STRUCTURAL CHANGE IN PAKISTANI EXPORTS 1992 - 2005

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1. Objectives

This study analyses

- **S**tructural change in Pakistani exports during 1992 – 2005. A comparison is made between the period 1992 – 1998 and the period 1999 – 2005. Has there been a significant change in the structure (i.e. commodity composition) of exports during this period?

- **E**xports are categorized into 'Core', 'Development' and 'Other' categories (as defined by EPB). Are exports with high world elasticities of demand growing more rapidly? These exports are mainly grouped within the 'development' and 'all other' categories by the EPB.

    Exports are also grouped by end use. The categorization enables us to identify product markets towards which Pakistani exports are targeted.

II. Structural Change in Pakistani Exports 1992 – 1998 and 1999 – 2005

Table 1 summarizes data on the commodity composition of Pakistani exports during 1992 – 1998 and 1999 – 2005.

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1. This paper summarizes the findings of a study undertaken for the Export Promotion Bureau in mid 2006.

Table 1: Structural Change in Pakistani Exports 1992 – 1998, 1999 – 2005

Commodity Category	1992 – 1998		1999 – 2005	
	Average %	Standard	Average %	Standard
Textiles and Garments	69.01	1.28	63.84	1.83
Raw Cotton	2.16	2.05	0.61	0.51
Yarn	16.86	1.72	9.05	2.16
Fabrics	13.77	1.96	13.69	1.38
Garments	15.80	1.06	19.25	0.72
Made ups	6.920	1.11	13.31	1.53
Towels	1.99	0.25	3.59	0.49
Rice	5.11	1.05	5.82	0.89
Leather	7.74	0.97	6.73	0.57
Sports Goods	2.10	0.90	2.97	0.46
Wool	3.11	0.87	2.53	0.51
Surgical Instruments	1.45	0.06	1.36	0.17
Petroleum	0.82	0.23	1.83	0.86
Fish	1.96	0.32	1.37	0.23
Fruits / Vegetables	0.83	0.15	1.17	0.15
Juices	0.07	0.03	0.09	0.02
Chemicals and Pharma	0.56	0.11	1.33	0.45
Engineering Goods	0.41	0.10	1.65	0.40
Metal Manufactures	0.13	0.23	0.40	0.12
Cutlery	0.22	0.01	0.24	0.02
Marble	0.17	0.03	0.17	0.03
Gems & Jewellery	0.13	0.01	0.22	0.06
IT Devices	0.00	0.00	0.20	0.11
Others	1.56	0.77	4.17	1.52

3

Spearman's Rho by ranks in the first and second period = 0.975. Spearman's rank correlation coefficient is a measure of change in the ranking of commodity categories over 1992 – 1993 and 1999 – 2005. If r = 0 this means that ranks have changed completely (e.g. textiles ranked, first in 1992 – 1993 but ranked last in term of the share of total exports in 1999 – 2005). If the value of Spearman Rho is 1 this means that ranks have remained the same and textiles remains first in both rankings.

Note: Shares have been calculated in terms of current nominal dollar values.
Source: EPB

The extra ordinarily high value of Spearman's Rank Correlation Coefficient shows that structural change at the commodity group level (EPB categorization) has been very modest when we compare the two periods 1992 – 1998 and 1999 – 2005. The top

five rankings are occupied by (a) The Textile group (b) Leather (c) Rice (d) Wool and its products (ranking fourth in 1992 – 1998 and fifth in 1999 – 2004) and (e) Sports Goods (ranking fifth in 1992 – 1998 and fourth in 1999 – 2005). The five commodities groups account for 86.5 percent of export earning in current dollar terms during 1992 – 1998, but their share declined to 81.9 percent during 1999 – 2005. In the terminal year of the second period i.e. 2004 – 2005 these five commodity groups accounted for 78.5 percent of export earnings (as measured in current dollar values). Petroleum products and Chemical and Pharmaceuticals replaced Wool Products and Sports Goods as the fourth and fifth major export revenue earners in 2004 – 2005. The export earning share of the "Other" category increased from 1.56 percent during 1992 – 1998 to 4.12 percent during 1999 – 2005. In the terminal year, 2004 – 2005 it exceeded 6.8 percent.

Structural change has been somewhat more pronounced in the textile sector. As table 1 shows the share of raw cotton and yarn in total exports has declined significantly. The share of fabrics has remained broadly constant (with relatively low standard deviation to mean ratio) and there has been a substantial increase in the share of made ups and towels (both of which have almost doubled their export earnings share in 1999 – 2005 compared to 1992 – 1998) and in garments whose share has gone up by over 20 percent.

Table 2: Annual Average Growth Rates of all EPB Commodity categories during 1992 – 1998 and 1999 – 2005

Category	1993 – 1998 Average Growth Rate	1999 – 2005 Average Growth Rate	
Textiles and Garments	2.66	11.19	
Raw Cotton	168.01	542.29	
Yarn	3.39	1.89	
Fabrics		1.64	10.12
Garments	6.12	12.25	
Made ups	10.36	14.54	
Towels		7.96	62.31
Rice	17.58	11.49	
Leather	-1.74	10.45	
Sports Goods	25.38	3.33	
Wool	-13.35	6.33	
Surgical Instruments		4.69	9.60
Petroleum	-7.11	51.91	
Fish	-0.58	2.54	
Fruits / Vegetables	11.23	3.54	
Juices	30.73	32.85	
Chemicals and	15.97	42.58	

Pharma		
Engineering Goods	11.98	33.6
Metal Manufactures	2.06	40.68
Cutlery	3.13	11.92
Marble	3.80	5.61
Gems & Jewelry	4.33	15.94
IT Devices	0.00	0.00
Others	22.36	18.32

Source: EPB

Commodity categories which dominate Pakistan's export structure (textiles, leather, wool, surgicals, fish products, fruits juices and marble products) have low income elasticities. As against this commodity categories with relatively high income elasticities include garments, made ups, rice, towels, petroleum products, fruits and vegetables, chemicals and pharmaceuticals, engineering goods and metal products. Some commodity categories such as gems and jewelry and IT services have high growth rates due to a statistical base effect.

The surgicals, petroleum, chemical and pharmaceutical, engineering goods, metal manufacturing, cutlery, gems and jewelry and IT services sector grew at a very high rate during 1999 – 2005.

The fact that commodity categories with a low share in export earnings have relatively high income elasticities creates a policy dilemma. Should export incentives be targeted to the high growth commodity categories? Can we afford to neglect the predominant but slow growth commodity categories specially yarn, leather and sports goods? Should encouragement be provided for shifting resources from low to high growth export commodity categories? Can such policies be effective in a liberalizing environment when WTO commitments significantly constrain policy choices? What will be the impact of the attempt to shift resources from low to high growth export commodity categories on employment, capacity utilization, income distraction and poverty?

III. Relative Performance of Commodities in 'Development', 'Core' and 'Other' Sectors

Table 3 presents data on changes in the share of 'Core', 'Other core', 'Developmental' and 'all other' categories during 1992 – 1998 and 1999 – 2005. Shares have been estimated using current US$ values.

Table 3: Share of 'Core', 'Other Core', 'Developmental' and 'All Other' Categories of Commodities in Pakistani Exports (Percent)

Commodity Categories	1992 – 1998	1999 – 2005
A 'Core' [1]	69.01	63.84
B 'Other Core' [2]	23.58	23.93
C 'Development' [3]	4.27	6.35
D 'All Others' [4]	3.14	6.77

Note:

1. Includes textiles and garments.
1. Includes rice, leather and leather products, sports goods, wool, surgical instruments, petroleum products and molasses.
2. Includes fish, fruits and vegetables, chemicals and pharmaceuticals, engineering goods, metal manufactures, gems, IT services, cutlery, marble, poultry, meat, unmilled wheat.
3. Includes gur, cement, sugar, oil seeds, animal casings, handicrafts, tobacco products, spices, furniture.

Shares have been calculated on the basis of current USDollar values.
Source: EPB

Table 3 shows that during 1999 – 2005 'Core' and 'Other Core' commodity categories accounted for about 87 percent of total export earnings (as against 93 percent during 1992 – 1998). The share of the 'all other' commodity categories more than doubled, rising from 3.1 percent during 1992 – 1998 to 6.7 percent during 1999 – 2005. The increase in the share of 'Development' commodity categories was much more modest rising from 4.7 percent during 1992 – 1998 to 6.3 percent during 1999 – 2005. Table 4 compares export sector shares of 'core', 'other core', 'development' and 'all others' categories in the first and terminal years of the period under study. Trends identified in Table 3 are broadly confirmed, the share of the 'core' sector is seen to decline by about 10 percentage points. The share of the 'Other Core sector' has risen marginally. The share of the 'All other' sector has more than tripled and the share of the 'Development' sector has risen by about the same rate as its share in Table 3.

Table 4:   Share of 'Core', 'Other Core', 'Development' and All 'Others' Categories in Total Exports 1992 – 1993 and 2004 – 2005 (Percent)

	1992 – 1993	2004 – 2005
Core	71.38	61.59
Other Core	22.21	23.93
Development	4.49	6.35
All Others	1.92	6.54

Note: Shares calculated on the basis of current US Dollar Value
Source: EPB

Table 5 presents data on the commodity structure of the 'Development' sector during the period under study.

Table 5: Development Sector Commodity Composition Percent

Commodity Group	1992 – 1998	1999 – 2005	Ave % sha
Fish & Fish Preparation	45.83	23.48	
Fruits & Vegetables	19.43	20.02	
Chemicals & Pharmaceutical	13.25	22.12	
Eng. Group	9.60	14.94	
Cutlery	5.22	4.39	
Marble & Grant / Onyx Manf	4.04	2.81	
Gems Jewelery	2.54	3.79	

Table 6: Annual Average Rates of Growth of 'Development' Commodity Categories 1992 – 1998 and 1999 – 2005

Commodity Group	1992 – 1998	1999 – 2005
Fish	-0.58	2.54
Fruits / Vegetables	11.23	3.47
Chemicals / Pharmaceuticals	15.97	42.58
Engineering Group	8.39	34.21
Cutlery	3.13	11.92
Marble	3.80	5.61
Gems	4.33	15.94
Poultry	0.00	63.03
IT Services	0.00	18.84
Meat	0.00	0.00
Wheat unmilled	0.00	55.81

Source EPB

It can be seen that the share of chemicals and pharmaceuticals and engineering goods has risen significantly. IT exports have had a high rate of growth in 1999 – 2005 (but significantly lower than chemicals), but this is entirely due to a low base effect. IT exports constituted less than 4 percent of Pakistani export earnings during 1999 – 2005. This is also true of the growth in poultry exports which is also mainly attributable to a low base affect.

There has been a major decline in the share of fish (raw and processed) exports; reflecting essentially our inability to cope with increasingly stringent quality standards in this sector. Other commodity groups with modest growth rates include fruits and

vegetables and marbles, all of which have seen significant declines in their shares in Development exports.

Clearly, the key 'development' sector categories are chemicals and engineering groups of commodities. There has been a significant change in the commodity composition of chemical sector exports. The share of pharmaceuticals in the chemicals and pharmaceutical exports has dropped from an average of 74.1 percent during 1992 – 1998 to only 32.8 percent during 1999 – 2005. This should be a major cause for concern given the potentially huge market in Africa and the Middle East and the much higher value added composition of pharmaceutical as against base chemical exports. In particular, intra firm trade in pharmaceuticals (export from Pakistan subsidiaries to other subsidiaries of the same multinational in foreign countries) seems to be extremely low, whereas pharmaceutical imports (by Pakistani subsidiaries from other members of their multinational parent company) are soaring. Reasons for this must be identified and remedial action taken. Value addition in pharmaceuticals is significantly higher than in base chemicals, and it is therefore necessary to stimulate pharmaceutical export growth specially in non traditional markets.

The trends in the engineering goods sector are much more encouraging. Electrical engineering exports accounted for over 75 percent of engineering goods export earnings during 1999 – 2005 as against 68.5 percent during 1992 – 1998. Value addition is higher in electrical equipment as against metal products and cutlery (both of which have declined in proportionate terms). However, electrical goods generate high value added not through assembly operations (which mainly export cheap labor intensive components) but through fully integrated manufacturing processes involving the application of modern technology. Electrical equipment exports should therefore be disaggregated into 'assembly' and 'integrated' products and measures taken to encourage the later product category.

As shown above commodities in the 'all other category' have been growing significantly more rapidly than 'development category' products during the past decade. Table 7 presents the structure of the commodity composition of the 'all other' category and Table 8 presents the associated rates of growth.

Table 7:   Commodity Composition of 'All Other' category 1992 – 1998, 1999 – 2005 (as percent of total)

Commodity	1992 – 1998	1999 – 2005
Gur	13.09	4.85
Cement	0.17	1.68
Sugar	14.33	7.47
Oil Seeds	5.36	2.22
Animal Casings	5.01	2.10
Handicrafts	4.95	3.48
Tobacco	2.02	1.38

Spices	4.71	2.69
Furniture	0.51	1.23
Others	49.85	72.90
Total	100.00	100.00

Source EPB

Table 8: **Average Annual Rate of Growth**

Commodity	1992 – 1998	1999 – 2005	
Gur	7.61	1.26	Cement
Sugar	3.08	83.61	
Oil Seeds	26.15	40.59	Animal Casin
Spices	1.07	8.92	Furniture

Source EPB

Table 7 and 8 show that major growth has been concentrated in the 'other' sub category of the 'all other' category. The share of 'other' export earnings now constitutes almost three fourths of the total export earnings of the 'all other' category. Desegregation of the data is therefore urgently required for identifying the commodities which are recording some of the highest rates of growth within the Pakistani export portfolio.

High rates of growth have also been recorded by cement, tobacco and furniture. Tobacco export prospects and expansion of the tobacco industry in developing countries are limited mainly due to restrictions imposed by the OECD countries. The tobacco industry is likely to become more domestic demand oriented targeting vulnerable groups. Cement exports can be expanded given domestic industry under utilization of capacity, which is usually high in most years. Furniture exports are constrained by the need to reduce deforestation and high design and styling requirements in world markets.

Table 9 presents structural change in the 'other core' sector of Pakistani exports over 1992 – 1998 and 1999 – 2005 and Table 10 presents associated growth rates

Table 9: Structural change in the 'other core' sector 1992 – 1998 and 1999 – 2005

Share of export earnings in the 'other core' sector (percent)		
Commodities	**1992 – 1998**	**1999 – 2005**
Rice	24.23	26.59
Leather Products	36.70	30.84
Leather Tanned	-11.93	10.35
Sports Goods	14.62	13.58
Wool Products	9.97	11.46
Surgical Instruments	6.62	6.22
Petroleum	3.89	9.01

Molassess	3.97	2.29

Source: EPB

Structural change in the 'other core' sector has been modest with a significant (6 percent point) decline in leather and a near tripling of the share of petroleum products in 'other core' export earnings during 1999 – 2005 in comparison to the first period. Rice exports and some leather product categories like gloves, footwear and unspecified leather manufacture have also grown rapidly.

Table 10:   Average Annual Rates of Growth 'Other Core' Sectors

Commodities	**1992 – 1998**	**1999 – 2005**
Rice	40.40	11.49
Leather Products	33.20	10.45
Leather Tanned	1.00	10.08
Sports Goods	12.30	3.33
Wool Products	7.90	6.33
Surgical Instruments	4.60	9.60
Petroleum	0.50	51.91
Molassess	0.00	15.86

Source: EPB

IV Structural Change In End Use

Structural change in the intermediate sector is more marked than in the consumerables sector. There is a drastic reduction in the share of raw cotton (although this fluctuates widely from year to year). The share of tanned leather and raw wool exports has also fallen indicating increased use of these raw materials for value addition in the country. The shares of petroleum products and chemical and pharmaceutical exports have doubled indicating a significant move towards technological upgradation of our intermediate exports. This trend is partly off set by the relative preponderance of base chemical exports and the relative decline of pharmaceutical products. Export of gems and jewellery has almost tripled their share of intermediate exports earnings. Once again, disaggregation of this product category is needed to ascertain the impact of this on technological up gradation as jewelery products are expected to have higher value addition content than gems.

Table 11:   Structure of Intermediate Exports (Percent)

Commodities	1992-1993	1998 – 1999	2004- 2005	Average 1992 – 1998	Average 1999 – 2005
Raw Cotton	40.4	0.70	8.60	25.50	9.00
Leather Tanned	33.20	52.80	23.60	34.10	30.00
Raw Wool	1.00	0.80	0.10	1.90	0.00
Petroleum Products	12.30	14.10	37.00	13.70	31.00
Molasses	7.90	11.70	5.60	13.20	17.00
Chemicals / Pharmaceuticals	4.60	14.70	22.80	9.20	19.00
Marbles	0.50	1.80	0.50	0.80	1.00
Gems	0.00	3.40	1.90	1.10	3.00

Source: EPB

Table 12 presents the commodity composition of the capital goods sector.
Table 12:   Structural Change in Capital Goods Export (Percent)

				Average	Average	1992
Surgical Instruments	60.15	60.80	34.00	64.70	46.20	
Engineering Goods	30.42	29.40	51.00	25.00	36.90	
IT Services	0.08	0.00	8.60	0.00	7.90	
Cutlery	9.43	9.83	6.40	10.20	9.00	

Source: EPB

Structural change is most pronounced in this category. The share of surgical instruments has fallen significantly and that of engineering products has risen by about 50 percent. On average, during 1999 – 2005 IT services provided 8 percent of aggregate capital exports revenue. However, as Table 13 shows, their share in capital goods export earnings fluctuated significantly during 1999 – 2005.

Table 13: IT Export Earnings as Percent of Exports Earnings from Capital Goods

	1999–2000	2000-2001	2001-2002	2002-2003	2003-2004	2004-2005
IT Exports as Percent of Capital Goods Exports	9.2	7.6	7.6	6.2	8.8	8.6

Source: EPB

As a proportion of capital goods export earnings they were higher in 1999 – 2000 than in 2004 – 2005. The phenomenal rates of growth in IT exports enjoyed by countries such as India, the Philippines and Malaysia have not yet materialized for Pakistan.

The growth of engineering products is encouraging but we need to decompose this growth in term of assembly and integrated manufacturing operations. It is only the latter which yields high value added and contributes to technological upgrading.

The overall message seems to be that intermediates and capital goods exports are performing better than consumerables. But whether this will contribute to growth in value addition and technological up gradation can be ascertained only after a more detailed decomposition of these product categories is available.

Conclusions

- There has been relatively modest structural change in the commodity composition of Pakistani exports during 1992 – 2005. Structural change has been more pronounced during the 1999 – 2005 period than during the 1992 – 1998.
- This change has two aspects:
  o A shift within the textile sector from yarn and fabrics to garments and made ups.
  o A relative decline in consumerable exports and proportionate growth in intermediate and capital goods exports.
- Textiles share in total exports earnings has fallen but its share in consumerable exports has not declined significantly.

- 'All other' category of exports has grown most rapidly. Exports characterized as 'developmental' by the EPB have done less well than 'all other' EPB category exports.
- Major success stories include chemicals and engineering products, but their share in total Pakistani exports is so low (relative to their share in world exports) that this success is not reflected in Pakistani Revealed Comparative Advantage (RCA) structure. Pakistan's export structure remains dominated by textile and clothing products, but there is no clear move towards specialization in wearing apparel. There is some indication of a move from resource intensive to labour intensive product specialization.