n.e.s	7.01	9	5.94	-	7.26	8	6.7	8	7.15	8	5.71	8	4.76	-	4.42	-	5.57	7	4.66	8
50. Silk	5.88	10	8.56	6	11.22	2	14.42	2	15.38	2	15.04	1	15.29	1	16.6	1	13.59	1	11.61	2
26. Ores, Slag and Ash	5.79	-	3.67	-	3.15	-	2.52	]	2.67	-	3.04	-	4.92	9	5.04	9	8.49	4	6.29	7
42. Articles of Leather	5.1	-	6.05	10	6.71	10	5.66	9	5.73	10	4.82	-	3.86	13	3.9	-	3.46	-	3.25	-

2000). Thus, a large pool of trained workforce and low labour costs has boosted the competitiveness of the sector in the world.

In contrast, although coffee and tea (C-9) managed to retain its position amongst the top 10 chapters, the RCA index declined steadily since the beginning of the decade of 2000. One of the reasons for this decline may be owing to the change in consumer preferences in the international market. While production of orthodox tea is limited in the country, this variety of tea has found appeal in the international market. India, on the other hand continues to produce the CTC (cut, tear and curl) variety and this has influenced exports (Mandal 2005). Coupled with this, the problems in the domestic market and abandoning of tea-plantations have also impacted the production of tea in the country (Devraj 2003). Moreover, the quality and yield of tea is affected by the higher age of tea plants in India as compared to the newly tea producing countries. Thus, high costs and low realizations have become the hallmarks of the tea industry in India (Ram 2002).

Interestingly, articles of apparel and clothing (C-61, C-62), within textiles have a much lower RCA when compared to silk and made-ups and the index too has declined over the period. While low labour costs, cheap raw material and the flexibility in production have enabled the sector to provide cost advantage to the economy, the lack of up gradation and modernization has stifled its competitiveness to some degree (Chauvin and Lemoine 2003).

While articles of iron and steel (C-73) may not have escalated it's position amongst the chapters offering comparative advantage, nonetheless, the chapter exhibited a jump from a comparative disadvantage to an advantage by 1997. Prior to 1991-92, the iron and steel industry in India was under the shackles of government control. It is during the policy reforms of 1991-92, that the industry was allowed to break away from the list of those reserved for the public sector. It was also freed from the obligation of compulsory licensing under the Industries Act 1951. In fact, in 1992, the industry was accorded the status of a 'high priority industry' for automatic approval for foreign equity investment upto 51%. Deregulation of price and distribution of steel was also granted by the government. In addition to these benefits, the import duty on imports of raw material for steel production was also reduced leading to lower cost of production. The Export-Import (EXIM) Policy of 1997-2002,

also permitted free exports of all items of iron and steel. This change in policy stance enabled the sector to gain advantage in the post-reform period. Thus deregulation accompanied by India's endowments of iron ore and non-coking coal have assisted in the sector attaining comparative advantage.

If we consider the data at a more disaggregated level of 6-digit, then one observes that out of the total 5130 products the number of items where India has a comparative advantage has escalated from 1172 in 1996 to 1421 in 2005. In fact, as is clear from Table 3, in 2003, India enjoyed RCA in 1489 items. However, it is mainly 591 items, which have displayed comparative advantage throughout the period of the study. Hence, it is these items, which should be provided incentives to promote their exports further.

Of these 591 items, right until 2001, India enjoyed the most advantage in the exports of castor oil seeds. However, since 2002, castor oil seeds witnessed a steady decline in its position, with the RCA index plummeting from 125.48 in 1996 to a mere 6.30 in 2005. Interestingly, multiple cotton yarn and coir yarn also enjoyed immense advantage but shed some of the index value since 2001. On the other hand, single cotton yarn and castor oil in fractions maintained their position throughout the period of the study. India is the leading producer of castor seeds and castor oil, followed by China and Brazil. However, while China and Brazil managed to meet only domestic demand, India emerged as the top-most exporter of castor oil in the world, along with catering to the domestic market. The tropical climate in India is extremely favourable for the growth of the item, thus enabling India to enjoy a lion's share in the world market. This makes India a dominant player in the international market for castor seeds and oil. Appendix Table A.2 provides a list of the top 25 commodities offering comparative advantage in exports.

The RCA index in case of cashew nuts displayed a decline since 2000; nevertheless, it remained in the list of the top 50 items where India has an RCA. Turmeric, non-knit cotton furnishing articles n.e.s, coir and coir yarn, sandstone and DDT, enjoyed maximum comparative advantage in exports even in 2005. Interestingly, recorded magnetic tapes, preserved cucumbers, mica waste and flat-rolled high speed steel greater than 600mm have escalated their positions among the list of items enjoying the maximum RCA.

Table 3: Number of Items Enjoying Comparative Advantage in Merchandise Exports

Years	No. of Items with RCA>1
1996	1172
1997	1170
1998	1199
1999	1239
2000	1387
2001	1387
2002	1432
2003	1489
2004	1403
2005	1421
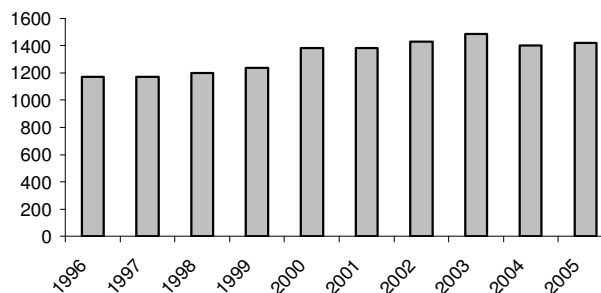
Figure 1: Number of Items Enjoying Comparative Advantage in Merchandise Exports

Although at the aggregate level of HS 2-digit, machinery and electrical equipment (C-84 and C-85) are conspicuous from their absence from the list of chapters enjoying comparative advantage, at the 6-digit level of disaggregation, one does observe that certain items are gradually gaining ground. While the RCA index of these items may be lower when compared to the above-mentioned items, nonetheless, they have made the transition from a comparative disadvantage to an advantage. These mainly include tyre-moulding machinery, engines, turbines liquid dielectric transformers, track-laying tractors, bicycle brakes and pedals and their parts and wine crushers.

Nevertheless, out of the total 591 items, which have displayed a comparative advantage throughout the 10-year period, the most number of items are drawn from chapters like apparel (C-61 and C-62), cotton (C-52) man-made staple fibres (C-55), organic and inorganic chemicals (C-28 and C-29) and iron and steel (C-72 and C-73). Thus, the focus of the export policy should therefore lie on further promoting exports of items within these chapters.

3.1.2 **India's Comparative Advantage in Imports:**

The study computed the RCA in imports so as to obtain a comprehensive picture of India's comparative advantage. In case of imports, an index more than one indicates that, the country has a comparative advantage in imports of that item and vice-versa. The RCA in imports does not present a true picture in the presence of

protectionist policies; however following the liberal policies adopted by India, it would be interesting to note the changes in the RCA of imports.

An interesting scene that emerges in case of imports at the Section level is that there are only 3 out of the total 21 Sections where the RCA index exceeds unity in 2005. As is evident from Table 4, these include animal and vegetable fats (S-3), mineral products (S-5) and natural pearls (S-14). Imports of chemicals (S-6) lost their comparative advantage by 2002, while base metals (S-15) enjoyed an advantage only in the first two years of the study. Decreasing tariffs and other taxes mainly brought about this change

The RCA at the 2-digit level also displays a similar scene. Of the total 97 chapters, India displayed comparative advantage in the imports of 26 chapters in 1996, as is evident from appendix Table A.1. By 1998, the number inched up to 28. However, thereafter, one observes a steady slide in the chapters enjoying RCA in imports. The year 2005 saw the number of chapters plummeting to a much lower 20. Thus, with the progress of liberalization, the chapters enjoying comparative advantage in imports have declined. In fact, only 15 chapters have shown a comparative advantage through the 10-year period of study. Until 2000, animal and vegetable fats (C-15) and natural pearls (C-71) vied for the top position amongst the chapters offering RCA. In case of the former chapter, all edible oils with the exception of palm oil and few others were moved to the freely importable list in March 1995. Moreover, import duties too were reduced (WTO 1998). The lifting of restrictions on the imports of edible oils may have led to a comparative advantage in imports. This is so inspite of higher tariffs imposed on these items, compared to other agricultural products. On the other hand, natural pearls (C-71), enjoys an advantage in imports mainly owing to immense imports of rough diamonds and non-monetary gold. In case of diamonds, reduction in customs duty with the onset of the reforms, have helped imports of both the items. Moreover, India is a major hub for polishing and cutting of diamonds. Low labour costs and a huge workforce have enabled the industry to thrive. Thus, the export of cut and polished diamonds has led to the huge imports of rough diamonds. On the other hand, advantage in the imports of gold, is chiefly attributed to the liberalization of the gold sector since October 1997. So also, the accounting of the

Table 4: India's Revealed Comparative Advantage in Merchandise Imports

Section no./Description	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
1. Live Animals	0.01	0.03	0.04	0.06	0.03	0.03	0.03	0.03	0.02	0.02
2. Vegetable Products	0.69	0.92	0.89	0.67	0.56	0.95	0.84	0.67	0.54	0.57
3. Animal and Vegetable Fats	5.59	4.55	10.08	9.85	9.51	9.50	8.15	7.79	5.47	4.17
4. Prepared Foodstuffs	0.11	0.20	0.30	0.24	0.11	0.12	0.10	0.09	0.20	0.15
5. Mineral Products	3.38	2.78	2.96	3.82	3.24	2.94	3.21	2.65	2.62	2.33
6 Products of Chemical and Allied Industries	1.51	1.59	1.49	1.32	1.09	1.11	0.93	0.93	0.87	0.89
7. Plastic and Rubber Articles Thereof	0.69	0.60	0.58	0.51	0.46	0.52	0.48	0.51	0.48	0.51
8. Raw Hides and Skin	0.36	0.39	0.44	0.39	0.49	0.50	0.41	0.39	0.36	0.33
9. Wood and Articles of Wood	0.48	0.74	0.74	0.69	0.80	0.91	0.56	0.79	0.71	0.60
10. Pulp of Wood	0.78	0.88	0.80	0.66	0.74	0.76	0.67	0.73	0.64	0.65
11. Textiles	0.30	0.31	0.32	0.37	0.40	0.50	0.45	0.46	0.38	0.38
12. Footwear, Headgear	0.07	0.07	0.07	0.07	0.07	0.06	0.05	0.06	0.07	0.09
13. Articles of Stone, Plaster and Cement	0.29	0.33	0.36	0.30	0.34	0.42	0.36	0.40	0.42	0.44
14. Natural and Cultured Pearls	5.12	7.74	10.67	9.95	9.23	9.72	8.70	9.76	10.00	7.07
15. Base Metals	1.31	1.17	0.90	0.78	0.68	0.79	0.69	0.77	0.76	0.89
16. Machinery and Mechanical Appliances	0.58	0.57	0.51	0.42	0.45	0.50	0.58	0.61	0.59	0.63
17. Vehicles, Aircraft and Transport Equipment	0.36	0.24	0.17	0.19	0.17	0.20	0.27	0.36	0.35	0.57
18. Optical, Photographic Precision Equipment	0.47	0.62	0.69	0.58	0.58	0.67	0.65	0.58	0.52	0.53
19. Arms and Ammunitions	0.02	0.03	0.03	0.04	0.02	0.03	0.07	0.07	0.04	0.01
20. Miscellaneous Manufactured Products	0.07	0.09	0.09	0.09	0.11	0.11	0.12	0.13	0.13	0.15
21. Works of Art	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.07
No. of Sections with RCA>1	**5**	**5**	**4**	**4**	**4**	**4**	**3**	**3**	**3**	**3**

items imported was shifted from the baggage route to the DGCI&S reporting system. Thus, the comparative advantage in the imports of these two items has led the section to emerge in the top three categories.

However, since 2001, imports of silk (C-50) occupied the top slot amongst chapters enjoying comparative advantage. India also enjoys an advantage in the imports of fertilizers (C-31) as the chapter managed to maintain its position among the top 10 through out the study. The government decontrolled the imports of all major fertilizers except urea and also provides concession under the Concession Scheme. Thus the imports of fertilizers have gained comparative advantage over the years owing to the liberal policy of the government. In contrast, mineral fuels (C-27) and inorganic chemicals (C-28) were pushed below the top 10 in the last few years of the study. On the other hand, lead and zinc articles (C-78, C-79) and ships (C-89) witnessed some fluctuations in their ranks, but comprised the top 10 chapters in terms of RCA by 2005 (Table 5).

In the 10 years that cover the study, photographic goods (C-37) lost its advantage in imports, while ores, slag and ash (C-26) gained advantage in the decade of 2000. Iron and steel (C-72) has displayed a comparative advantage in imports in most of the years, as is clear from appendix Table A.1. Freeing up imports of raw materials for the steel industry led to the chapter enjoying comparative advantage in imports. Thus, policy should be designed keeping in mind the changing RCA scenario, whereby items which enjoy a comparative advantage in imports, should be provided the right import incentive. This would enable the country to utilize its resources efficiently on producing and exporting items which offer a comparative advantage.

The number of items offering RCA in imports at the 6-digit level of disaggregation too, has been less when compared to exports. In 1996, 1074 items witnessed an RCA index greater than one. By 1999, the number declined to 966. However, in 2005, almost 1100 items enjoyed comparative advantage in imports. Nevertheless, out of these items, it is mainly 389 items that have shown comparative advantage throughout the study period. Of these commodities, dried almonds and cashew nuts in shell, organic compounds n.e.s, greasy and degreased wool and
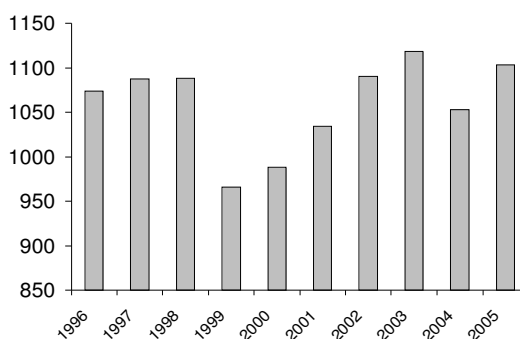
Table 5: Top 10 Chapters Enjoying Comparative Advantage in India's Merchandise Imports with their Ranks

Years	1996		1997		1998		1999		2000		2001		2002		2003		2004		2005	
Chapter no./Description	RCA	Rank	RCA	Rank	RCA	Rank	RCA	Rank	RCA	Rank	RCA	Rank	RCA	Rank	RCA	Rank	RCA	Rank	RCA	Rank
15. Animal, Vegetable fats	5.59	1	4.55	3	10.08	2	9.85	2	9.51	1	9.50	3	8.15	3	7.79	3	5.47	3	4.17	4
31. fertilizers	5.16	2	6.38	2	6.28	3	7.33	3	3.27	5	3.10	8	2.08	-	2.20	9	2.68	7	3.53	6
71. Precious Stones	5.12	3	7.74	1	10.67	1	9.95	1	9.23	2	9.72	2	8.70	2	9.76	2	10.00	2	7.07	2
50. Silk	3.69	4	3.46	5	4.63	4	6.16	4	6.93	3	10.13	1	11.13	1	12.06	1	10.46	1	9.91	1
27. Mineral fuels	3.60	5	2.94	6	3.13	7	4.04	5	3.35	4	3.02	9	3.33	5	2.75	6	2.73	6	2.42	9
28. Organic Chemicals	3.07	6	3.75	4	4.04	5	3.72	7	3.02	6	3.17	7	2.67	7	2.36	8	2.16	8	2.18	10
79. Zinc Articles	2.95	7	2.68	7	2.29	9	2.05	10	1.88	10	2.36	10	2.05	-	2.40	7	1.83	9	2.65	8
89. Ships	2.95	8	1.93	-	1.78	-	3.82	6	2.39	9	3.72	5	2.79	6	4.37	5	4.37	5	4.78	3
80. Tin Articles	2.81	9	2.16	-	1.53	-	1.37	-	1.50	-	1.80	-	1.32	-	1.13	-	0.86	-	0.83	-
74. Copper articles	2.76	10	2.22	10	1.43	-	1.10	-	0.72	-	0.86	-	0.64	-	0.78	-	0.71	-	0.83	-
25. Salt, Sulphur	2.48	-	2.50	9	2.69	8	2.68	9	2.73	8	2.15	-	2.11	-	1.59	-	1.60	10	1.62	-
78. Lead Articles	2.42	-	2.68	8	3.68	6	2.88	8	2.97	7	3.79	4	3.97	4	5.46	4	4.66	4	3.82	5
51. Wool	1.89	-	1.76	-	1.46	-	1.30	-	1.17	-	1.49	-	1.87	-	1.97	10	1.49	-	1.47	-
07. Edible Vegetables	1.54	-	2.07	-	1.09	-	0.49	-	0.65	-	3.62	6	2.62	8	1.88	-	1.14	-	1.26	-
53. Other Textile Fibres	1.52	-	1.17	-	1.90	-	1.95	-	1.55	-	1.92	-	2.44	9	1.89	-	1.49	-	2.01	-
88.Aircraft Parts	1.16	-	0.67	-	0.29	-	0.12	-	0.39	-	0.35	-	1.19	-	1.26	-	1.25	-	3.03	7
17. Sugar and Confectionery	0.06	-	1.09	-	2.26	10	1.97	-	0.15	-	0.14	-	0.11	-	0.16	-	1.19	-	0.50	-

dried leguminous vegetables are highest-ranking items throughout the study period. On the other hand, gold in semi-manufactured form, shuttles for weaving machines, salts of naphthols and yarn in filaments have gradually elevated themselves to the top ranking items enjoying RCA. Vessels and floating structures have witnessed a fluctuating trend in the RCA index although it has enjoyed comparative advantage in all years.

Table 6: Number of Items enjoying Comparative Advantage in Imports

Years	No. of Items with RCA>1
1996	1074
1997	1087
1998	1088
1999	966
2000	988
2001	1034
2002	1090
2003	1118
2004	1053
2005	1103

Figure 2: Number of Items enjoying Comparative Advantage in Imports

Of the total 389 items that have displayed RCA throughout the 10 years, the maximum numbers of items are found in chapters like inorganic chemicals (C-28), machinery (C-84), organic chemicals (C-29), miscellaneous chemical products (C-38) and iron and steel (C-72).

3.1.3 India's Comparative Advantage– A Comparison between Exports and Imports:

Reviewing the RCA of exports and imports simultaneously sheds light on a number of observations. Firstly the number of chapters where India offers a comparative advantage is greater in case of exports across all levels of data disaggregation. At the level of the 21 Sections, it is essentially natural pearls (S-14), where the RCA exceeds unity for both exports as well as imports through out the study period. In contrast, chemicals (S-6) and base metals (S-15) are two Sections, where India continued to enjoy a comparative advantage in exports, but lost the same

in imports. The decontrol policy of the government aided the growth in exports as the country began to produce goods as per its comparative advantage. Infact, the undue protection provided to the chapters had marred its progress for a long time. This is reflected in the chapter losing comparative advantage in imports as it simultaneously gained RCA in exports. An observation of the last two years of the study marks the entrance of mineral products (S-5) in the list of items offering RCA in exports, while the Section enjoyed an advantage in imports right through the 10 years.

However, Sections like these where India enjoys RCA in exports as well as imports merit further scrutiny. While at a higher level of aggregation, similar chapters may enjoy RCA in both, but at the 6-digit level of disaggregation, the items that offer RCA may differ. The country may have RCA in import of one kind of item, while it may enjoy an RCA in the export of another item within the same section. Aggregating all the items at the level of a chapter may however present an RCA in exports as well as imports. For instance in case of natural pearls (S-14), India enjoys comparative advantage in exports of worked diamonds, jewellery of precious metals and imitation jewellery, while it displays an advantage in the imports of unworked diamonds, silver and gold. Thus, an analysis at the lowest level of aggregation yields the true picture.

A similar trend emerges at the 2-digit level of aggregation, India may enjoy RCA in exports as well as imports in few chapters such as silk (C-50), iron and steel (C-72), organic chemicals (C-28) and inorganic chemicals (C-29). However, a deeper probe suggests that the items on the export and the import front differ. On the other hand, in certain chapters such as apparel and textile articles India enjoys a comparative advantage only in exports, whereas in chapters such as aircraft parts and ships it displays a comparative advantage only in imports.

A noteworthy trend that comes to light is that India enjoys neither a comparative advantage in imports nor in exports of machinery and electrical equipment (C-84 and C-85), and precision instruments. This is a reflection of scarcity of trade in these chapters in case of India. This prods us to move further in the direction of evaluating the type of goods where India enjoys a comparative advantage in either exports or imports and also to assess the shift in comparative advantage.

3.2 **The 'Shift' in India's Comparative Advantage:**

It is expected that as a country progresses on the path of development, the comparative advantage shifts from the production of goods requiring the use of natural resources to those requiring a higher level of technology. In order to analyse the case of India, the goods entering foreign trade as per the HS classification were regrouped into 'Ricardo' (RIC), Heckscher-Ohin (HO) and Product-cycle (PC) goods. Those goods that could not be included in any of the three categories were clubbed as 'Others' (OTH). The RCA index of exports and imports of these goods for India was then computed. A list of SITC (Rev.3) codes comprising each of these categories is available in appendix Table A.3.

'Ricardo' goods incorporate those goods which use natural resources for their production, such as wood, paper, ores, food, non-ferrous metals and oils. Thus, countries at lower levels of development generally export such goods since their production is based on what is naturally available in the economy. 'HO' goods are produced using standard technology and are characterized by lower costs in R&D. Beverages, clothing, jewellery, ferrous metals, locomotives and domestic appliances are some of the items that fall in this category. Since the technology in producing these goods is already developed by technologically advanced countries, and later standardized, there is not much expenditure on R&D. Moreover, these tend to be labour and capital intensive, but not skill and knowledge intensive. Production of such goods is thus passed on to developing countries that in turn enjoy economies of scale. On the other hand, 'PC' goods essentially are technology intensive and are characterized by high R&D. So also, technology in case of 'PC' goods changes rapidly as innovation is the key to their existence. Chemicals, medicines, instruments, machinery and aircraft are some examples of 'PC" goods. However, since such technology and the ability to cope with rapid change, is present only with the developed countries, they enjoy a comparative advantage in exports of such items.

The Table 7 makes it evident that India has a comparative advantage in the exports of Ricardo and HO goods, while it has a comparative disadvantage in the exports of PC goods. The availability of natural resources such as ores and minerals, accompanied by climatic factors, in conjunction with policy-induced measures to attain self- sufficiency had made India an agro-based economy. This provided India

with an opportunity to gain RCA in 'Ricardo' goods. On the other hand, the existence of a massive low-skilled cheap labour force, the emphasis on industrialization in the post-independence period, along with the policy of deregulation in the 1990s had supported the rise in the production and exports of 'HO' goods thereby enabling the country to attain comparative advantage vis-à-vis the developed countries.

Table 7: India's Comparative Advantage in Exports for Different Type of Goods

Type of Goods				
Years	RIC	HO	PC	OTH
1996	1.94	1.18	0.34	1.29
1997	1.76	1.23	0.35	1.30
1998	2.05	1.23	0.33	1.08
1999	1.98	1.25	0.34	1.02
2000	1.49	1.30	0.38	1.40
2001	1.54	1.23	0.42	1.37
2002	1.68	1.18	0.43	1.28
2003	1.49	1.18	0.46	1.41
2004	1.56	1.13	0.45	1.51
2005	1.32	1.13	0.48	1.70
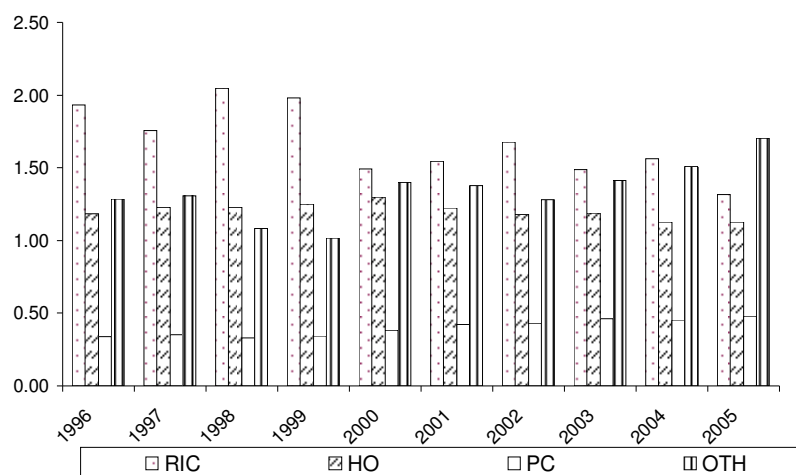
Figure 3: India's Comparative Advantage in Exports for Different Type of Goods

An interesting trend that emerges is that the RCA index for Ricardo goods is slightly decelerating, while the Others category is gradually gaining ground. This category essentially includes dried fishes, raw hides and skin, waste and scrap of metals, miscellaneous and not elsewhere specified items. Conversely, throughout the period of the study, PC goods are conspicuous by the disadvantage they offer.

In contrast to exports, it is essentially Ricardo goods where India enjoys a comparative advantage in imports. India does not seem to be having an advantage in

imports of either HO or PC goods. India also lost its comparative advantage in the imports of the Others category since 2000 as is evident from Table 8. The comparative disadvantage in the imports of HO goods and an advantage in their exports are primarily owing to the shift in production base of goods requiring standard technology, to low cost economies such as India. The developed countries are hence left free to concentrate on the production of PC goods.

Table 8: India's Comparative Advantage in Imports for Different Type of Goods

Type of Goods				
Years	RIC	HO	PC	OTH
1996	2.10	0.33	0.87	1.77
1997	2.30	0.33	0.86	1.50
1998	2.96	0.30	0.76	1.28
1999	3.32	0.27	0.64	1.17
2000	3.30	0.27	0.62	0.71
2001	3.21	0.30	0.66	0.76
2002	3.18	0.33	0.67	0.77
2003	3.02	0.40	0.66	0.69
2004	2.93	0.40	0.64	0.75
2005	2.52	0.44	0.73	0.75
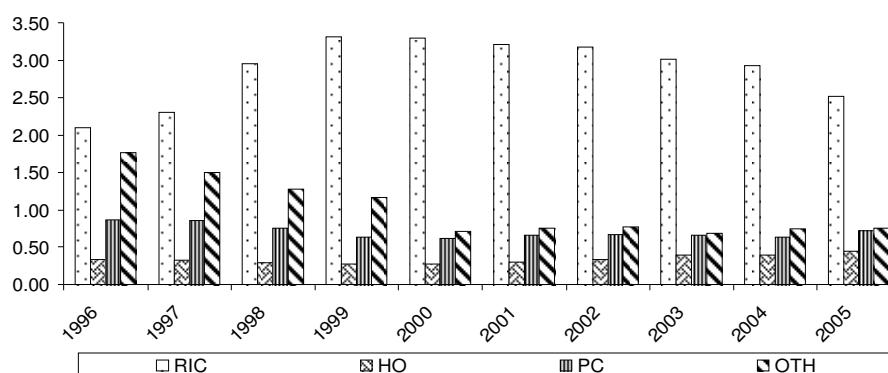
Figure 4: India's Comparative Advantage in Imports for Different Type of Goods

India has not notched up its trade in PC goods in comparison to the world even in the post-reform period. There has not been any 'shift' in the direction of PC goods. It is only in the 'standard technology' universe that the country has carved a place for itself. Thus, incentives should be geared towards exports of HO goods, till such time that the country gains competence in exports of PC goods. Marching ahead on the path of development will gradually foster the trade in PC goods and at a later stage enhance India's comparative advantage in the exports of PC goods. Till such time the focus of the policy makers should hover around exports of HO and Ricardo goods.

4. CONCLUSION:

The study aimed at assessing the structure of comparative advantage in India and the change in the scene over a 10-year period from 1996 to 2005. Data as per the HS classification was used to compute the index of RCA. The index was constructed for various levels of aggregation for exports as well as for imports. As per the HS-classification, labour-intensive chapters of textiles and scale-intensive chapters of chemicals and iron and steel are the foremost chapters enjoying a comparative advantage in India. The paper also attempted to evaluate India's RCA in exports and imports for Ricardo, HO and PC goods. The purpose of such an analysis was to obtain a comprehensive view of the comparative advantage that India enjoys vis-à-vis the rest of the world. This would enable policymakers to focus on goods where India's comparative advantage in exports truly lies. In case of items where India enjoys a comparative advantage in imports, it would be beneficial to import them. A direct consequence of this is the efficient utilization of national as well as the global resources.

Results suggest that India enjoys a comparative advantage in the exports of Ricardo and HO goods. The category of 'Other goods' is also enhancing its presence on the list of items offering comparative advantage. PC goods in contrast have not displayed any improvement in the RCA universe. On the import front, it is essentially Ricardo goods where India enjoys comparative advantage. All production of goods requiring standard technology is shifting to developing economies like India as reflected in the absence of RCA in imports of HO goods.

India has still not arrived on the world map of advanced technology. The RCA index for PC goods is less than unity in case of imports as well as exports throughout the period of the study. The structure of India's exports and thereby its economy even after a decade and a half of liberalization is still a long distance away from innovation and technological advancement. Thus, cheap, semi and unskilled labour and simple technologies essentially characterize India's competitive advantage (Lall 1999). Hence, greater accumulation of physical and human capital is mandatory, if India has to shift to a higher trajectory of cutting edge technology and more importantly, offer a comparative advantage in such goods, in relation to the rest of the world.

REFERENCES

1. Atkinson, William (2004), *Purchasing Chemicals from India: Lots of Opportunities*. Retrieved July 1, 2006 from http://www.purchasing.com/article/CA407123.html

2. Balassa, Bela (1965), Trade Liberalization and Revealed Comparative Advantage, *The Manchester School of Economic and Social Studies*, No. 33, pp. 99-123.

3. Balassa, Bela (1986), Comparative Advantage in Manufactured Goods: A Reappraisal, *The Review of Economics and Statistics,* Vol. 68, No. 2, pp. 315-319.

4. Batra, Amita and Zeba Khan (2005), *Revealed Comparative Advantage: An Analysis for India and China*, Working Paper No. 168, Indian Council for Research on International Economic Relations (ICRIER), New Delhi.

5. Brakman, Steven, Harry Garretsen and Charles Van Marrewijk (2005), *Cross-Border Mergers and Acquisitions: On Revealed Comparative Advantage And Merger Waves*, Working Paper Series No. 1602, CESifo, Munich, Germany.

6. Chauvin, Sophie and Lemoine Francoise (2003), *India in the World Economy: Traditional Specialisations and Technology Niches,* Working Paper No. 09, CEPII Research Center, August.

7. Chow, Peter C. Y. (1990), The Revealed Comparative Advantage of the East Asian NICs, *The International Trade Journal*, Vol. 5:2, pp. 235 – 262.

8. Devraj, Ranjit (2003), *Hard Times Continue for the Tea Industry in India.* Retreived July 13, 2006, from http://www.indiatogether.org/2003/nov/eco-teawoes.htm

9. Faustino, Horácio (2008), *Intra-Industry Trade and Revealed Comparative Advantage: An Inverted-U Relationship*, WP03/2008/DE/SOCIUS, Department of Economics, School of Economics and Management, Technical University of Lisbon, Portugal.

10. Ferto, Imre and Lionel J. Hubbard (2002) *Revealed Comparative Advantage and Competitiveness in Hungarian Agri-Food Sectors*, Institute of Economics, Hungary Academy of Sciences, Budapest, Discussion Paper Series 2002/8.

11. Government of India (1997-2002), EXIM Policy, Ministry of Commerce, New Delhi.

12. Hufbauer, G. C. and J. G. Chilas (1974), Specialization among Industrial Countries: Extent and Consequences, in *International Division of Labor Problems and Prospectives*, edited by H. Giersch, Tubingen, Mohr.

13. Krishnan, Reshma (2000), *Diamonds: The Politics of Caratage,* Business Line, Investment World, October 15. Retrived March 22, 2007, from http://www.hinduonnet.com/businessline/iw/2000/10/15/stories/0515e051.htm`

14. Lall, Sanjaya (1999), *India's Manufactured Exports: Comparative Structure and Prospects*, Queen Elizabeth House, Oxford, UK.

15. Leu, Gwo-Jiun Mike (1998), *Changing Comparative Advantage in East Asian Economies***,** SABRE Working Papers 1998 Working Paper Series, WP. No. 3-98, School of Accounting and Business Research Center, NTU, Nanyang Avenue, Singapore.

16. Lim, Kang-Taeg (1997), Analysis of North Korea's Foreign Trade by Revealed Comparative Advantages, *Journal of Economic Development,* Vol. 22, No. 2, pp. 97-117.

17. Li, Kui-Wai and Siegfried Bender, (2003), *Relative Advantage of Manufacture Exports Among World Regions: 1981-1999*, APEC Study Center Consortium Annual Conference, Phuket, Thailand.

18. Mandal, Kohinoor (2005), Tea Exports Decline Drastically; Imports Up, *Business Line,* Financial Daily from The Hindu group of publications, January 27. Retrieved July 13, 2006 from
http://www.thehindubusinessline.com/2005/01/27/stories/2005012700611100.htm

19. Prasad, Ananthkrishnan and Sonal-Jain Chandra (2005), *The Impact on India of Trade Liberalization in the Textiles and Clothing Sector*, Working Paper No. 05/214, International Monetary Fund, Washington, D.C. US.

20. Ram, Anand (2002), Tea: The Overflowing Cup of Woes, *Business Line,* Financial Daily from The Hindu group of publications, September 01. Retrieved Oct 15, 2006 from
http://www.blonnet.com/iw/2002/09/01/stories/2002090100621300.htm

21. Smyth, Diarmaid Addison (2005), Ireland's Revealed Comparative Advantage, *Quarterly Bulletin*, Central Bank of Ireland, Dublin, No.1, pp.101-114.

22. Sud, Hari (2005), *India as Petroleum Products Exports Hub,* October 11, Retrieved Mar 10, 2008 from http://www.ivarta.com/columns/OL_051011.htm

23. Vollrath, T. L. (1991), A Theoretical Evaluation of Alternative Trade Intensity Measures of Revealed Comparative Advantage, *Weltwirtschaftliches Archiv,* 130, pp. 265–279.

24. Widgrén, Mika (2005), Revealed Comparative Advantage in the Internal Market, Discussion Papers No. 989, The Research Institute of the Finnish Economy, Finland.

25. World Trade Organization (1998), *Trade Policy Review: India,* Report by the Secretariat, WT/TPR/S/33, Geneva.

26. http://www.silkepc.org/news_result_37.asp

27. http://www.crnindia.com/commodity/castor.html

Appendix Table A.1: Index of Revealed Comparative Advantage in India's Exports and Imports

Chapter	1996		1997		1998		1999		2000		2001		2002		2003		2004		2005	
	Exp	Imp	Exp	Imp	Exp	Imp	Exp	Imp	Exp	Imp	Exp	Imp	Exp	Imp	Exp	Imp	Exp	Imp	Exp	Imp
1. Live Animals	**1.69**	**0.01**	**2.01**	**0.03**	**1.75**	**0.04**	**1.80**	**0.06**	**2.07**	**0.03**	**1.73**	**0.03**	**1.67**	**0.03**	**1.34**	**0.03**	**1.19**	**0.02**	**1.22**	**0.02**
1. Live Animals	0.03	0.01	0.01	0.01	0.02	0.01	0.02	0.01	0.03	0.00	0.03	0.00	0.02	0.01	0.05	0.01	0.05	0.01	0.04	0.01
2. Meat and Meat Offal	0.67	0.00	0.83	0.00	0.74	0.00	0.70	0.00	1.09	0.00	0.80	0.00	0.78	0.00	0.84	0.00	0.72	0.00	0.91	0.00
3. Fish and Crustaceans	5.33	0.01	5.83	0.03	4.96	0.05	4.75	0.02	5.00	0.02	4.14	0.02	3.95	0.02	3.00	0.02	2.66	0.02	2.46	0.02
4. Edible Products of Animal Origin	0.14	0.01	0.16	0.04	0.11	0.05	0.14	0.17	0.22	0.06	0.33	0.03	0.29	0.06	0.28	0.08	0.38	0.03	0.53	0.01
5. Products of Animal Origin N.E.S.	2.09	0.17	2.13	0.21	1.73	0.31	1.78	0.36	1.76	0.40	1.75	0.36	1.41	0.37	1.07	0.24	0.82	0.17	0.79	0.16
2. Vegetable Products	**3.39**	**0.69**	**3.62**	**0.92**	**4.31**	**0.89**	**3.57**	**0.67**	**3.31**	**0.56**	**3.06**	**0.95**	**3.10**	**0.84**	**2.67**	**0.67**	**2.67**	**0.54**	**2.33**	**0.57**
6. Live trees	0.29	0.14	0.45	0.07	0.46	0.02	0.44	0.01	0.46	0.01	0.42	0.02	0.45	0.02	0.51	0.02	0.39	0.02	0.48	0.02
7. Edible Vegetables	1.14	1.54	1.67	2.07	1.20	1.09	1.53	0.49	1.83	0.65	1.47	3.62	1.29	2.62	1.33	1.88	1.28	1.14	1.65	1.26
8. Edible Fruits and Nuts	2.71	1.24	2.65	1.36	2.61	1.49	3.67	1.34	2.96	1.48	2.45	0.89	2.23	1.12	1.67	1.04	1.82	1.07	1.67	0.99
9. Coffee, Tea and Spices	13.15	0.19	10.12	0.23	10.45	0.51	9.41	0.36	8.95	0.46	7.82	0.90	6.92	1.04	6.02	0.77	5.45	0.71	4.56	0.67
10..Cereals	3.50	0.42	3.56	1.04	6.72	1.16	3.22	0.74	3.09	0.03	3.85	0.00	5.25	0.00	4.33	0.00	4.73	0.00	3.52	0.01
11. Products of the Milling Industry	3.24	0.04	0.36	0.04	0.24	0.39	0.17	0.44	1.04	0.30	1.22	0.17	1.42	0.08	1.68	0.09	0.61	0.09	0.32	0.08
12. Oil Seeds	1.97	0.08	2.32	0.08	1.57	0.13	2.03	0.16	2.33	0.16	1.92	0.13	1.32	0.18	1.80	0.15	1.30	0.13	1.33	0.15
13. Lac, Gums and Resins	15.86	1.47	20.13	1.51	22.70	1.21	22.05	1.22	17.27	1.22	14.59	1.39	12.35	1.15	10.57	1.11	11.67	1.14	11.65	1.00
14. Vegetable Products N.E.S.	7.01	0.30	5.94	0.31	7.26	0.48	6.70	0.84	7.15	0.33	5.71	0.30	4.76	0.36	4.42	0.32	5.57	0.35	4.66	0.39
3. Animal and Vegetable Fats	**1.51**	**5.59**	**0.99**	**4.55**	**0.97**	**10.08**	**1.60**	**9.85**	**1.66**	**9.51**	**1.22**	**9.50**	**0.73**	**8.15**	**0.77**	**7.79**	**0.94**	**5.47**	**0.69**	**4.17**
15. Animal &Vegetable Fats & Oils	1.51	5.59	0.99	4.55	0.97	10.08	1.60	9.85	1.66	9.51	1.22	9.50	0.73	8.15	0.77	7.79	0.94	5.47	0.69	4.17
4. Prepared Foodstuffs	**1.50**	**0.11**	**1.31**	**0.20**	**0.81**	**0.30**	**0.73**	**0.24**	**0.86**	**0.11**	**1.02**	**0.12**	**0.75**	**0.10**	**0.85**	**0.09**	**0.63**	**0.20**	**0.78**	**0.15**
16. Preparation of Meat or Fish	0.09	0.00	0.04	0.00	0.03	0.00	0.09	0.00	0.04	0.00	0.06	0.01	0.16	0.00	0.52	0.00	0.53	0.00	0.60	0.01
17. Sugar and Confectionery	3.44	0.06	0.74	1.09	0.13	2.26	0.17	1.97	1.21	0.15	3.27	0.14	2.92	0.11	1.88	0.16	0.31	1.19	0.70	0.50
18. Cocoa and it's Preparations	0.03	0.11	0.03	0.08	0.03	0.10	0.04	0.08	0.04	0.10	0.03	0.10	0.02	0.10	0.03	0.06	0.03	0.08	0.03	0.08
19. Preparations of Cereals	0.27	0.23	0.30	0.23	0.25	0.08	0.28	0.07	0.33	0.09	0.36	0.12	0.36	0.13	0.32	0.08	0.33	0.08	0.39	0.07
20. Preparations of Vegetables	0.25	0.00	0.28	0.01	0.30	0.03	0.29	0.04	0.47	0.05	0.41	0.07	0.34	0.07	0.37	0.06	0.34	0.05	0.47	0.05
21. Misc. Edible Preparations	0.88	0.47	1.19	0.47	1.17	0.40	0.90	0.27	1.03	0.39	1.07	0.38	0.74	0.17	0.67	0.06	0.52	0.05	0.56	0.05
22. Beverages & Spirits	0.23	0.03	0.08	0.07	0.07	0.05	0.07	0.04	0.14	0.05	0.10	0.04	0.07	0.05	0.06	0.06	0.06	0.25	0.09	0.25

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Contd… **Appendix Table A.1:** Index of Revealed Comparative Advantage in India's Exports and Imports

Chapter	1996		1997		1998		1999		2000		2001		2002		2003		2004		2005	
	Exp	Imp	Exp	Imp	Exp	Imp	Exp	Imp	Exp	Imp	Exp	Imp	Exp	Imp	Exp	Imp	Exp	Imp	Exp	Imp
23. Residues and Waste	7.32	0.18	6.20	0.11	3.67	0.19	3.08	0.15	3.23	0.17	3.20	0.22	1.68	0.26	3.30	0.27	2.66	0.21	3.63	0.21
24. Tobacco	1.26	0.04	1.69	0.02	1.19	0.05	1.57	0.02	1.21	0.03	1.09	0.02	1.21	0.04	1.24	0.05	1.27	0.08	1.15	0.05
5. Mineral Products	**0.75**	**3.38**	**0.51**	**2.78**	**0.46**	**2.96**	**0.31**	**3.82**	**0.63**	**3.24**	**0.75**	**2.94**	**0.89**	**3.21**	**0.90**	**2.65**	**1.33**	**2.62**	**1.23**	**2.33**
25. Paltering Materials	2.86	2.48	2.24	2.50	2.21	2.69	3.21	2.68	3.90	2.73	3.84	2.15	3.66	2.11	3.69	1.59	3.83	1.60	3.48	1.62
26. Ores, Slag and Ash	5.79	0.76	3.67	0.61	3.15	0.98	2.52	1.22	2.67	1.17	3.04	1.75	4.92	1.55	5.04	1.26	8.49	1.31	6.29	1.22
27. Mineral fuels & Oils	0.31	3.60	0.19	2.94	0.09	3.13	0.04	4.04	0.45	3.35	0.56	3.02	0.60	3.33	0.63	2.75	0.88	2.73	0.91	2.42
6 Products of Chemical and Allied Industries	**1.05**	**1.51**	**1.20**	**1.59**	**1.11**	**1.49**	**1.18**	**1.32**	**1.24**	**1.09**	**1.18**	**1.11**	**1.16**	**0.93**	**1.13**	**0.93**	**1.07**	**0.87**	**1.17**	**0.89**
28. Inorganic Chemicals	1.05	3.07	0.87	3.75	0.72	4.04	0.70	3.72	0.84	3.02	0.93	3.17	1.25	2.67	1.09	2.36	1.21	2.16	1.16	2.18
29. Organic Chemicals	1.18	2.04	1.45	1.92	1.42	1.56	1.53	1.34	1.61	1.22	1.51	1.30	1.55	1.31	1.64	1.43	1.57	1.33	1.77	1.25
30. Pharmaceutical Products	1.41	0.14	1.64	0.23	1.37	0.22	1.36	0.17	1.36	0.20	1.20	0.17	1.09	0.16	0.98	0.12	0.93	0.10	0.92	0.11
31. Fertilizers	0.27	5.16	0.07	6.38	0.07	6.28	0.03	7.33	0.09	3.27	0.15	3.10	0.03	2.08	0.05	2.20	0.07	2.68	0.05	3.53
32. Dyes & Pigments	1.94	0.77	2.15	0.72	1.77	0.74	1.90	0.65	1.99	0.68	2.02	0.82	1.93	0.78	1.78	0.79	1.42	0.69	1.57	0.68
33. Essential Oils	0.76	0.15	0.81	0.21	0.82	0.23	0.81	0.29	0.93	0.33	0.87	0.37	0.71	0.31	0.75	0.21	0.55	0.20	0.69	0.19
34. Washing Agents	0.31	0.61	0.29	0.68	0.23	0.67	0.26	0.63	0.27	0.74	0.41	0.64	0.37	0.52	0.30	0.53	0.26	0.43	0.34	0.42
35. Albuminoidal Substances	0.29	0.27	0.22	0.40	0.34	0.38	0.49	0.34	0.73	0.40	0.67	0.37	0.66	0.39	0.62	0.43	0.72	0.38	0.85	0.40
36. Explosives	1.68	0.09	1.54	0.12	0.88	0.08	1.01	0.08	1.21	0.22	1.13	0.22	1.07	0.22	0.91	0.13	1.15	0.18	1.36	0.14
37. Photographic Goods	0.14	1.09	0.27	1.18	0.35	1.26	0.36	1.05	0.29	1.30	0.21	1.52	0.17	1.26	0.13	1.25	0.14	0.96	0.13	0.86
38. Misc. Chemical Products	0.73	0.98	0.97	1.07	0.93	1.27	1.05	1.01	1.08	0.87	1.04	1.06	0.94	0.89	0.92	0.96	0.88	0.85	1.14	0.83
7. Plastic and Rubber Articles Thereof	**0.51**	**0.69**	**0.05**	**0.60**	**0.45**	**0.58**	**0.48**	**0.51**	**0.60**	**0.46**	**0.66**	**0.52**	**0.71**	**0.48**	**0.74**	**0.51**	**0.08**	**0.48**	**0.72**	**0.51**
39. Plastics. & it's Articles	0.36	0.70	0.35	0.58	0.31	0.56	0.37	0.50	0.51	0.42	0.58	0.49	0.61	0.46	0.65	0.48	0.77	0.45	0.63	0.52
40. Rubber & its Articles	0.98	0.66	0.98	0.67	0.88	0.64	0.80	0.53	0.90	0.59	0.96	0.63	1.06	0.56	1.05	0.61	0.90	0.60	1.00	0.49

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Contd… **Appendix Table A.1:** Index of Revealed Comparative Advantage in India's Exports and Imports

Chapter	1996		1997		1998		1999		2000		2001		2002		2003		2004		2005	
	Exp	Imp	Exp	Imp	Exp	Imp	Exp	Imp	Exp	Imp	Exp	Imp	Exp	Imp	Exp	Imp	Exp	Imp	Exp	Imp
8. Raw Hides and Skin	**3.32**	**0.36**	**3.75**	**0.39**	**4.18**	**0.44**	**3.74**	**0.39**	**3.94**	**0.49**	**3.57**	**0.50**	**3.07**	**0.41**	**3.03**	**0.39**	**2.7**	**0.36**	**2.57**	**0.33**
41. Raw Hides & Skin	2.20	0.82	2.13	0.93	2.28	1.07	2.06	1.01	2.56	1.18	2.82	1.16	2.78	0.96	2.64	0.92	2.47	0.86	2.42	0.81
42. Articles of Leather	5.10	0.02	6.05	0.01	6.71	0.01	5.66	0.02	5.73	0.04	4.82	0.03	3.86	0.03	3.90	0.04	3.46	0.05	3.25	0.06
43. Fur skins & Artificial Fur	0.00	0.19	0.00	0.08	0.01	0.08	0.00	0.06	0.01	0.04	0.01	0.06	0.03	0.09	0.01	0.06	0.01	0.04	0.00	0.05
9. Wood and Articles of Wood	**0.10**	**0.48**	**0.07**	**0.74**	**0.06**	**0.74**	**0.06**	**0.69**	**0.07**	**0.8**	**0.07**	**0.91**	**0.08**	**0.56**	**0.09**	**0.79**	**0.09**	**0.71**	**0.10**	**0.6**
44. Wood & its Articles	0.10	0.49	0.07	0.76	0.06	0.76	0.06	0.71	0.07	0.83	0.07	0.94	0.08	0.58	0.09	0.82	0.09	0.73	0.10	0.62
45. Cork & it's Articles	0.02	0.23	0.03	0.24	0.02	0.20	0.20	0.16	0.14	0.16	0.04	0.13	0.03	0.13	0.04	0.10	0.06	0.09	0.07	0.11
46. Manufactures of Straw	0.09	0.00	0.31	0.00	0.28	0.00	0.22	0.00	0.16	0.02	0.19	0.02	0.32	0.02	0.17	0.02	0.17	0.02	0.13	0.02
10. Pulp of Wood	**0.15**	**0.78**	**0.13**	**0.88**	**0.14**	**0.80**	**0.17**	**0.66**	**0.22**	**0.74**	**0.23**	**0.76**	**0.25**	**0.67**	**0.24**	**0.73**	**0.25**	**0.64**	**0.27**	**0.65**
47. Pulp of Wood	0.01	1.45	0.01	1.91	0.01	1.68	0.00	1.46	0.01	1.30	0.01	1.62	0.00	1.68	0.00	1.61	0.01	1.39	0.00	1.32
48. Paper & Paperboard	0.15	0.70	0.12	0.69	0.12	0.62	0.17	0.50	0.24	0.54	0.26	0.51	0.28	0.43	0.26	0.51	0.26	0.42	0.29	0.45
49. Printed Material	0.25	0.47	0.22	0.80	0.28	0.88	0.29	0.64	0.33	0.95	0.29	1.06	0.30	0.81	0.35	0.92	0.36	0.89	0.38	0.89
11. Textiles	**4.21**	**0.30**	**4.19**	**0.31**	**4.37**	**0.32**	**4.54**	**0.37**	**4.65**	**0.40**	**4.19**	**0.50**	**3.89**	**0.45**	**3.63**	**0.46**	**3.12**	**0.38**	**3.54**	**0.38**
50. Silk	5.88	3.69	8.56	3.46	11.22	4.63	14.42	6.16	15.38	6.93	15.04	10.13	15.29	11.13	16.60	12.06	13.59	10.46	11.61	9.91
51. Wool	0.94	1.89	1.06	1.76	0.93	1.46	0.59	1.30	0.63	1.17	0.49	1.49	0.58	1.87	0.54	1.97	0.54	1.49	0.59	1.47
52. Cotton	12.51	0.14	12.27	0.25	10.12	0.61	10.76	1.16	10.32	1.12	8.51	1.74	7.78	1.03	6.70	1.19	4.98	0.80	6.35	0.74
53. Other Vegetable Fibres	7.53	1.52	8.93	1.17	6.50	1.90	5.30	1.95	6.71	1.55	4.93	1.92	4.79	2.44	4.46	1.89	4.82	1.49	4.57	2.01
54. Man-Made Filaments	1.67	0.39	1.81	0.38	1.65	0.53	2.03	0.78	2.46	0.82	2.87	1.14	3.12	1.28	3.26	1.09	3.04	1.00	2.58	0.98
55. Man-Made Staple Fibres	1.80	0.80	2.27	0.86	2.29	0.59	2.56	0.38	2.98	0.48	2.96	0.48	3.50	0.60	3.69	0.51	3.29	0.48	3.13	0.46
56. Nonwovens	0.43	0.47	0.49	0.48	0.67	0.47	0.88	0.34	0.75	0.38	0.67	0.43	0.62	0.39	0.55	0.45	0.43	0.39	0.60	0.43
57. Carpets	10.46	0.02	8.73	0.03	10.86	0.09	11.53	0.09	10.31	0.14	9.90	0.16	8.88	0.15	8.58	0.20	7.87	0.21	9.29	0.22
58. Special Woven Fabrics	0.88	0.33	2.53	0.40	2.66	0.41	3.21	0.36	3.67	0.41	3.59	0.48	2.00	0.59	1.35	0.62	1.17	0.58	1.32	0.62
59. Coated Textile Fabrics	0.73	1.46	0.54	1.51	0.58	1.52	0.54	1.23	0.50	1.47	0.47	1.62	0.49	1.43	0.57	1.36	0.49	1.47	0.50	1.70
60. Knitted fabrics	0.80	0.09	0.54	0.13	0.48	0.19	0.35	0.39	0.35	0.50	0.31	0.43	0.28	0.35	0.36	0.31	0.25	0.32	0.26	0.46

Contd… **Appendix Table A.1:** Index of Revealed Comparative Advantage in India's Exports and Imports

Chapter	1996		1997		1998		1999		2000		2001		2002		2003		2004		2005	
	Exp	Imp	Exp	Imp	Exp	Imp	Exp	Imp	Exp	Imp	Exp	Imp	Exp	Imp	Exp	Imp	Exp	Imp	Exp	Imp
61. Apparel (Kintted)	2.53	0.00	2.15	0.00	2.85	0.00	3.18	0.01	3.14	0.01	3.24	0.01	3.30	0.01	3.01	0.01	2.36	0.01	2.65	0.01
62. Apparel (Non-Knitted)	4.61	0.00	4.74	0.00	5.46	0.01	5.22	0.01	5.39	0.02	4.39	0.03	3.72	0.01	3.31	0.02	3.00	0.01	3.72	0.02
63. Made-Up Textile Articles	7.55	0.32	8.52	0.38	7.95	0.27	8.28	0.32	9.28	0.52	8.64	0.37	7.80	0.29	7.17	0.43	6.84	0.24	6.82	0.23
12. Footwear, Headgear	**1.61**	**0.07**	**1.54**	**0.07**	**1.9**	**0.07**	**1.87**	**0.07**	**1.82**	**0.07**	**1.77**	**0.06**	**1.44**	**0.05**	**1.54**	**0.06**	**1.48**	**0.07**	**1.49**	**0.09**
64. Footwear	1.76	0.04	1.68	0.06	2.06	0.07	2.03	0.06	1.94	0.06	1.87	0.05	1.51	0.04	1.58	0.06	1.54	0.07	1.51	0.09
65. Headgear	0.16	0.00	0.21	0.01	0.31	0.01	0.22	0.01	0.26	0.01	0.25	0.01	0.24	0.01	0.24	0.02	0.15	0.02	0.21	0.03
66. Umbrella.	0.05	0.95	0.10	0.61	0.09	0.45	0.02	0.55	0.06	0.61	0.06	0.49	0.04	0.38	0.10	0.18	0.09	0.27	0.10	0.29
67. Feather and its Articles	0.88	0.01	0.82	0.01	1.65	0.01	1.74	0.04	2.30	0.06	2.53	0.08	2.27	0.06	3.03	0.05	3.01	0.06	3.44	0.07
13. Articles of Stone, Plaster and Cement	**0.72**	**0.29**	**0.76**	**0.33**	**0.73**	**0.36**	**0.87**	**0.30**	**1.06**	**0.34**	**1.02**	**0.42**	**1.02**	**0.36**	**1.01**	**0.40**	**0.78**	**0.42**	**0.92**	**0.44**
68. Articles of Lime, Plaster	1.90	0.21	2.10	0.23	1.94	0.25	2.20	0.19	2.58	0.26	2.30	0.28	2.30	0.29	2.32	0.35	1.73	0.35	2.20	0.33
69. Ceramic products	0.27	0.25	0.26	0.35	0.30	0.33	0.32	0.26	0.48	0.29	0.55	0.37	0.56	0.38	0.49	0.42	0.36	0.51	0.39	0.56
70. Glass and Glassware	0.33	0.36	0.32	0.36	0.30	0.43	0.47	0.40	0.61	0.43	0.62	0.53	0.63	0.38	0.63	0.41	0.51	0.40	0.49	0.44
14. Natural and Cultured Pearls	**7.49**	**5.12**	**7.89**	**7.74**	**9.02**	**10.67**	**10.85**	**9.95**	**8.87**	**9.23**	**9.11**	**9.72**	**8.99**	**8.70**	**8.62**	**9.76**	**9.15**	**10.00**	**7.76**	**7.07**
71. Precious Stones	7.49	5.12	7.89	7.74	9.02	10.67	10.85	9.95	8.87	9.23	9.11	9.72	8.99	8.70	8.62	9.76	9.15	10.00	7.76	7.07
15. Base Metals	**0.85**	**1.31**	**0.90**	**1.17**	**0.77**	**0.90**	**0.99**	**0.78**	**1.10**	**0.68**	**1.06**	**0.79**	**1.28**	**0.69**	**1.36**	**0.77**	**1.39**	**0.76**	**1.24**	**0.89**
72. Iron & Steel	1.15	1.69	1.23	1.53	0.89	1.12	1.28	1.13	1.31	0.92	1.15	1.10	1.84	0.89	1.83	1.00	1.79	1.05	1.33	1.29
73. Articles of Iron & Steel	0.92	0.75	1.06	0.81	1.13	0.67	1.35	0.44	1.65	0.43	1.55	0.46	1.45	0.47	1.58	0.54	1.70	0.50	1.61	0.53
74. Copper and Articles	0.34	2.76	0.29	2.22	0.38	1.43	0.38	1.10	0.57	0.72	0.80	0.86	1.33	0.64	1.63	0.78	1.65	0.71	1.95	0.83
75. Nickel and Articles	0.10	1.40	0.10	1.68	0.08	1.37	0.08	1.32	0.03	1.43	0.09	2.21	0.05	2.20	0.07	1.79	0.05	1.18	0.10	0.96
76. Aluminium Articles	0.60	0.80	0.67	0.47	0.38	0.53	0.63	0.41	0.73	0.43	0.74	0.57	0.68	0.48	0.61	0.47	0.60	0.41	0.56	0.55
78. Lead and Articles	0.27	2.42	0.25	2.68	0.07	3.68	0.07	2.88	0.10	2.97	0.13	3.79	0.10	3.97	0.27	5.46	0.37	4.66	0.53	3.82
79. Zinc and Articles	0.16	2.95	0.21	2.68	0.18	2.29	0.03	2.05	0.14	1.88	0.10	2.36	0.25	2.05	0.61	2.40	0.51	1.83	0.54	2.65
80. Tin and Articles	2.50	2.81	1.21	2.16	0.67	1.53	0.95	1.37	1.14	1.50	0.59	1.80	1.01	1.32	0.81	1.13	0.29	0.86	0.74	0.83
81. Other Base Metals	0.15	1.16	0.18	1.05	0.23	0.91	0.14	0.75	0.11	0.83	0.13	0.90	0.13	0.90	0.17	1.12	0.14	0.70	0.22	0.66
82. Tools & Implements	1.01	0.55	1.02	0.59	1.00	0.68	1.10	0.74	1.22	0.53	1.15	0.45	1.06	0.47	1.16	0.47	1.15	0.50	1.28	0.54
83. Misc. Articles of Base Metals	0.59	0.21	0.64	0.21	0.62	0.21	0.83	0.24	0.75	0.21	0.80	0.21	0.61	0.21	0.70	0.23	0.54	0.25	0.57	0.25

Contd… **Appendix Table A.1:** Index of Revealed Comparative Advantage in India's Exports and Imports

16. Mechanical Appliances	**0.20**	**0.58**	**0.20**	**0.57**	**0.18**	**0.51**	**0.17**	**0.42**	**0.20**	**0.45**	**0.22**	**0.5**	**0.21**	**0.58**	**0.24**	**0.61**	**0.22**	**0.59**	**0.24**	**0.63**
84. Machinery and Appliances	0.20	0.78	0.22	0.74	0.19	0.63	0.17	0.51	0.21	0.57	0.24	0.57	0.23	0.59	0.27	0.63	0.27	0.62	0.29	0.69
85. Electrical Equipment	0.20	0.35	0.19	0.38	0.18	0.37	0.16	0.33	0.18	0.34	0.20	0.42	0.19	0.58	0.21	0.60	0.17	0.56	0.19	0.56
17. Vehicles, Aircraft and Transport Equipment	**0.22**	**0.36**	**0.21**	**0.24**	**0.17**	**0.17**	**0.17**	**0.19**	**0.20**	**0.17**	**0.19**	**0.20**	**0.20**	**0.27**	**0.24**	**0.36**	**0.28**	**0.35**	**0.36**	**0.57**
86. Railway Locomotives & Parts	0.25	2.64	0.19	0.48	0.12	1.29	0.07	0.41	0.12	0.53	0.36	0.21	0.19	0.31	0.12	0.84	0.09	0.63	0.12	0.58
87. Vehicles & Parts	0.26	0.16	0.24	0.11	0.20	0.08	0.19	0.09	0.22	0.07	0.21	0.06	0.21	0.06	0.27	0.07	0.30	0.08	0.34	0.08
88. Aircraft, Spacecraft & Parts	0.01	1.16	0.07	0.67	0.02	0.29	0.04	0.12	0.08	0.39	0.10	0.35	0.09	1.19	0.08	1.26	0.04	1.25	0.05	3.03
89. Ships & Boats	0.16	2.95	0.27	1.93	0.20	1.78	0.29	3.82	0.18	2.39	0.11	3.72	0.29	2.79	0.24	4.37	0.50	4.37	1.31	4.78
18. Optical, Photographic Precision Equipment	**0.12**	**0.47**	**0.13**	**0.62**	**0.14**	**0.69**	**0.18**	**0.58**	**0.20**	**0.58**	**0.22**	**0.67**	**0.23**	**0.65**	**0.24**	**0.58**	**0.22**	**0.52**	**0.21**	**0.53**
90. Precision Instruments	0.10	0.52	0.11	0.69	0.13	0.77	0.17	0.63	0.19	0.63	0.21	0.73	0.22	0.71	0.23	0.62	0.22	0.55	0.21	0.56
91. Clocks & Watches	0.22	0.21	0.18	0.15	0.20	0.18	0.27	0.23	0.34	0.20	0.34	0.18	0.32	0.17	0.39	0.19	0.29	0.18	0.17	0.19
92. Musical Instruments	0.39	0.15	0.35	0.10	0.39	0.12	0.31	0.12	0.27	0.08	0.25	0.08	0.20	0.05	0.22	0.09	0.19	0.11	0.20	0.14
19. Arms and Ammunitions	**0.03**	**0.02**	**0.11**	**0.03**	**0.01**	**0.03**	**0.02**	**0.04**	**0.06**	**0.02**	**0.20**	**0.03**	**0.05**	**0.07**	**0.08**	**0.07**	**0.03**	**0.04**	**0.04**	**0.01**
93. Arms & Ammunitions	0.03	0.02	0.11	0.03	0.01	0.03	0.02	0.04	0.06	0.02	0.20	0.03	0.05	0.07	0.08	0.07	0.03	0.04	0.04	0.01
20. Miscellaneous Manufactured Products	**0.22**	**0.07**	**0.22**	**0.09**	**0.21**	**0.09**	**0.22**	**0.09**	**0.23**	**0.11**	**0.24**	**0.11**	**0.22**	**0.12**	**0.27**	**0.13**	**0.29**	**0.13**	**0.29**	**0.15**
94. Furniture	0.04	0.04	0.05	0.05	0.05	0.04	0.07	0.04	0.09	0.06	0.10	0.07	0.11	0.08	0.17	0.10	0.24	0.11	0.23	0.13
95. Toys & Games	0.25	0.04	0.25	0.06	0.24	0.05	0.19	0.08	0.19	0.08	0.20	0.08	0.18	0.07	0.21	0.07	0.20	0.07	0.21	0.10
96. Misc. Manufactures	0.97	0.39	0.90	0.44	0.96	0.48	1.05	0.44	1.13	0.49	1.13	0.49	1.00	0.53	1.08	0.55	0.84	0.49	0.90	0.52
21. Works of Art	**0.03**	**0.01**	**0.04**	**0.00**	**0.04**	**0.00**	**0.04**	**0.00**	**0.03**	**0.00**	**0.04**	**0.01**	**0.06**	**0.01**	**5.25**	**0.01**	**3.04**	**0.01**	**2.95**	**0.07**
97. Works of Arts	0.03	0.01	0.04	0.00	0.04	0.00	0.04	0.00	0.03	0.00	0.04	0.01	0.06	0.01	5.25	0.01	3.04	0.01	2.95	0.07
No. of Sections with RCA>1	**9**	**5**	**8**	**5**	**7**	**4**	**8**	**4**	**10**	**4**	**11**	**4**	**9**	**3**	**10**	**3**	**10**	**3**	**10**	**3**
No. of Chapters with RCA>1	**38**	**26**	**38**	**27**	**35**	**28**	**39**	**27**	**44**	**23**	**42**	**27**	**43**	**26**	**41**	**26**	**37**	**24**	**39**	**20**

Appendix Table A.2: Top 25 Products Enjoying RCA in India's Exports as per the 6-Digit HS Classification (1996-2005)

Ranks	HS Code	1996 Description	RCA	HS Code	1997 Description	RCA
1	120730	Castor oil seeds	125.48	520535	Cotton yarn >85% multiple uncombed <125 dtex	129.71
2	530810	Coir yarn	123.34	530810	Coir yarn	128.47
3	520535	Cotton yarn >85% multiple uncombed <125 dtex	119.35	520521	Cotton yarn >85% single combed >714dtex	126.05
4	520521	Cotton yarn >85% single combed >714dtex	113.92	580124	Woven warp pile cotton	122.32
5	151530	Castor oil or fractions	113.00	120730	Castor oil seeds	119.74
6	130211	Opium sap	108.93	151530	Castor oil or fractions	113.78
7	80132	Cashew nuts, shelled	107.26	520790	Cotton yarn <85% cotton	111.24
8	410619	Goat or kid skin leather, tanned or retanned, nes	100.31	130211	Opium sap	110.84
9	520541	Cotton yarn >85% multiple combed >714 dtex	97.64	530720	Yarn of jute	108.07
10	630492	Furnishing articles	97.58	630492	Furnishing articles	106.91
11	520790	Cotton yarn <85% cotton	89.63	520541	Cotton yarn >85% multiple combed >714 dtex	101.84
12	230500	Ground-nut oil-cake and other solid residues	87.17	720120	Pig iron, non-alloy	99.32
13	91030	Turmeric	83.48	410619	Goat or kid skin leather	93.47
14	530720	Yarn of jute	83.24	531010	Woven fabric of jute	89.57
15	520515	Cotton yarn >85% single uncombed <125 dtex	82.98	91030	Turmeric	88.15
16	230220	Rice bran, sharps, other residues	82.64	230500	Ground-nut oil-cake	82.89
17	531010	Woven fabric of jute	81.26	80132	Cashew nuts, shelled	82.27
18	570220	Floor coverings of coconut fibres	80.25	721011	Flat rolled i/nas, coated with tin	82.10
19	50610	Ossein and bones treated with acid	79.48	420400	Articles of leather & composition	81.23
20	640320	Footwear, soles/uppers leather, strap instep & big toe	79.46	630510	Sacks & bags	80.93
21	420400	Articles of leather & composition for technical uses	78.25	294200	Organic compounds, nes	78.90
22	252530	Mica waste	78.14	252530	Mica waste	78.07
23	530710	Yarn of jute or textile bast fibres nes	77.35	730220	Sleepers, iron or steel	74.53
24	630510	Sacks & bags	76.77	640320	Footwear, soles/uppers leather, strap instep & big toe	74.03
25	521142	Denim cotton	72.98	530710	Yarn of jute or textile bast fibres	73.99

Contd … **Appendix Table A.2**: Top 25 Products Enjoying RCA in India's Exports as per the 6-Digit HS Classification (1996-2005)

Ranks	1998			1999		
	HS Code	Description	RCA	HS Code	Description	RCA
1	520535	Cotton yarn >85% multiple uncombed <125 dtex	137.82	520535	Cotton yarn >85% multiple uncombed <125 dtex, not ret.	130.31
2	530810	Coir yarn	135.86	722620	Flat rolled high speed steel <600mm wide	128.34
3	120730	Castor oil seeds	130.91	120730	Castor oil seeds	125.55
4	520521	Cotton yarn >85% single combed >714dtex	127.21	151530	Castor oil or fractions not chemically modified	122.60
5	151530	Castor oil or fractions	117.94	520521	Cotton yarn >85% single combed >714dtex, not retail	113.04
6	520790	Cotton yarn <85% cotton	117.68	91030	Turmeric	112.27
7	91030	Turmeric	116.58	630492	Furnishing articles	109.36
8	630492	Furnishing articles	112.35	580124	Woven warp pile cotton,	108.64
9	722620	Flat rolled high speed steel <600mm wide	108.83	530810	Coir yarn	106.34
10	410619	Goat or kid skin leather	100.67	520790	Cotton yarn <85%	102.00
11	530720	Yarn of jute	98.72	530720	Yarn of jute, textile bast fibre nes,	101.40
12	580124	Woven warp pile cotton	97.24	80132	Cashew nuts, shelled dri	100.93
13	570220	Floor coverings of coconut fibres	96.19	410619	Goat or kid skin leather	94.56
14	294200	Organic compounds, nes	95.04	520710	Cotton yarn (except sewing thread) >85% cotton, retail	94.43
15	252530	Mica waste	93.57	420400	Articles of leather & composition for technical uses	94.42
16	80132	Cashew nuts, shelled	92.03	294200	Organic compounds, nes	93.62
17	520541	Cotton yarn >85% multiple combed >714 dtex,	90.05	330122	Essential oils of jasmin	92.37
18	420400	Articles of leather & composition	89.05	722520	Flat rolled high speed steel width >600mm	90.48
19	531010	Woven fabric of jute/bast fibres	82.53	530710	Yarn of jute or textile bast fibres nes, single	85.97
20	520710	Cotton yarn >85% cotton, retail	81.57	531010	Woven fabric of jute/bast fibres, unbleached/bleached	80.51
21	580310	Cotton gauze > 30 cm wide	78.52	520921	Plain weave cotton, >85% >200g/m2, bleached	77.16
22	330122	Essential oils of jasmine	76.64	252530	Mica waste	76.86
23	510540	Coarse animal hair	76.57	130232	Mucilages & thickeners, from locust bean, guar seeds	72.55
24	130211	Opium sap	76.21	721011	Flat rolled i/nas, coated with tin, w >600mm, t >0.5mm	71.54
25	630510	Sacks & bags	75.83	570220	Floor coverings of coconut fibres (coir)	69.12

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Contd … **Appendix Table A.2**: Top 25 Products Enjoying RCA in India's Exports as per the 6-Digit HS Classification (1996-2005)

Ranks		2000			2001	
	HS Code	Description	RCA	HS Code	Description	RCA
1	120730	Castor oil seeds	116.24	580124	Woven warp pile cotton, epingle (uncut),except terry	114.07
2	520535	Cotton yarn >85% multiple uncombed <125 dtex, not ret.	115.67	120730	Castor oil seeds	110.34
3	580124	Woven warp pile cotton, epingle (uncut),except terry	113.60	530710	Yarn of jute or textile bast fibres nes, single	103.08
4	151530	Castor oil or fractions not chemically modified	107.87	151530	Castor oil or fractions not chemically modified	101.46
5	520521	Cotton yarn >85% single combed >714dtex, not retail	107.78	520521	Cotton yarn >85% single combed >714dtex, not retail	101.38
6	530710	Yarn of jute or textile bast fibres nes, single	104.79	630492	Furnishing articles nes, of cotton, not knit, crochet	100.92
7	530720	Yarn of jute, textile bast fibre nes, multiple, cabled	104.26	91030	Turmeric (curcuma)	97.68
8	630492	Furnishing articles nes, of cotton, not knit, crochet	103.23	520535	Cotton yarn >85% multiple uncombed <125 dtex, not ret.	92.01
9	530810	Coir yarn	100.68	530720	Yarn of jute, textile bast fibre nes, multiple, cabled	90.68
10	91030	Turmeric (curcuma)	100.36	520790	Cotton yarn (except sewing thread) <85% cotton, retail	88.91
11	722620	Flat rolled high speed steel <600mm wide	99.77	520710	Cotton yarn (except sewing thread) >85% cotton, retail	88.64
12	520790	Cotton yarn (except sewing thread) <85% cotton, retail	98.11	251621	Sandstone, crude or roughly trimmed	85.76
13	531010	Woven fabric of jute/bast fibres, unbleached/bleached	93.88	420400	Articles of leather & composition for technical uses	82.61
14	252530	Mica waste	93.77	410619	Goat or kid skin leather, tanned or retanned, nes	82.42
15	410619	Goat or kid skin leather, tanned or retanned, nes	93.28	294200	Organic compounds, nes	81.49
16	520710	Cotton yarn (except sewing thread) >85% cotton, retail	89.35	722520	Flat rolled high speed steel width >600mm	80.40
17	294200	Organic compounds, nes	84.57	570220	Floor coverings of coconut fibres (coir)	77.87
18	330122	Essential oils of jasmin	83.56	531010	Woven fabric of jute/bast fibres, unbleached/bleached	75.68
19	80132	Cashew nuts, shelled dri	83.31	80132	Cashew nuts, shelled dri	72.25
20	722520	Flat rolled high speed steel width >600mm	82.10	130211	Opium sap	71.92
21	510540	Coarse animal hair, carded or combed	81.77	520921	Plain weave cotton, >85% >200g/m2, bleached	66.33
22	580310	Cotton gauze > 30 cm wide	81.19	570259	Carpets of yarn nes, woven, not made up, nes	65.57
23	520921	Plain weave cotton, >85% >200g/m2, bleached	79.46	530810	Coir yarn	63.70
24	570220	Floor coverings of coconut fibres (coir)	78.73	252510	Mica in crude form, sheets and splittings	62.54
25	251621	Sandstone, crude or roughly trimmed	73.01	722620	Flat rolled high speed steel <600mm wide	61.22

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Contd … **Appendix Table A.2**: Top 25 Products Enjoying RCA in India's Exports as per the 6-Digit HS Classification (1996-2005)

Ranks	2002			2003		
	HS Code	Description	RCA	HS Code	Description	RCA
1	293970	Nicotine, salts, in bulk	115.40	722520	Flat rolled high speed steel width >600mm	104.32
2	290316	1,2-dichloropropane and dichlorobutanes	115.40	283670	Lead carbonate	99.86
3	293729	Adrenal cortical hormones nes, in bulk, derivatives	115.40	290344	Dichlorotetrafluorometha	96.02
4	290730	Phenol-alcohols	115.40	130211	Opium sap	93.56
5	530830	Paper yarn	115.40	91030	Turmeric (curcuma)	85.95
6	381720	Mixed alkylnaphthalenes, nes	114.43	151530	Castor oil or fractions not chemically modified	85.93
7	291817	Phenylglycolic acid, its salts & esters	111.96	970190	Collages, similar decorative plaques	84.66
8	681240	Asbestos woven or knit fabric	111.09	294200	Organic compounds, nes	81.38
9	681220	Asbestos yarn and thread	107.13	530720	Yarn of jute, textile bast fibre nes, multiple, cabled	79.56
10	150510	Wool grease, crude	105.31	570220	Floor coverings of coconut fibres (coir)	79.02
11	741510	Wood screws of copper and copper alloys	105.17	630492	Furnishing articles nes, of cotton, not knit, crochet	77.28
12	71110	Onions, provisionally preserved	104.84	251622	Sandstone, merely cut into blocks etc	75.77
13	911210	Clock, etc cases, of metal	104.82	530810	Coir yarn	75.65
14	110314	Rice groats or meal	102.22	520790	Cotton yarn (except sewing thread) <85% cotton, retail	75.48
15	410619	Goat or kid skin leather, tanned or retanned, nes	100.26	252530	Mica waste	74.89
16	722520	Flat rolled high speed steel width >600mm	99.53	520521	Cotton yarn >85% single combed >714dtex, not retail	69.94
17	730210	Sleepers (cross-ties), iron or steel	96.37	230500	Ground-nut oil-cake and other solid residues	68.17
18	91030	Turmeric (curcuma)	89.85	570259	Carpets of yarn nes, woven, not made up, nes	67.37
19	151530	Castor oil or fractions not chemically modified	89.17	520710	Cotton yarn (except sewing thread) >85% cotton, retail	66.28
20	282738	Barium chloride	86.16	520535	Cotton yarn >85% multiple uncombed <125 dtex, not ret.	60.56
21	130211	Opium sap	84.05	130110	Lac	59.64
22	630492	Furnishing articles nes, of cotton, not knit, crochet	83.71	670300	Worked human hair, wool or animal hair, for wig making	58.64
23	520521	Cotton yarn >85% single combed >714dtex, not retail	81.81	410612	Goat or kid skin leather, otherwise pre-tanned	57.22
24	580124	Woven warp pile cotton, epingle (uncut),except terry	81.31	262011	Ash or residues containing hard zinc spelter	55.97
25	530810	Coir yarn	80.19	531010	Woven fabric of jute/bast fibres, unbleached/bleached	55.81

Contd… **Appendix Table A.2**: Top 25 Products Enjoying RCA in India's Exports as per the 6-Digit HS Classification (1996-2005)

Ranks	2004			2005		
	HS Code	Description	RCA	HS Code	Description	RCA
1	270500	Coal gas, water gas, etc. (not gaseous hydrocarbons)	97.56	294200	Organic compounds, nes	76.83
2	722520	Flat rolled high speed steel width >600mm	95.96	570220	Floor coverings of coconut fibres (coir)	74.49
3	530720	Yarn of jute, textile bast fibre nes, multiple, cabled	86.85	531010	Woven fabric of jute/bast fibres, unbleached/bleached	73.87
4	151530	Castor oil or fractions not chemically modified	86.39	520521	Cotton yarn >85% single combed >714dtex, not retail	72.16
5	294200	Organic compounds, nes	81.08	290362	Hexachlorobenzene and DDT	71.73
6	570220	Floor coverings of coconut fibres (coir)	79.96	151530	Castor oil or fractions not chemically modified	71.69
7	290362	Hexachlorobenzene and DDT	79.30	530720	Yarn of jute, textile bast fibre nes, multiple, cabled	70.67
8	230500	Ground-nut oil-cake and other solid residues	79.17	270500	Coal gas, water gas, etc. (not gaseous hydrocarbons)	70.15
9	91030	Turmeric (curcuma)	78.76	230500	Ground-nut oil-cake and other solid residues	69.59
10	970190	Collages, similar decorative plaques	74.39	630492	Furnishing articles nes, of cotton, not knit, crochet	69.21
11	520790	Cotton yarn (except sewing thread) <85% cotton, retail	73.34	970190	Collages, similar decorative plaques	68.15
12	630492	Furnishing articles nes, of cotton, not knit, crochet	72.72	252530	Mica waste	68.02
13	251621	Sandstone, crude or roughly trimmed	71.29	91030	Turmeric (curcuma)	67.60
14	410612	Goat or kid skin leather, otherwise pre-tanned	69.68	520710	Cotton yarn (except sewing thread) >85% cotton, retail	63.07
15	251622	Sandstone, merely cut into blocks etc	68.36	251621	Sandstone, crude or roughly trimmed	63.03
16	520521	Cotton yarn >85% single combed >714dtex, not retail	67.30	251622	Sandstone, merely cut into blocks etc	61.89
17	260120	Roasted iron pyrites	66.94	520790	Cotton yarn (except sewing thread) <85% cotton, retail	61.56
18	252530	Mica waste	65.22	630510	Sacks & bags, packing, of jute or other bast fibres	61.54
19	262011	Ash or residues containing hard zinc spelter	61.20	530810	Coir yarn	61.44
20	290344	Dichlorotetrafluorometha	60.60	722520	Flat rolled high speed steel width >600mm	59.18
21	520710	Cotton yarn (except sewing thread) >85% cotton, retail	60.27	293941	Ephedrine and their salt	55.99
22	130211	Opium sap	59.28	570259	Carpets of yarn nes, woven, not made up, nes	54.31
23	531010	Woven fabric of jute/bast fibres, unbleached/bleached	55.18	262011	Ash or residues containing hard zinc spelter	52.35
24	130110	Lac	53.58	530710	Yarn of jute or textile bast fibres nes, single	52.01
25	530810	Coir yarn	53.40	852451	Recorded magnetic tapes,	50.67

Appendix Table A.3: SITC Codes of Goods in Different Categories

RIC		HO		PC		OTHERS	
011	322	111	696	335	735	001	745
012	325	112	697	511	737	034	749
016	333	122	699	512	741	035	811
017	342	273	746	513	742	036	896
022	343	533	747	514	743	037	898
023	344	551	748	515	744	062	899
024	345	553	761	516	751	073	961
025	411	554	762	522	752	081	--
041	421	611	763	523	759	091	--
042	422	612	764	524	771	098	--
043	431	613	775	525	772	211	--
044	641	621	781	532	773	212	--
045	667	625	782	541	774	222	--
046	681	629	783	542	776	223	--
047	682	642	784	562	778	231	--
048	683	651	785	571	792	232	--
054	684	652	786	572	871	244	--
056	685	653	791	573	872	245	--
057	686	654	793	574	873	246	--
058	687	656	812	575	874	264	--
059	689	657	813	581	881	265	--
061	971	658	821	582	882	266	--
071	--	659	831	583	883	267	--
072	--	661	841	591	884	269	--
074	--	662	842	593	885	277	--
075	--	664	843	597	891	278	--
121	--	665	844	711	--	282	--
247	--	666	845	712	--	286	--
248	--	671	846	713	--	288	--
251	--	672	848	714	--	291	--
261	--	673	851	716	--	292	--
263	--	674	892	718	--	334	--
268	--	675	893	721	--	351	--
272	--	676	894	722	--	531	--
274	--	677	895	723	--	579	--
281	--	678	897	724	--	592	--
283	--	679	--	725	--	598	--
284	--	691	--	726	--	633	--
285	--	692	--	727	--	634	--
287	--	693	--	728	--	635	--
289	--	694	--	731	--	655	--
321	--	695	--	733	--	663	--