Export Competitiveness and Comparative Advantage of Pakistan's Non-agricultural Production Sectors: Trends and Analysis

AMIR MAHMOOD

1. INTRODUCTION

The composition and volume of global trade has witnessed significant changes during the last two decades. Trade liberalisation, rising income and technological advancements, have been the main determinants. Against the backdrop of a rapidly changing global export pattern, and the success of Southeast Asian economies, there is a strong case for Pakistan to pursue an export-led growth strategy that leads ultimately to improve living standards. However, given Pakistan's past macroeconomic performance and its current export structure, such a turnaround would require a major structural transformation of the economy and changes in its export specialisation patterns.

In the context of on-going multilateral trade negotiations, this paper analyses the comparative advantage/disadvantage of Pakistan's non-agriculture production sectors, by using the revealed comparative advantage (RCA) approach at HS 4-digit levels. This is to provide a unique understanding of challenges and opportunities that Pakistan's non-agricultural sector faces, as it becomes rapidly integrated into global markets.

It is important to note that supply and demand side conditions play a crucial role in changing comparative advantage profile of a country. The objective of this study is to identify those non-agricultural export categories, in which Pakistan is losing, gaining or maintaining its comparative advantage. Following the "stages of comparative advantages" thesis by Balassa, an attempt is made to examine the extent to which Pakistan's leading non-agriculture product lines have witnessed a shift in their comparative advantage away from traditional labour-intensive production to export of technology based production activities.[1] This insight is important to assess

Amir Mahmood is Acting Head, Newcastle Graduate School of Business, University of Newcastle, NSW 2300, Australia.
[1]Balassa (1965, 1979).

whether Pakistan has succeeded in moving from low value-added to technology-intensive high-value manufacturing.

A comprehensive analysis that examines the relative competitive strengths and weaknesses of Pakistan's non-agricultural exports is helpful in identifying product lines that require special attention in trade and industry policy formulation. Such an investigation has the potential to assist policy-makers and trade policy strategists to weigh the benefits or costs of trade liberalisation and the implications of export diversification. The study addresses this question by dividing key non-agriculture product lines into six distinct groups, based upon their competitive position in Pakistan's export structure.

The paper is organised into six sections. Section 2 highlights the top 25 RCA ranking product lines based upon their technological classification. Section 3 examines the extent to which Pakistan's export specialisation in the non-agricultural sector has shifted away from labour and natural resource intensive products to high value-added knowledge and technology intensive products during 1990–2000. To assist Pakistan trade and industry policy formulation, Section 4 provides an in-depth investigation of the comparative advantage/disadvantage of Pakistan's non-agriculture production sectors. This outcome is achieved, by dividing HS 4-digit product lines into six distinct groups, based upon their competitive position in Pakistan's export structure. Section 5 analyses the relative performance of each non-agricultural production sector to gauge its relative position, within Pakistan's revealed comparative advantage spectrum. Section 6 provides conclusions drawn from the study and discusses implications for Pakistan's export structure in the context of changing world demand patterns. To provide future directions, this section emphasises necessary conditions to achieve international competitiveness at both the macro and micro level.

2. METHODOLOGY

A country's comparative advantage, at a given point in time, depends on its pre-trade relative prices that rely on relative production costs. Data on these variables, in the presence of factor and product market distortions, are difficult to generate. We, however, can approximate the comparative advantage concept in an indirect way by using post-trade data that manifests post-trade relative prices and prevailing factors and product market distortions. The revealed comparative advantage approach is one of the few formal methodologies to measure a country's comparative advantage and disadvantage in a particular industry.

Revealed comparative advantage is usually used to investigate shifts over time in comparative advantage of industries. This approach, however, is not meant to capture the potential future comparative advantage of a country, as RCA indices are based on actual trade data. However, RCA indices estimated across time can point to the general direction in which the pattern of comparative advantage is moving.[2]

[2]Muel (1996).

The RCA index compares a country's world export share of a commodity, with the country's total export share in total world exports. If a country's share of world exports of a particular commodity is greater than its share of world exports of all commodities, the RCA will be greater than one. A country therefore has a revealed comparative advantage only in those products for which its market share of world exports is above its average share of world exports. In other words, the country is a relatively heavy exporter of a product under consideration and possesses a revealed comparative advantage in that product line.[3]

The RCA index, therefore, categorises industries according to their ability to compete within a specific market. A high value of RCA index would indicate relative inter-industrial export specialisation. The RCAI of country *i* in industry *a*, $(RCAI^i)_a$, can be presented as:

$$(RCAI^i)_a = (X^i_a / X^w_a) / (X^i_t / X^w_t) \quad \ldots \qquad \ldots \qquad \ldots \qquad \ldots \qquad (1)$$

Where,

X^i_a = value of exports of commodity *a* by country *i*;

X^i_t = value of total exports by country *i*;

X^w_a = value of world exports of commodity *a*; and

X^w_t = value of total world exports.

Accordingly, country *i* exhibits revealed comparative advantage or has a greater specialisation in export of product *a*, than the world as whole, if $(RCAI^i)_a$ is greater than one. In general, the higher the RCA index of a product, the greater a country's comparative advantage in that product line.

It is important to note that RCA indices are quite robust and insensitive to changes in growth and business cycle differences across trading partners. These changes influence the numerator and denominator in the RCA formula. Similarly, the indices are not sensitive to the height of market access barriers, as long as these barriers are across the board, against all exporters of a particular product line. Yet, they are sensitive to discriminatory market access barriers against exports of a particular country.[4]

The RCA indices can also be used to gain further insight to target those industries that currently exhibit revealed comparative disadvantage but have potential to achieve export competitiveness over time. This can be achieved by categorising a country's export structure, based upon HS 4-digit product lines into

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[3]For more on the DRC methodology, [see for example, Balassa (1965, 1979); Lee (1986); Reza (1983); Balassa and Noland (1989); Peterson (1988); Craft (1989); Jean-Michel (1998); Hoekman and Djankov (1997); Ray (1999); Richardson and Zhang (1999); Lee (1995); Maule (1996); Sheehan, *et al.* (1994) and Jones, *et al.* (1993); Bender and Li (2001)].

[4]Richardson and Zhang (1999).

six broader product groups based upon their relative RCA profile. In the order of their relative comparative advantage position, these groups are:[5]

(a) Competitively Positioned Product Lines

These product lines have RCA's greater than unity and show consistent improvement over time owing to favourable external and internal conditions. The decision criteria used to select products under this category is:

- RCA index of a product line, "*i*", is > 1 in 2000, i.e., ; $(RCA^i)_{2000} > 1$.
- Difference between RCA index of product line "*i*" in 2000 and its last three years average RCA's is positive, i.e., $(RCA^i)_{2000} - (RCA^i)_{\text{Average (1997–1999)}} > 0$.

(b) Threatened Products Lines

These product lines have RCA's greater than unity, but the indices are declining over time due to an adverse domestic environment and/or global competitive pressures. The decision principle to select products under this group is as follows:

- RCA of a product line, "*i*", is > 1 in 2000, i.e. ; $(RCA^i)_{2000} > 1$.
- Difference between RCA of product line "*i*" in 2000 and its last three years average RCA's is negative, i.e., $(RCA^i)_{2000} - (RCA^i)_{\text{Average (1999–1997)}} < 0$.

(c) Emerging Products: Tier I and Tier II

These product lines exhibit RCA indices that are less than unity, (revealed comparative disadvantage) but their relative global position in the exports market is improving. These product lines signal promise for future export potential. To provide a meaningful analysis, the "Emerging Product Group" is sub-divided into two groups in terms of their RCA position within this broader group. The selection criterion used to group these product lines is given as:

Tier I

- RCA for a product line, "*i*", is < 1 but equal to or > 0.5 in 2000, i.e., ; $(RCA^i)_{2000} < 1$ and equal to or > 0.5.
- Difference between RCA of product line "*i*" in 2000 and its last three years average RCA is positive, i.e., $(RCA^i)_{2000} - (RCA^i)_{\text{Average (1997–1999)}} > 0$.

Tier II

- RCA of a product line, "*i*", is < 0.5 in 2000, i.e., ; $(RCA^i)_{2000} < 0.5$

[5]The central idea for this classification comes from Standard and Poor's (1997).

- Difference between RCA of product line "i" in 2000 and its last three years average RCA is positive, i.e., $(RCA^i)_{2000} - (RCA^i)_{\text{Average (1997–1999)}} > 0$.

(d) Weakly Positioned Products: Tier 1 and Tier II

RCA indices of these product lines are less than unity and declining due to non-conducive global and domestic factors. The "Weakly Positioned Product Group" is sub-divided into two groups based on their relative level of revealed comparative disadvantage. The selection criterion used to group these products is as follows:

Tier I

- RCA of a product line, "i", is < 1 but equal to or > 0.5 in 2000, i.e. ; $(RCA^i)_{2000} < 1$ and equal to or > 0.5.
- Difference between RCA of product line "i" in 2000 and its last three years average RCA is negative, i.e., $(RCA^i)_{2000} - (RCA^i)_{\text{Average (1997–1999)}} < 0$.

Tier II

- RCA of a product line, "i", is < 0.5 in 2000, i.e., ; $(RCA^i)_{2000} < 0.5$.
- Difference between RCA of product line "i" in 2000 and its last three years average RCA is negative, i.e., $(RCA^i)_{2000} - (RCA^i)_{\text{Average (1997–1999)}} < 0$.

The above framework has two advantages. First, it identifies the strengths and weaknesses of Pakistan's exports' profile as at 2000. Second, it allows an evaluation of the degree of competitiveness of Pakistan's exports in the world markets.

The data set used in this study is exports data (1990–2000) at HS 4-digit drawn from International Trade Statistics compiled by the Australian National University (ANU). The data set comprises 16 product categories made up of 978 product lines.

3. SHIFTING COMPARATIVE ADVANTAGE OF PAKISTAN'S NON-AGRICULTURAL PRODUCTS: THE LEADING PRODUCTS

The pattern of Pakistan's export specialisation in non-agricultural production sectors highlights the failure of Pakistani manufacturing to move into relatively technological, scale-based, and differentiated areas. These trends are highlighted in Table 1 that lists the top 25 RCA ranking product lines according to their technological orientation and relative factor intensities such as: (a) Resource-Intensive; (b) Scale-Intensive/Technological Intensive; (c) Labour-Intensive; and (d) Differentiation-based.[6]

Analysis of the top 25 product categories leads to interesting observations. The list is dominated by labour-intensive production activities operating at the lower

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[6]For more on technological and product classification, see Lall (1998) and Krause (1984).

Table 1

Technological Classification of Top 25 RCA Ranking Non-agricultural Products

Rank	HS Code and Product Category	RCA (2000)	Technological Classification
1	5205 Cotton yarn	72.32	Labour-Intensive
2	4106 Leather of goat or kidskin	59.47	Resource-Intensive
3	5513 Woven fabric of synthetic staple fibres	57.26	Labour-Intensive
4	5701 Carpets and other textile floor coverings	54.6	Labour-Intensive
5	5202 Cotton waste, including yarn and garneted stock	53.16	Labour -Intensive
6	6302 Bed linen, table linen, toilet linen and kitchen linen	50.61	Labour-Intensive
7	6303 Curtains and interior blinds; curtain and bed valances drapes	32.44	Labour-Intensive
8	5802 Woven terry fabrics and towelling, tufted textile fabric	29.19	Labour-Intensive
9	4203 Articles of apparel and clothing accessories made of leather or of composition leather gloves, jackets, coats, belts	27.27	Labour-Intensive
10	5210 Woven cotton fabrics, less than 85 percent cotton, mixed with or solely manmade fibres	26.94	Labour-Intensive
11	5206 Cotton yarn (not sewing thread) less than 85 percent cotton	23.99	Labour-Intensive
12	8445 Machines for preparing textile fibres and yarns	22.71	Technology-Intensive
13	6105 Men's or boys' shirts, knitted or crocheted	20.82	Labour-Intensive
14	5209 Woven cotton fabrics, 85 percent or more cotton	20.35	Labour-Intensive
15	5514 Woven fabric of synthetic staple fibres	19.59	Labour-Intensive
16	5208 Woven cotton fabrics, 85 percent or more cotton	19.51	Labour-Intensive
17	6116 Gloves, mittens and mitts, knitted or crocheted	16.64	Labour-Intensive
18	8213 Scissors, tailors' shears and similar shears/blades and base metal parts thereof	15.86	Labour-Intensive
19	8214 Other articles of cutlery	15.74	Labour-Intensive
20	5203 Cotton, carded or combed	15.61	Resource-Intensive
21	6307	15.11	Labour-Intensive
22	2610 Chromium ores and concentrates	13.07	Resource-Intensive
23	6310	12.32	Labour-Intensive
24	6304 Other furnishing articles of textile materials	12.19	Labour-Intensive
25	3202 Synthetic organic or inorganic tanning substances; tanning preparations; enzymatic	12.16	Technological-Intensive

Source: International Economic Data Bank (IEDB), Australian National University, and calculations by the author.

Notes: This ranking excludes HS 9307 (Arms and Ammunition) as an outliner.

end of the technology spectrum and requiring relatively low technical skills. Table 1 illustrates that 20 out of the top 25 RCA ranking exports in 2000 were labour-intensive, dominated mainly by the textiles and clothing sector. Although the textiles and clothing sector has been at the forefront of Pakistan's export drive, it has made the country highly dependent on the buoyancy of this sector. Given that an export structure is a manifestation of the underlying technological base and industry policy, any industrial reorientation in the Pakistani context, would require a massive effort to move up the technological ladder.

Changes in the revealed comparative advantage pattern can be examined by analysing the list of top-25 product lines ranked by their RCA indices (Table 2). With the exception of 1999–2000, 20 out of the top-25 high RCA ranking categories were from the textiles and clothing sector. In 1999, 18 out of the top-25 RCA ranking product groups were from this sector. This number climbed to 19 in 2000. Other categories included in the list of top 25 were:

- Base Metals and Articles: 1990 *(HS7614, 7904)*; *1998 (HS8004)*, 1999 *(HS 8002, 8004, 8213)*; and 2000 *(8213, 8214).*
- Hides and Skin; 1990 *(HS 4106)*; and 2000 *(HS 4106, 4203).*
- Machinery and Mechanical Appliances: 1990 *(HS 8445)*; 1997 *(HS 8410)*; and 2000 *(HS 8445).*
- Miscellaneous Product: 1990 *(HS 9602).*
- Chemical Products: 1997, 1999 *(HS 2917).*
- Arms and Ammunition: 1998, 1999, and 2000 *(HS 9307).*
- Plastics and Rubber: 1997 *(HS 4014).*
- Mineral Products: 1998 and 2000 *(HS 2610).*

The evidence provided by RCA ranking of the top 25 product lines indicate that there has been little shift in the comparative advantage pattern of Pakistan's non-agricultural exports. During the entire period studied, the pattern of revealed comparative advantage has been relatively stable in its industry orientation. Dominance of the textiles and clothing sector is quite consistent with Pakistan's existing natural and human factor endowments. This analysis reveals Pakistan's failure to catch up with the Southeast Asian economies, by moving from low value-added to technology-intensive high-value manufacturing.

With few exceptions, Pakistan's top-ranking exports belong to the textiles and clothing sector. This pattern of export specialisation points to a failure to diversify export structure by moving into high value-added, relatively technological and high-skilled labour-intensive product lines. These findings highlight the vulnerability of Pakistan's textile-dependent external sector. In the present climate of trade liberalisation, Pakistan's textiles and clothing sector will come under increasing competitive pressure from lower cost producers. Besides, the elimination of quota regime under the Uruguay Round Agreement on Textiles and Clothing will put further competitive pressure on Pakistani textile and clothing firms.

Table 2

Comparative Advantage of Pakistan's Non-agricultural Products

	HS Code	RCA-1990	HS Code	RCA-1997	HS Code	RCA-1998	HS Code	RCA-1999	HS Code	RCA-2000
1	5205	100.35	5303	54.14	4106	87.26	5205	54.12	9307	105.82
2	5802	88.27	5205	51.02	5205	58.68	4106	53.77	5205	72.32
3	5202	59.15	4106	49.3	5513	40.42	8002	50.23	4106	59.47
4	5303	54.68	5202	36.72	6302	38.24	6302	43.39	5513	57.26
5	7614	51.71	5513	31.67	5202	35.63	5701	41.87	5701	54.6
6	4106	46.88	6302	31.6	5701	35.05	5513	41.28	5202	53.16
7	5204	39.17	8410	31.33	5210	27.79	5202	31.77	6302	50.61
8	5207	32.72	5701	28.84	5803	25.84	5203	25.62	6303	32.44
9	5701	30.2	4203	22.93	4203	25.75	4203	25.11	5802	29.19
10	5506	25.9	5514	20.91	5504	23.98	5210	25.09	4203	27.27
11	5406	24.44	5206	20.55	5514	19.74	9307	25.06	5210	26.94
12	6309	16	5210	20.29	5209	19.23	6303	24.72	5206	23.99
13	5201	15.89	5504	18.27	6105	17.85	5803	23.96	8445	22.71
14	5504	14.92	5209	17.38	5208	16.36	8004	23.88	6105	20.82
15	5212	12.64	5208	17.14	6303	16.36	5504	22.44	5209	20.35
16	5403	12.4	6105	15.44	5802	16.27	5209	20.62	5514	19.59
17	5208	12.05	6303	15.23	6116	14.44	5802	18.5	5208	19.51
18	6302	11.79	2917	14.76	9307	12.84	6105	17.69	6116	16.64
19	5203	11.73	5802	14.2	5509	12.59	5208	17.16	8213	15.86
20	8445	11.08	5803	13.46	2610	12.44	5514	16.1	8214	15.74
21	9602	10.87	6116	12.08	5206	11.96	6116	14.15	5203	15.61
22	5503	9.46	5509	11.09	8004	11.33	8213	12.76	6307	15.11
23	7904	9.21	6309	10.46	6307	11.27	2917	12.33	5504	14.82
24	5513	8.4	6307	9.72	5211	10.89	6307	12.23	2610	13.07
25	5206	7.93	4014	8.92	6309	10.84	5206	11.46	6310	12.32

Source: International Economic Data Bank (IEDB), Australian National University, and calculations by the author.

4. COMPETITIVE POSITIONING OF PAKISTAN'S NON-AGRICULTURAL PRODUCTION SECTORS: AN AGGREGATED ANALYSIS

Competitively Positioned Products

Out of the 978 HS 4-digit level product lines, 222 of them (23 percent of the total) have RCA indices that are greater than unity and increasing, placing them in the category of "Competitively Positioned Product Group". As Table 3 illustrates, 34.7 percent of Pakistan's Non-agricultural Competitively Positioned Products are from the textiles and clothing sector, followed by the chemical sector (23.9 percent).

Given Pakistan's factor endowments, performance of the textiles and clothing sector is hardly surprising. Pakistan's gradual export specialisation in chemical products reflects the structural change experienced by the manufacturing sector as it shifts towards relatively high value-added sectors. Similar trends are also emerging in other relatively skilled-labour and technology industries such as base metals and articles; machinery and mechanical appliances; and measuring and musical instruments.

Table 3

RCA Profile and Product Grouping, 2000

Industry Category/Sector and HS Code	CP	TP	EP (TI)	EP(I)	WP (I)	(WPII)
Textile and Textile Articles: HS 50–63	77	18	11	9	8	19
	34.7	32	9.2	3.9	14.3	6.5
Chemical Products: HS 28:38	53	8	36	32	10	34
	23.9	14	30.3	13.9	17.9	11.6
Base Metals and Articles: HS 72–83	18	7	11	43	10	60
	8.1	13	9.2	18.7	17.9	20.4
Machinery and Mechanical Appliances: HS 84-85	17	4	17	41	9	44
	7.7	7	14.3	17.8	16.1	15.0
Measuring and Musical Instruments: HS 90–92	10		5	17	2	21
	4.5	–	4.2	7.4	3.6	7.1
Hides and Skins: HS 41–43	8	1	2	3	3	3
	3.6	2	1.7	1.3	5.4	1.0
Articles of Stone, Plaster, Cement, Asbestos: HS 68–70	7	3	8	12	2	13
	3.2	5	6.7	5.2	3.6	4.4
Mineral Products: HS 25:27	7		3	16	1	19
	3.2	–	2.5	7.0	1.8	6.5
Plastic and Rubber: HS 39:40	6	8	9	8	4	7
	2.7	14	7.6	3.5	7.1	2.4
Transportation Equipment: HS 86–89	6		2	8	5	11
	2.7	–	1.7	3.5	8.9	3.7
Miscellaneous Product Category: HS 94–96	5	3	3	8		13
	2.3	5	2.5	3.5	–	4.4
Wood Pulp Products: HS 47–49	4	1	7	11	2	15
	1.8	2	5.9	4.8	3.6	5.1
Pearls, Precious or Semi-precious Stones, Metals: HS 71	2		2	4		8
	0.9	–	1.7	1.7	–	2.7
Footwear and Headgear: HS 64–67	1		2	7		8
	0.5	–	1.7	3.0	–	2.7
Wood and Wood Products: HS 44–46	1	2		11		10
	0.5	4	–	4.8	–	3.4
Arms and Ammunition: HS 93	1	1	1			4
	0.5	2	0.8	–	–	1.4

Source: International Economic Data Bank (IEDB), Australian National University, and calculations by the author.

Notes: CP=Competitive Positioned Product; TP= Threatened Product; EM (TI) = Emerging Product Tier I; EM (TII) = Emerging Product Tier II; WP(TI)= Weakly Positioned Product (TI); WP(TII)= Weakly Positioned Product (TII).

The profile of "Competitively Positioned Products" highlights a lack of inroads made by some unskilled and skilled labour-intensive and resource-base industries, which draw their competitive strength from low wages and the availability of raw material. This includes industries such as hides and skins, footwear and headgear, wood and wood products, pearls and precious stones. Lack of headway made by the transportation equipment industry is a reflection of its narrow production base and cost disadvantage due to a higher share of imported inputs, an absence of forward and backward linkages and a lack of economies of scale and scope.

Threatened Non-agricultural Products

In the case of "Threatened Product" group, there are 56 product lines (6 percent of the total). These products exhibit revealed comparative advantage, but have experienced a declining share in world markets during 1997–2000 (Table 3). It is important to note, that 32 percent of the "Threatened Products" are from the textiles and clothing sector, which has been the driving force of Pakistan's export structure. The most significant decline in the revealed comparative advantage occurred in jute products. This outcome can be attributed to the industry assistance measures undertaken by the Bangladeshi and the Indian governments in support of their jute industry. Other notable declining sectors include chemical products (14 percent); plastic and rubber (14 percent) and base metal products (14 percent).

In view of their significance to Pakistan's revealed comparative advantage profile, there is a need for determined efforts to ensure that Pakistan sustains and enhances its export competitiveness by reversing the above trends. Although it is difficult to formulate product-specific policy responses, there is a strong economic rationale for targeting those "Threatened Products" that have significant comparative advantage, but one that is declining with time. For instance, one of the "Threatened Product Group" is sports goods, a major export earner for Pakistan. This product line has witnessed a modest decline in its export competitiveness in recent times. This analysis is by no means designed to draw industry-specific measures for every product line in this group. However, it highlights specific industries that require specific attention during trade negotiations and industry policy formulation.

Emerging Products: Tier I

The "Emerging Product Group" is sub-divided into two groups to draw a distinction between two types of product lines: (a) the product lines that are showing underlying trends to join the "Competitive Group", but exhibit a comparative disadvantage at present; and (b) Tier II products.

There are 119 product lines (12 percent of the total) in Tier I. Three relatively technology intensive manufacturing sectors, e.g., chemical, machinery and

mechanical appliances, and base metals and articles, constitute 54 percent of the total "Emerging Product Lines-Tier I" (Table 3). This result highlights the comparative advantage dynamics of Pakistan's manufacturing sector, where momentum is developing to move towards relatively high value-added technology intensive production activities.

Emerging Products: Tier II

There are 230 product lines (24 percent of the total) that show continuous improvement, but their RCA indices are below 0.5. Table 3 reconfirms the observation that Pakistani manufacturing is making slow progress towards the export of high-value added non-agricultural products. The three top product categories in this group belong to relatively technological intensive production activities, such as, base metals and articles (18.7 percent), machinery and mechanical appliances (17.8 percent), and chemical products (13.9 percent). The findings are significant these industries exhibit backward linkages. Competitiveness in these sectors has positive spill-over effects on other segments of the manufacturing industry. Given the competitive potential of the "Emerging Product Group", further investigation is required to target the products with the highest potential, to achieve international competitiveness. Caution will be required to ensure that these product lines do not encounter unfair competition from overseas suppliers.

Weakly Positioned Products: Tier 1

"Weakly Positioned" products are categorised into Tier I and Tier II sub-groupings. The RCA indices of Tier I product lines are less than unity but greater than 0.5 and thus have experienced negative growth. With 57 product lines, no single industry dominates this product grouping. However, over 50 percent of the products belong to three sectors: base metals and articles (17.9 percent); chemical sector (17.9 percent); and machinery and mechanical appliances sector (16.1). The above findings point to inter-industry and intra-industry variations in the degree of revealed comparative disadvantage in this product grouping.

Weakly Positioned Products: Tier II

This group represents 30 percent of Pakistan's total non-agricultural product lines. With their level of revealed comparative disadvantage worsening, there is need for a careful examination of this "sun-set" class of product lines, which includes base metals and articles (20.4 percent), chemical sector (11.6 percent), and machinery and mechanical appliances sector (15 percent) (Table 3). This analysis points to inter-industry and intra-industry variation in the degree of revealed comparative disadvantage in this product grouping. While the manufacturing sector is making slow progress to contest the technology-intensive export markets, there are still a

significant number of product lines, which are "Weakly Positioned" at the lower end of the competitive spectrum.

5. COMPETITIVE POSITIONING OF PAKISTAN'S NON-AGRICULTURAL PRODUCTION SECTORS: A SECTORAL ANALYSIS

To formulate a set of trade and industry policy recommendations at the sectoral level, it is imperative to undertake a sectoral analysis of Pakistan's key non-agricultural production sectors. Building upon the earlier analysis, this section analyses the export performance of three key sectors and gauge their relative positioning within Pakistan's revealed comparative advantage profile.[7]

Chemical Products

The number of chemical product lines (HS 28–38) participating in world trade has risen from 147 to 173 during 1990– 2000. There was also a jump in the number of products with comparative advantage from 35 in 1990 to 61 in 2000, an overall increase of 74 percent (Table 4).

Table 4

Chemical Products (HS 28–38)

Description	1990	2000	Change (1990–2000)
Total No. of Reported Product Lines	147	173	17% [a]
Products Lines with Revealed Comparative Advantage (RCA >1)[d]	35 (24%) [b]	61 (36%) [b]	74%[a]
Products Lines with Revealed Comparative Disadvantage (RCA<1)	112 (76%) [c]	112 (64%) [c]	0%[a]

Notes: [a]Percent change from 1990 to 2000; [b] Product lines with RCA>1 as a proportion of total product lines; [c] Product lines with RCA<1 as a proportion of total product lines; [d] International Economic Data Bank (IEDB), Australian National University, and calculations by the author.

The chemical sector shows its transformation from an import-competing sector to one that has successfully positioned itself in the export markets. In the presence of existing infrastructure bottlenecks, this is an impressive performance. The sector has only 36 percent of its product lines "Weakly Positioned" in the export markets. This result indicates an improved competitiveness during the period studied (Table 5). With continuous improvement of 39 percent of its product lines (i.e., the Emerging Products), any trade policy shift should look at the role of foreign direct investment, industry–specific stimulants, protection afforded, external competitive environment, and growth trends in the world chemical markets.

[7]These non-agricultural sectors are selected due to their relative significance in Pakistan's export structure.

Table 5

Revealed Comparative Advantage Profile of Chemical Products

Product Categories	Competitive Products Group	Threatened Products Group	Emerging Products Group		Weakly Positioned Products Group	
			Tier I	Tier II	Tier I	Tier II
Chemical Products	53	8	36	32	10	34
HS 28–38	(31)	(5)	(21)	(18)	(6)	(20)

Source: International Economic Data Bank (IEDB), Australian National University, and calculations by the author.

Notes: The figures in the parenthesis are percentage share in that product category.

This sector, which includes petrochemicals and pharmaceuticals, is relatively technological and capital intensive, relaying largely on global production networks. With petrochemicals, there are strong linkages with other key industries such as plastics, textiles, and rubber-based products. These synergies with other export-oriented industries ensure petrochemicals status as a strategic industry in Pakistan's manufacturing.

The revealed comparative advantage profile of Pakistan's chemical sector needs to be assessed in the context of global trends in this sector. With total trade of US $595 billion in 2001, the chemical sector is one of the fastest growing sectors globally. The share of chemical sector in world trade has risen from 8.7 percent in 1990 to 9.9 percent in 2001. During 1990–2001, this sector kept an annual average growth rate of 7 percent, making it the second highest rapidly growing sector after office and telecom equipment.[8] Pakistan's increasing export specialisation in the chemical sector, therefore, shows its relative success in contesting the high growth segments of global trade.

With direct and indirect linkages to the export sector, industries in this sector have the ability to achieve economies of scale and enhance their competitiveness. With continued present trends, this sector has the potential to emerge as a major contributor to Pakistan's manufacturing exports. This outcome, however, depends on the level of investment in this relatively capital-intensive sector.

Textiles and Textile Articles

The textiles and clothing sub-sector (HS 50–63) is the largest contributor to Pakistan's total exports. This sector has displayed increased export coverage, with the number of product lines increasing from 127 in 1990 to 142 in 2000, an increase of 12 percent. There has been a dramatic rise in the number of products displaying comparative advantage during this period. In 2000, 67 percent of the product lines exhibited comparative advantage. These trends confirm the dominant position of textiles and clothing products in Pakistan's non-agricultural exports (Table 6).

[8]WTO (2002).

Table 6

Textiles and Textile Articles (HS 50–63)

Description	1990	2000	Change (1990–2000)
Total No. of Reported Product Lines	127	142	12% [a]
Product Lines with Revealed Comparative Advantage (RCA >1) [d]	63 (50%) [b]	95 (67%) [b]	51% [a]
Product Lines with Revealed Comparative Disadvantage (RCA<1)	64 (50%) [c]	47 (33%) [c]	–27% [a]

Notes: [a]Percent change from 1990 to 2000; [b] Product lines with RCA>1 as a proportion of total product lines; [c] Product lines with RCA<1 as a proportion of total product lines; [d] International Economic Data Bank (IEDB), Australian National University, and calculations by the author.

The textiles and clothing sector is the most competitively positioned segment of Pakistan's manufacturing. For instance, 18 of the top 25 top RCA ranking products in 2000 were from this sector. During the period studied, only 19 percent of its products were "Weakly Positioned". This is the lowest percentage of "Weakly Positioned" products, observed by any sector of Pakistan's manufacturing (Table 7). An important feature of Pakistan's textiles and clothing sector is that export specialisation is not merely in the low value-added textiles sub-sector.

Given that this sector is one of the largest contributors in terms of output, value added, employment and exports, these competitive trends are comforting. The analysis shows the resilience of this sector in a competitive environment. There are, however, also signs of competitive threats, as reflected in Table 7.

Table 7

Revealed Comparative Advantage Profile of Textiles and Clothing Products

Product Categories	Competitive Products Group	Threatened Products Group	Emerging Products Group		Weakly Positioned Products Group	
			Tier I	Tier II	Tier I	Tier II
Textiles and Textile Articles HS Code 50–63	77 (54)	18 (13)	11 (8)	9 (6)	8 (6)	19 (13)

Source: International Economic Data Bank (IEDB), Australian National University, and calculations by the author.

Notes: The figures in the parenthesis are percentage share in that product category.

Pakistan's textiles and clothing sector remains at the lower end of the value chain. To move up the value chain, and export high-value added clothing, requires developing capabilities in design, product planning, distribution channels, and international marketing. Sustainable export competitiveness of the local textiles and clothing industry depends on its global orientation and building of capacity ahead of demand in key areas. With the global demand patterns shifting from natural fibre to man-made fibre, a reorientation of the clothing industry is needed to contest the most dynamic segment of the export markets.

Machinery and Mechanical Appliances

The overall position of the Machinery and Mechanical Appliances sector (HS 84-85) showed no improvement during 1990–2000. While the total number of product lines has risen from 128 to 132, 84 percent of these products exhibited a comparative disadvantage in 2000 (Tables 8 and 9).

Table 8

Machinery and Mechanical Appliances (HS 84-85)

Description	1990	2000	Change (1990–2000)
Total No. of Reported Product Lines	128	132	3%[a]
Product Lines With Revealed Comparative Advantage (RCA >1)[d]	22 (17%)[b]	21 (16%)[b]	–5%[a]
Products Lines With Revealed Comparative Disadvantage (RCA<1)	106 (83%)[c]	111 (84%)[c]	5%[a]

Notes: [a]Percent change from 1990 to 2000; [b] Product lines with RCA>1 as a proportion of total product lines; [c] Product lines with RCA<1 as a proportion of total product lines; [d] International Economic Data Bank (IEDB), Australian National University, and calculations by the author.

Table 9

Revealed Comparative Advantage Profile of Machinery and Mechanical Appliances

Product Categories	Competitive Products Group	Threatened Products Group	Emerging Products Group		Weakly Positioned Products Group	
			Tier I	Tier II	Tier I	Tier II
Machinery and Mechanical Appliances HS 84-85	17 (13)	4 (3)	17 (13)	41 (31)	9 (7)	44 (33)

Source: International Economic Data Bank (IEDB), Australian National University, and calculations by the author.

Notes: The figures in the parenthesis are percentage share in that product category.

Pakistan has performed admirably in some of the niche markets within this highly fragmented sector. The competitive positioning of the textile machinery industry is a distinct example. Other high value-added segments in which Pakistan is making steady progress are household appliances such as refrigerators and freezers. There are a number of other electrical and electronics products, which now form the "Emerging Product Group" in this sector. There are 40 percent of the product lines that are "Weakly Positioned", and, in some cases, their international competitiveness has been declining sharply.

Irrespective of its current level of revealed comparative advantage, development of the machinery and mechanical appliance sector is vital for Pakistan's industrial development due to its backward and forward linkages with other manufacturing sectors. Therefore, the study calls for treating this sector as a "Policy-Driven Sector", with efforts to provide an investment-friendly environment for its diversification and technological upgrading. This would require time-bound assistance or protection to those segments that are scale-based and are positioned to achieve export competitiveness or industries, which are "Weakly Positioned". Their survival is vital for strategic reasons.

6. CONCLUSIONS AND POLICY IMPLICATIONS

The composition and volume of world trade has witnessed significant changes during the past two decades. However, Pakistan's narrow low value-added export base has failed to create a solid foundation for an export-led growth. The dominance of the textiles and clothing sector is consistent with Pakistan's existing natural and human factor endowments. However, Pakistan has failed to move from low value-added un-skilled labour intensive to technology-intensive high-value added manufacturing. In the present climate of rapid trade liberalisation, Pakistan's textiles and clothing sector will come under increasing competitive pressure from lower cost producers.

Pakistan's economic well-being depends on the extent to which the non-agricultural sector remains competitive and contributes to economic growth, exports, investment and employment. Given the present profile of Pakistan's revealed comparative advantage in non-agricultural exports, these outcomes in turn depend on (a) an industrial restructuring of Pakistan's manufacturing, enabling it to contest high growth sectors of world trade; and (b) the ability of the manufacturing sector to create, sustain and enhance its export competitiveness.

While Pakistan's non-agricultural sector witnessed competitive positioning of some of its sectors, these trends were not uniform across all sectors. Further, a higher revealed comparative advantage or rapid export growth of a sector does not imply that the sector is displaying high growth in world markets. In an ideal situation, there would be the emergence of an export structure that has a heavy concentration of those industries that exhibit high growth in world markets. Such

an industrial restructuring would indicate a country's success in contesting the dynamic segments of world trade. While the chemical sector comes closer to meeting the above criterion, the same is not true for Pakistan's leading sector of textiles and clothing.

Within Pakistan's overall export profile, trade liberalisation will exert further competitive pressure. The competitive threat from other low wage economies, such as China, poses new challenges for Pakistan's labour-intensive manufacturing sector. Trade liberalisation and market access is a necessary but not a sufficient condition to achieve competitive advantage at the enterprise and industry level. Achieving export competitiveness in rapidly globalise markets would require efforts at both micro and macro levels.

To sustain its cost advantage, the non-agricultural sector will need to increase total factor productivity. This would require improving capital to labour ratio, by encouraging domestic and foreign direct investment. The importance of changes in trade policy to generate this outcome cannot be underestimated. At the present level of development, changes in Pakistan's import structure are crucial to both contest high growth markets of the world and to remain competitive in traditional export markets by moving up the value chain. A firm's ability to import technology and key intermediate inputs is critical to allow it to compete in dynamic export markets. Trade liberalisation is a necessary condition to achieve this outcome.

In some instances, industrial restructuring will require moving away from areas of decreasing revealed comparative advantage and allocation of these resources to the segments of manufacturing with greater export potential. As the analysis indicates, an industrial reorientation implies a shift towards high-value added technology intensive activities. This would require vigorous efforts to develop and upgrade workforce capabilities, through education, retraining, and skill acquisition programmes. In other areas of manufacturing, as in clothing and textiles, creating or maintaining export competitiveness would necessitate adding more value than the competitors. This would be achieved through non-price measures to offset high-cost disadvantages that may arise from the Chinese competitive threat. Importantly, pressure for industrial restructuring would become increasingly important with implementation of the Agreement on Textiles and Clothing and growing globalisation of production.

The extent to which Pakistan can succeed in its drive to move into high-value added export industries, in which knowledge and technology intensive industries play a central role, depends upon an emphasis on research and development, technology capabilities, and pace of technology transfer. Similarly, the ability of Pakistan's institutional and socio-economic infrastructure to provide helpful conditions for industrial restructuring ought not to be underestimated. The quality and type of human capital needed for an industrial transformation would become an important issue to overcome.

The slow pace of Pakistan's export growth is a manifestation of supply and demand side constraints. While good macroeconomic management is essential, a more important issue is to build investor confidence, by creating a credible investment friendly environment. The "drag factors" that severely inhibit further deepening and broadening of the manufacturing sector should be tackled in conjunction with further trade liberalisation measures. These inhibiting factors obstruct new start-ups and export ready firms, which are willing to venture into overseas markets. The "export promotion" policies are important to help build new markets for traditional and non-traditional exports. There is a need to confront issues that constrain "export creation" at the enterprise level. At the firm level, factors such as worker motivation and skill level, the nature of the product and technology in use, the scale of production, the internal organisation of the firm, strategic alliances between local and foreign firms, and ownership of other unique assets of quality, reliability, and service, are instrumental in the value-adding process.

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