

Sources of India's Export Growth in Pre- and Post-Reform Periods

The pace of India's export growth has not been distinctly high during the larger part of the post-reform period (1993-2005), though it has accelerated since 2002. In contrast to the pre-reform period (1950-90), the actual growth of exports in the post-reform period has been above the potential offered by the growth of world demand. The gap between the actual and potential is mainly explained by an improvement in the overall competitiveness of India's exports. The rapid growth of India's merchandise exports since 2002 gives no room for complacency since it has been mainly determined by a buoyant world economy. The competitiveness effect, though positive, has not been the major contributing factor to the acceleration in the growth rate of merchandise exports in recent years. It appears that exports have been adversely affected by the appreciation of the real effective exchange rate during the post-reform period.

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Several studies have argued that the import substitution policies had created a bias against exports in India. In spite of the various export promotion schemes adopted in the 1970s and 1980s, profitability in the heavily protected domestic market remained significantly higher than that in the export market [Kathuria 1996]. A major objective of the economic reforms introduced in 1991 has been to reduce and eventually eliminate the gap between domestic and export profitability. The focus of the export policy, by and large, shifted from product-specific incentives to more generalised incentives based primarily on the exchange rate. A major element of this policy shift was the downward adjustment in the exchange rate of the rupee against the major currencies in July 1991. It was held that a more realistic exchange rate would make exporting inherently more attractive. Further, in 1993, the government adopted full convertibility of the rupee on the current account.¹ The exchange rate was henceforth to be determined by demand for and supply of foreign exchange in the market.

It is worthwhile to undertake a detailed analysis of the response of Indian exports to the changes in the incentive structure engendered by the reforms. In order to establish a link between domestic policy changes and export growth, however, it is important to emphasise that the latter is determined not only by internal but also by external factors. Among external factors, the most crucial, perhaps, is the growth of world demand. The internal and external factors are often intertwined to determine the export performance of a country. A country may fail to exploit the buoyancy of world demand if the domestic policy environment is highly restrictive. Similarly, despite the policy reforms, a country's exports may not grow faster if world demand happens

to decelerate in the post-reform period compared to the pre-reform period ("world trade effect"). Clearly, a simple before and after comparison, without taking into account world demand (or world export) conditions can be misleading. It is therefore appropriate to judge the country's export performance in the two periods in relation to the performance of world exports (which proxies world demand).

A country's exports, in a given period, may grow faster than the world average for one or more of the following three reasons. First, the country's exports would have been concentrated in commodities for which world demand was growing relatively faster during the period ("commodity composition effect"). Second, the country's exports would have been going, primarily, to the fast growing regions of the world ("market distribution effect"). Third, the country would have been able to improve its overall competitiveness (possibly due to policy changes) and therefore, could expand its exports faster than the world average (overall "competitiveness effect"). It is important to disentangle these effects in order to assess the impact of domestic policy changes on export growth.

The main focus of this paper is to analyse the sources of India's export growth since 1993, the year in which the government adopted full convertibility on the current account. However, to place the results for the post-reform period in proper perspective, the analysis also covers the pre-reform period. A brief overview of India's export performance till the 1991 reforms is provided in Section I. A more detailed analysis of the trends and patterns of exports since 1993 are provided in Section II. Section III decomposes India's export growth during the pre and post-reform periods into the four effects mentioned above: (i) world trade effect, (ii) commodity composition effect, (iii) market

distribution effect, and (iv) overall competitiveness effect. Finally, Section IV concludes.

I Export Trends in Pre-Reform Period: Brief Overview

Exports were largely neglected during the first and the second five-year plans, which was justified on the ground that demand for Indian exports was inelastic. Whilst the world merchandise export was growing at 6.3 per cent per annum during the 1950s, exports from India stagnated (Table 1). As the world merchandise exports expanded relatively faster during the 1960s at 8.8 per cent per annum, the growth rate of India's exports improved somewhat to 3.6 per cent per annum. Clearly, the country failed to make the best use of the trade possibilities available during the 1950s and 1960s. The share of India's exports in world exports declined sharply from 1.4 per cent during the 1950s to 0.9 per cent during the 1960s. In order to offset the detrimental effects of overvalued exchange rates and other government policies on exports, various implicit and explicit measures of export subsidisation have been adopted.²

World exports registered a hefty growth rate of 20.4 per cent per annum during the 1970s. Buoyancy of world demand and a relatively favourable domestic policy provided an atmosphere conducive to a rapid growth of exports from India. Thus, India's exports of merchandise and services grew at the annual rate of about 18 per cent and 27 per cent respectively during the 1970s. Joshi and Little (1994), while recognising the importance of world demand, attributed the export growth of the 1970s mainly to the depreciation of the real effective exchange rate (REER), provision of export subsidy and a relatively liberal import policy for export production. Despite the high growth, India's share in world merchandise exports declined to 0.5 per cent during the 1970s from 0.9 per cent during the 1960s. This is not surprising since the growth rate of world exports remained higher than that of India during the 1970s.

The export boom of the 1970s, however, could not be maintained during the first half of the 1980s. As the growth rate of world exports turned negative in the aftermath of the second oil price hike, India's exports decelerated sharply. During the second half of the 1980s, however, the world economy recovered and India's exports grew at a healthy pace (17.8 per cent). According to Joshi and Little (1994), there was a genuine improvement in the export competitiveness of India during this period due to a major depreciation of the REER and increased export subsidies. This period also witnessed some doses of industrial deregulation and liberalisation of capital goods imports.

II Trends and Patterns of Exports in Post-Reform Period

The process of economic reforms became far more comprehensive and systemic after a severe balance of payment crisis in 1991. Significant reforms have been made in terms of the removal of state controls on domestic and foreign investment, foreign trade, prices and exchange rates. It was hoped that the policy changes would boost exports through efficient resource allocation, greater specialisation, diffusion of international knowledge and heightened competition. The pace of India's export growth, however,

has not been distinctly high in the most part of the post-reform period but it has accelerated since 2002.³ In what follows, we analyse the pattern of India's export growth in the post-reform period in more detail. The post-reform period (1993-2005) is divided into three sub-periods: 1993-97 (the period before the east Asian crisis); 1999-2001 (the period immediately after the crisis); and 2002-05 (the period of rapid export growth).

Growth of Exports

During 1993-97, India's merchandise exports recorded a growth rate of about 13 per cent per annum and services exports showed a comparable growth rate of about 14 per cent per annum (Table 1). This was attained in spite of the appreciation of the REER by about 1 per cent per annum.⁴ Table 2 shows that the

Table 1: Indicators of India's Export Growth, 1950-2005
(US \$ millions)

Period	Average Annual Growth Rates ^a				India's Share in World Exports, Averages		India's Exports of Goods and Services (Per Cent of GDP), Averages
	Goods		Services ^b		Goods	Services	
	India	World	India	World			
1950-59	0.22	6.30	3.78	NA	1.39	NA	NA
1960-69	3.58	8.77	1.78	NA	0.90	NA	4.21
1970-79	17.97	20.41	26.61	NA	0.54	NA	5.20
1980-85	2.39	-0.86	3.79	0.36	0.47	0.81	6.05
1986-90	17.76	12.36	10.47	14.14	0.48	0.63	6.29
1993-97	13.30	10.56	14.10	9.22	0.60	0.59	10.50
1999-01	10.26	4.09	9.52	3.07	0.66	1.07	12.52
2002-05	25.29	17.58	45.36	15.16	0.81	1.64	17.19 ^c

Notes: a Growth rates are calculated using semi-logarithmic regressions.
b Services represent commercial services excluding government services.

c Exports (per cent of GDP) for the year 2005 was extrapolated based on the trend for the previous three years (the average for 2002-04 was 16.08).

Source: Data on merchandise exports (for 1950-2005) and services exports (from 1980-2005) have been accessed from the WTO website; India's services exports for 1950-79 are from the RBI; Exports of goods and services (per cent of GDP) are taken from the World Development Indicators database, World Bank.

Table 2: India's Merchandise Exports across Commodity Groups, Average Annual Growth Rates

SITC Code	Commodity Group	1993-97	1999-2001	2002-05
0	Food and live animals	14.42	5.92	11.44
1	Beverages and tobacco	23.44	-12.54	13.71
2	Crude materials, inedible, except fuels	12.56	8.85	51.12
3	Mineral fuels, lubricants and related	-4.14	403.01	66.65
4	Animal and vegetable oils and fats	14.49	-16.35	23.07
5	Chemicals	20.41	13.61	26.85
6	Manufactured goods classified chiefly by material	9.70	2.74	19.27
7	Machinery and transport equipments	17.10	22.19	35.47
8	Miscellaneous manufactured articles	9.82	5.55	20.72
9	Commodities and transactions not classified according to kind	17.58	26.54	-3.09
	Total (excluding SITC 33)	13.50	7.56	22.10
	Total (excluding SITC 33 + SITC 9)	13.43	7.08	22.64

Source: COMTRADE-WITS (author's calculations). To compute the growth rates of total exports in the last two rows, export values of SITC 33 and SITC 9 (reported in COMTRADE) are subtracted from the total exports (reported in WTO). The WTO data on total exports are used so that these growth rates are comparable with the ones in Table 1. We use the WTO data in Table 1 as it gives a longer time series (from 1948) than COMTRADE-WITS (from 1962).

merchandise export growth during this period was, by and large, broad-based with double-digit growth in most of the commodity groups. Within the services sector, the growth rate of exports was the highest for the group miscellaneous (which includes software) followed by insurance (Table 3). As a result of the slow-down in world demand triggered by the crisis in east Asia, merchandise exports of India (and of the world) in 1998 declined in absolute value from the level in the previous year. Depreciation of the REER of the rupee by more than 6 per cent between 1997 and 1998 could not avert the decline in the value of India's exports.

India's exports showed signs of recovery during 1999-2001 by growing by about 10 per cent per annum.⁵ The growth rate of merchandise exports declined to about 7.6 per cent if petroleum (SITC 33) exports, which skyrocketed from \$ 55 million in 1999 to \$ 1,929 million in 2000 are excluded from the total.⁶ As the world economy fully recovered after the Asian crisis, India's merchandise exports showed a high growth rate of about 25 per cent per annum during 2002-05 (22 per cent if petroleum exports are excluded). In particular, services exports showed exceptional performance, growing at the rate of 45 per cent per annum. The growth was broad-based with almost all the commodity groups (except SITC 9) and services sectors showing double-digit growth rates (see Table 2 and Table 3). It is significant that this high growth occurred despite the appreciation of the REER by about 1 per cent per annum during the period.⁷

The latest (provisional) data indicates that the growth momentum of the previous four years continued, by and large, in 2006. The cumulative value of India's merchandise exports during April-March 2006-07 was \$ 124.6 billion (provisional) as against \$ 100.6 billion (provisional) in 2005-06. The growth rate of merchandise exports in 2006-07 over the previous year on a like-to-like basis is 23.8 per cent.⁸ This has been attained in spite of the appreciation of the REER by about 2.8 per cent during April-January of 2006-07.

In sum, India's exports during the post-reform period have been growing faster than the rate of growth of world exports. This is in contrast to the pattern observed for the pre-reform period, particularly during 1950-80. It appears that the growth of world demand is the most important determining factor of India's merchandise export growth for both the pre- and post-reform periods. The strong correlation of India's exports with world exports during the post-reform period is evident from the figure. It is tempting to conclude that the appreciation of the REER in the post-reform period has not had any adverse effect on export growth. In order to make a firm conclusion, however, it is important to control for other factors that determine the growth of exports.⁹ The growth decomposition exercise carried out in Section III provides some insight into this issue.

Market Share, Commodity Composition, and Comparative Advantage

Table A-1 in the Appendix presents the composition of India's exports and market shares (share of India's exports in world exports) at the 2-digit level of commodity disaggregation. As many as 46 product groups (out of the total number of 59) show an increase in their market shares in 2005 compared to 1993. Only nine product groups show a decline in their market shares while no change has been observed for the remaining four groups. The increase in the market share can be seen in all groups at the 1-digit level of commodity disaggregation. In the recent

period – that is from 2002 to 2005 – the market shares of 37 product groups increased while there has been some decline in the case of 17 groups. The groups that gained market shares significantly between 1993 and 2005 include: metalliferous ores and metal scrap (SITC 28); textile fibres, not manufactured (SITC 26); crude chemicals (SITC 52); crude fertilisers and minerals (SITC 27); cereals and cereal preparations (SITC 04); textile yarn, fabrics, made-up articles (SITC 65); petroleum and petroleum products (SITC 33); clothing (SITC 84); chemical elements and compounds (SITC 51); non-metallic mineral manufactures (SITC 66); iron and steel (SITC 67), etc.

Some changes notwithstanding, it appears that the structure of India's merchandise exports at the 2-digit level shows a relatively high degree of persistence over time (see column 3, Table A-1).¹⁰ Spearman's rank correlation coefficients are estimated to gauge the extent of structural changes over time in India's exports. Between 1993 and 2005, the correlation coefficient of the shares of various commodities (at the 2-digit level) in India's total exports is 0.92. The correlation coefficient between 2002 and 2005 is as high as 0.98. The high positive correlations (both significant at the 1 per cent level) suggest that there have been no major structural changes (at the 2-digit level) in India's merchandise exports during the post-reform period. These correlations, however, do not rule out any structural changes that might have occurred within the 2-digit groups.

Previous studies by this author, using highly disaggregated trade data (4-digit level) for the period 1988-2001, showed significant growth of intra-industry trade in India's multilateral trade during the post-reform period [Veeramani 2002, 2004]. Intra-industry trade refers to the simultaneous occurrence of exports and imports within the same 4-digit industry. Updated estimates for the period 2001-05 show further increases in the share of intra-industry trade in India's trade flows.¹¹ Growth of intra-industry trade is a manifestation of specialisation in narrow product lines and resource reallocation within the industry as opposed to between industries. Econometric analysis, using panel data from Indian industries, showed that the reduction of trade barriers contributed significantly to the increase in the intensity of intra-industry trade [Veeramani 2007a]. Thus, while we do not observe major structural changes at the 2-digit level, analysis using more disaggregated data suggests significant structural changes within the narrowly defined industries.

A comparison of the export structure of India with that of the world (excluding India) helps us to identify the product groups where India has a comparative advantage (see columns 3 and 4, Table A-1). We say that India has a comparative advantage in

Table 3: India's Services Exports across Sectors, Average Annual Growth Rates

Sector	1993-97	1999-2001	2002-05
Travel	7.67	1.65	33.25
Transportation	6.57	12.51	36.40
Insurance	18.26	11.66	47.22
Miscellaneous	25.99	4.26	49.81
Miscellaneous of which software ^a	NA	7.27 ^a	35.29
Total commercial services ^b	13.96	4.83	45.59

Notes: a Value of software for the year 1999 was estimated based on the share of software in miscellaneous in 2000 (RBI has been reporting separate data on software exports from the year 2000 onwards).

b Exports of Government not included elsewhere (Gnie) are excluded.

Source: Reserve Bank of India.

the product group i if its share in India's total exports is higher than its share in the total world exports.¹² Accordingly, India's comparative advantage primarily lies in some of the food items (SITC 03-08); certain type of crude materials (SITC 26-29); certain chemicals (SITC 51-54); leather and rubber products (SITC 61-62); textiles (SITC 65); non-metallic mineral manufactures (SITC 66); iron and steel (SITC 67); and clothing, footwear, and travel goods (SITC 83-85). As expected, India has the least comparative advantage in machinery and transport equipments (SITC 7), which accounts for more than 40 per cent of total world exports in 2005 but only 11 per cent of India's exports.¹³ In contrast, manufactured goods classified chiefly by material (SITC 6) accounts for only 14.5 per cent of world exports while it accounts for 33 per cent of India's exports, which is indicative of India's comparative advantage in this group.

In a similar manner, we can identify the markets where India has a comparative advantage. It is clear that India's comparative advantage rests primarily in the African and Asian regions (see Table A-2, columns 2 and 3, in the Appendix). In 2005, Africa accounted for 6.7 per cent of total exports from India whereas the share of Africa in total world exports was only 2.8 per cent. Asian countries accounted for nearly half (46 per cent) of India's total exports in 2005 while the share of Asia in total world export was only about one-quarter (26 per cent). In contrast, Europe accounted for only 24 per cent of India's total exports in 2005 though its share in total world export is as high as 40 per cent. As far as the Americas are concerned, India's share (ranges from 20 to 25 per cent) is not significantly different from the share of the world.

India accounted for 1 per cent of the total world exports to Africa in 1993, which increased to 2 per cent in 2005. The increase can be seen across all the African regions (see column 4, Table A-2). With the notable exception of Japan, an increase in India's market share can be observed across Asia as well. A noticeable increase can be observed in India's market share in South America. However, India's market share in eastern Europe in general and the Russian Federation in particular has declined substantially despite a significant growth of world exports to these regions over the years.

III Sources of India's Export Growth

It is evident from Table 1 that the periods of India's relatively higher export growth (1970-79, 1986-90, 1993-97 and 2002-05) were associated with a rapid increase in world demand, while periods of slow export growth (1980-85 and 1998-2001) were associated with a slowdown in world demand. Joshi and Little (1994), while recognising the importance of world demand, have laid greater emphasis on price competitiveness to explain India's export growth. In what follows, we undertake a growth decomposition exercise to understand the relative contribution of world demand and other factors in explaining India's export growth during the pre- and post-reform periods. In particular, we are interested in investigating whether India's overall export competitiveness has improved in the post-reform period.

Methodology and Data

The method of constant market share (CMS) analysis allows us to decompose the export growth of a country between any two periods into the four effects mentioned earlier [for more

details see Leamer and Stern 2006]. The change in India's exports (ΔX) between any two periods can be written as:

$$\Delta X = \underbrace{\sum_i r X_i}_{(i)} + \underbrace{\sum_i r_i X_i - \sum_i r X_i}_{(ii)} + \underbrace{\sum_j \sum_i r_{ij} X_{ij} - \sum_i r_i X_i}_{(iii)} + \underbrace{\Delta X - \sum_j \sum_i r_{ij} X_{ij}}_{(iv)} \dots (1)$$

where r = percentage increase in total world (excluding India) exports from period 1 to period 2; r_i = percentage increase in world (excluding India) exports of commodity i from period 1 to period 2; r_{ij} = percentage increase in world (excluding India) exports of commodity i to region j from period 1 to period 2; X_i = India's exports of commodity i to the rest of the world in period 1; and X_{ij} = India's exports of commodity i to region j in period 1.

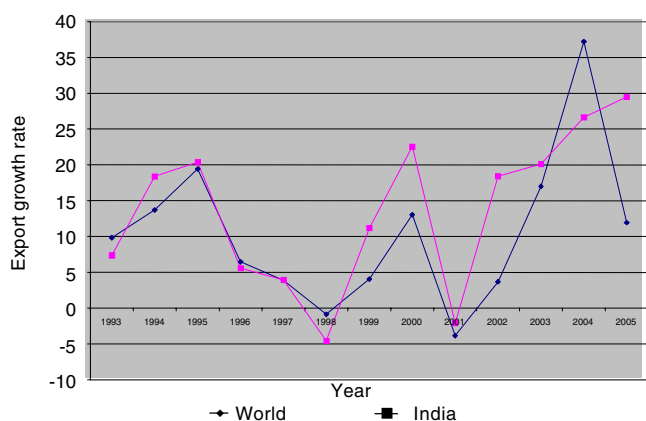
The expression (i) of the decomposition is the "world trade effect", which isolates India's export growth attributable to the overall growth in the world exports. In other words, this term estimates the level of change in the exports had India merely maintained its share in the world market. Expression (ii) is the "commodity composition effect". A positive value for this term indicates that India's exports in period 1 were concentrated in commodities where the growth rates of world exports (r_i) were higher than the world average for all commodities (r). A negative value indicates just the opposite – that is, concentration of India's exports in commodities for which world demand was growing relatively slowly. Expression (iii) is the "market distribution effect", which can be interpreted in the same manner as the commodity-composition effect: a positive value indicates that India's exports in period 1 were directed to the markets (i.e., regions), which were growing faster than the world average. Expression (iv) is a residual, which reflects the difference between the actual export growth of India (ΔX) and the growth that would have occurred had the country maintained its export share of each commodity to each region ($\sum_j \sum_i r_{ij} X_{ij}$). A positive residual is reflective of a general improvement in the competitiveness of the exporting country (India, in our case) due to the various price and non-price factors.

Merchandise export data have been taken from COMTRADE-WITS. The data set consists of the value of total world exports and Indian exports (in \$) spanning more than four decades (1962-2005).¹⁴ There are 59 commodity groups ($i = 1 \dots 59$) according to the 2-digit level of SITC (rev 1) and 20 market groups ($j = 1 \dots 20$).¹⁵ Unfortunately, such detailed data are not available in the case of services exports. The World Trade Organisation (WTO) provides data on the exports of commercial services since 1980 disaggregated into three sectors – travel, transportation and other commercial services. The destination-wise break up of the services exports from the source country, however, is not available. Given this limitation, the following equation is used to decompose the growth of services exports:

$$\Delta X = \underbrace{\sum_i r X_i}_{(i)} + \underbrace{\sum_i r_i X_i - \sum_i r X_i}_{(ii)} + \underbrace{\Delta X - \sum_i r_i X_i}_{(iii)} \dots (2)$$

where the variables are as defined for equation (1). As before "world trade effect" and "commodity composition effect" are isolated in expressions (i) and (ii), respectively. However, since the variable X_{ij} is not available, the "market distribution effect" could not be isolated. The latter is, therefore, combined with the overall "competitiveness effect" in expression (iii), which implies

Figure: Annual Export Growth Rate, India and World



Source: COMTRADE-WITS (author's calculations).

that some part of the residual might be attributed to the market distribution effect.¹⁶

Decomposition of Export Growth, Pre-Reform Period (1962-1990)

Results of the growth decomposition exercise pertaining to India's merchandise exports during the pre-reform period are presented in Table 4. That India failed to exploit the available trade opportunities during this period is evident from the table. Between 1962 and 1970, India's exports increased by \$ 625 million. But, had the country maintained its market share of the initial year (1962), the increase of exports would have been as high as \$ 2,121 million. The potential increase of exports would have been even higher (\$ 2,367 million) had India also exploited its favourable market distribution of exports. This means that between 1962 and 1970 the actual export growth was below the potential by 278 per cent. The failure to exploit this opportunity is mainly attributable to the negative competitiveness effect (-176 per cent) followed by the negative commodity composition effect (-102 per cent). The negative competitiveness effect during the above period may reflect the adverse effect of the overvalued exchange rate and the general bias of the policy regime against exports. The negative commodity composition effect reflects specialisation in the "wrong" commodities.¹⁷

The 1970s was a period of rapid export growth both for India and the world as a whole. The average export growth of India during this period was about 18 per cent. Table 4, however, indicates that the potential offered by the rapidly growing world demand was much higher than the actual export growth of India during the 1970s. From 1970 to 1980, India's exports increased by \$ 5,495 million. But, had the growth rate of Indian exports matched that of the world exports, the former's exports would have increased by \$ 10,294 million. Nevertheless, the performance was better compared to the 1960s in that the gap between the actual exports and the potential declined to 135 per cent for 1970-80 from 278 per cent for 1962-70. The negative competitiveness effect (-87 per cent) and the negative commodity composition effect (-48 per cent) were again why the actual growth fell short of the potential during the 1970s.¹⁸ The improvement in the value of the competitiveness residual from -176 per cent (during 1962-70) to -87 per cent might be attributed to the export promotion policies during 1970-80, including the exchange rate policies. That the value of the competitiveness residual still

remained negative should not be taken to mean that the real exchange rate depreciation and other export promotion incentives of the 1970s were ineffective. In contrast, it means that the export incentives were not sufficiently high to fully exploit the potential offered by the buoyant world economy.

India's merchandise exports increased by \$ 2,245 million from 1980 to 1986 even as the world exports were stagnant during this period. Had India merely maintained its market share, its exports would have increased by only \$ 337 million. For the first time, the actual was higher than the potential offered by the growth of world demand. This is attributable to the favourable commodity composition effect (49 per cent), favourable market distribution effect (25 per cent) and the positive competitiveness effect (11 per cent). Thus, it is evident that the slow growth of India's merchandise exports during the first half of the 1980s is attributable to stagnant world demand.¹⁹ When it comes to the exports of services, however, the actual growth during the first half of the 1980s was far below the potential offered by the growth of world trade (Table 6).

The second half of the 1980s witnessed significant export growth from India. The actual increase of merchandise exports from 1986 to 1990 (\$ 7,820) was marginally higher than the

Table 4: Growth Decomposition of India's Merchandise Exports, Pre-Reform Period (1962-90)
(in millions of US \$)

Period	Actual Change in India's Exports	World Trade Effect	Commodity Composition Effect	Market Distribution Effect	Competitiveness Effect
1962-70	625 (100)	2121 (339)	-641 (-102)	246 (39)	-1101 (-176)
1970-80	5495 (100)	10294 (187)	-2668 (-48)	2654 (48)	-4785 (-87)
1980-86	2245 (100)	337 (15)	1101 (49)	553 (25)	254 (11)
1986-90	7820 (100)	7615 (97)	-470 (-6)	948 (12)	273 (-3)

Note: Figures in parentheses are percentage shares.
Source: Estimated using data from COMTRADE-WITS.

Table 5: Growth Decomposition of India's Merchandise Exports, Post-Reform Period (1993-2005)
(in millions of US \$)

Period	Actual Change in India's Exports	World Trade Effect	Commodity Composition Effect	Market Distribution Effect	Competitiveness Effect
1993-2005	80493 (100)	46241 (57)	-9674 (-12)	4395 (6)	39531 (49)
1993-2000	22380 (100)	16492 (73)	-5052 (-22)	665 (3)	10275 (46)
1993-2001	21142 (100)	15033 (71)	-4163 (-19)	624 (3)	9649 (45)
1993-1997	12210 (100)	10982 (90)	-1322 (-10)	13 (0.1)	2537 (20)
1997-2000	10170 (100)	5716 (56)	-4003 (-39)	1059 (10)	7398 (73)
1997-2001	8933 (100)	4201 (47)	-3038 (-34)	931 (10)	6839 (77)
1997-2002	17152 (100)	5593 (32)	-2382 (-14)	849 (5)	13091 (76)
2002-2005	51131 (100)	40006 (78)	-2838 (-5)	6251 (12)	7712 (15)
2000-2005	58112 (100)	34311 (59)	-1542 (-2)	6701 (11)	18641 (32)

Note: Figures in parentheses are percentage shares.
Source: Estimated using data from COMTRADE-WITS.

potential offered by the growth of world demand (\$ 7,615). The difference is attributable to the positive market distribution effect (12 per cent). The commodity composition effect, however, turned negative once again (-6 per cent) and so did the competitiveness effect (-3 per cent). The second half of the 1980s witnessed a sharp depreciation of the REER, which might have helped India to exploit the growing world demand. In the case of services exports, however, the actual growth remained below the potential.

Decomposition of Export Growth, Post-Reform Period (1993-2005)

Throughout the post-reform period, the actual growth rates of India's merchandise and services exports have been above the potential offered by the growth of world trade (Tables 5 and 6). It is significant that the gap has been mainly explained by the positive competitiveness effect. From 1993 to 2005, India's merchandise exports increased by \$ 80,493 million, which was clearly above the potential offered by the growth of world trade (\$ 46,241 million). The positive competitiveness effect (49 per cent) more than offsets the negative commodity composition effect (-12) resulting in the superior performance. This result has not been particularly driven by the rapid growth of exports from India since 2002: the competitiveness residual remains positive and high at 45 per cent for the period 1993 to 2000 and 46 per cent for the period 1993 to 2001.

Breaking the period 1993-2000 into two sub-periods (1993-97 and 1997-2000), however, reveals that the positive competitiveness effect is attributable mainly to the second period. The competitiveness residual was only 20 per cent for the sub-period 1993-97 while it was 73 per cent for the sub-period 1997-2000. Value of the competitiveness residual is even higher (77 per cent) if we consider the sub-period 1997-2001.

From 2002 to 2005, India's exports increased by \$ 51,131 million, which is mainly explained by the world trade effect (78

per cent). It may be emphasised that the competitiveness effect, though positive (15 per cent), has not been the major factor behind the acceleration of India's export growth in the recent years. This is not surprising given the appreciation of the REER during this period. That exports did grow rapidly since 2002 despite the appreciation of the REER should not be taken to mean that the latter had no adverse effect on the former. The actual increase of exports (and hence value of the competitiveness residual) would have been larger had the REER not appreciated.

The positive market distribution effect for both the pre- and post-reform periods underscores the Indian exporter's ability to exploit the relatively fast growing international markets. The commodity composition effect, however, has been negative for both the pre- and post-reform periods, which is indicative of specialisation in the "wrong" commodities. Commodity composition has become less serious, a problem in the recent years than in the past with the increasing product diversification of exports from India.²⁰ Competitiveness residual remains positive throughout the post-reform period although its magnitude varies for different sub-periods. As mentioned earlier, the residual captures both the price and non-price factors of export competitiveness. Thus, despite the possible erosion of price competitiveness in some of the post-reform years, as reflected in the appreciation of the REER, the competitiveness residual may well remain positive if there have been improvements in the non-price factors.²¹

A somewhat puzzling relationship may be noticed in the post-reform period between the pace of merchandise export growth and magnitude of the competitiveness residual: whenever the exports grew relatively faster, the residual showed a relatively smaller value and vice versa. When exports (of India and the world) showed relatively high growth between 1993 and 1997, the value of the residual was just 20 per cent. In contrast, when the growth rate (of India and the world) slowed down during 1997-2001, the residual increased to 77 per cent. Again, when the growth rate (of India and world) accelerated in 2002, the competitiveness residual fell to 15 per cent.²²

We believe that the relationship discussed above is reflective of the intervention strategy of the Reserve Bank of India in the foreign exchange market since the switch to the floating exchange rate regime in 1993. It appears that whenever world demand slows down, the central bank's interventions are intended to achieve a significant depreciation of the REER so as to moderate the fall in the growth rate of India's exports.²³ For example, from 1997 to 2001, a period that witnessed a significant slowdown in the world demand, the REER depreciated by about 3.6 per cent and the nominal effective exchange rate (NEER) depreciated by about 2.7 per cent. If the intervention was indeed successful, it may show up as an increase in the competitiveness residual. Note that the competitiveness residual showed a high value of 77 per cent for 1997-2001, which may indicate the effectiveness of central bank intervention.

The central bank, however, may not be very concerned about the currency appreciation whenever world demand is buoyant. Thus, from 2002 to 2005, the REER and NEER appreciated by about 4.3 per cent and 3.6 per cent respectively, and consequently, the competitiveness residual fell to 15 per cent. Whenever the pace of world demand growth is satisfactory, it is likely that the central bank interventions, if any, are intended to slow down the speed of the REER appreciation (smoothing) rather than to reverse the trend.

Table 6: Growth Decomposition of India's Services Exports, 1980-2005
(in millions of US \$)

Period	Actual Change in the Exports of India	World Trade Effect	Commodity Composition Effect	Market Distribution and Competitiveness Effects
1980-86	275 (100)	650 (236)	241 (88)	-616 (-224)
1986-90	1473 (100)	2328 (158)	34 (2)	-889 (-60)
1993-2005	51485 (100)	7208 (14)	202 (0.4)	44075 (85)
1993-2000	10995 (100)	2936 (27)	-106 (-1)	8165 (74)
1993-2001	11764 (100)	2947 (25)	-135 (-1)	8952 (76)
1993-97	3891 (100)	2020 (52)	-44 (-1)	1915 (49)
1997-2000	7104 (100)	1160 (16)	28 (0.4)	5916 (83)
1997-2001	7873 (100)	1173 (15)	41 (0.5)	6659 (84)
1997-2002	10200 (100)	1901 (19)	64 (0.6)	8235 (80)
2002-05	36969 (100)	9724 (26)	353 (1)	26892 (72)
2000-05	40064 (100)	9926 (25)	734 (2)	29404 (73)

Note: Figures in parentheses are percentage shares.
Source: Estimated using WTO data.

Appendix

Table A-1: Commodity Composition of Exports, India and World (Excluding India)

SITC Code (1)	Description (2)	Composition of India's Exports (3)				Composition of World Exports ^a (4)				India's Share in the World Exports (5)			
		1993	1997	2002	2005	1993	1997	2002	2005	1993	1997	2002	2005
0	<i>Food and live animals:</i>	15.47	15.96	11.53	8.03	7.61	6.85	5.86	5.04	12.97	13.83	14.58	14.02
00	Live animals	0.01	0.00	0.00	0.01	0.24	0.17	0.15	0.12	0.02	0.00	0.01	0.05
01	Meat and meat preparations	0.50	0.63	0.55	0.61	1.10	0.91	0.78	0.73	0.29	0.46	0.60	0.79
02	Dairy products and eggs	0.03	0.09	0.12	0.22	0.71	0.56	0.47	0.46	0.03	0.11	0.22	0.45
03	Fish and fish preparations	3.69	3.52	2.75	1.55	1.01	0.89	0.84	0.63	2.28	2.54	2.74	2.32
04	Cereals and cereal preparations	2.02	2.79	3.35	1.73	1.31	1.17	0.94	0.76	0.97	1.56	2.97	2.14
05	Fruit and vegetables	2.49	2.20	1.77	1.55	1.51	1.34	1.25	1.08	1.04	1.08	1.20	1.36
06	Sugar, sugar preparations and honey	0.27	0.22	0.78	0.19	0.35	0.35	0.27	0.23	0.49	0.43	2.41	0.79
07	Coffee, tea, cocoa, and spices	2.96	3.63	1.46	1.00	0.52	0.64	0.44	0.39	3.51	3.62	2.73	2.39
08	Feed-stuff for animals	3.42	2.77	0.62	1.10	0.50	0.46	0.38	0.29	4.21	3.86	1.39	3.50
09	Miscellaneous food preparations	0.08	0.10	0.13	0.08	0.37	0.37	0.35	0.35	0.14	0.18	0.32	0.23
1	<i>Beverages and tobacco:</i>	0.73	0.87	0.46	0.33	1.25	1.15	0.99	0.93	0.82	1.14	1.11	1.20
11	Beverages	0.06	0.03	0.04	0.04	0.69	0.65	0.65	0.68	0.05	0.03	0.06	0.05
12	Tobacco and tobacco manufactures	0.67	0.85	0.41	0.29	0.55	0.50	0.33	0.24	0.77	1.11	1.05	1.14
2	<i>Crude materials (inedible, except fuels):</i>	5.54	4.97	4.26	6.95	3.74	3.64	2.99	2.99	7.45	7.50	9.39	14.30
21	Hides, skins and fur skins	0.00	0.00	0.00	0.01	0.14	0.14	0.12	0.09	0.02	0.00	0.02	0.09
22	Oil-seeds, oil nuts and oil kernels	0.39	0.74	0.29	0.31	0.28	0.32	0.26	0.20	0.87	1.51	0.94	1.45
23	Crude rubber	0.02	0.02	0.08	0.14	0.22	0.22	0.18	0.20	0.04	0.05	0.40	0.63
24	Wood, lumber and cork	0.00	0.00	0.01	0.01	0.80	0.69	0.54	0.46	0.00	0.00	0.02	0.02
25	Pulp and paper	0.00	0.00	0.00	0.00	0.35	0.34	0.31	0.26	0.00	0.00	0.00	0.00
26	Textile fibres, not manufactured	1.03	0.78	0.18	0.78	0.48	0.50	0.33	0.25	1.35	1.03	0.46	2.94
27	Crude fertilisers and crude mineral	0.89	0.51	0.81	0.69	0.31	0.27	0.22	0.20	1.82	1.23	2.97	3.26
28	Metalliferous ores and metal scrap	2.27	1.68	2.07	4.39	0.75	0.81	0.71	1.06	1.90	1.35	2.42	3.82
29	Crude animal and vegetable materials, nes	0.95	1.24	0.82	0.62	0.41	0.35	0.32	0.28	1.45	2.32	2.15	2.08
3	<i>Mineral fuels, lubricants:</i>	2.27	1.17	5.19	11.51	6.98	6.87	8.59	10.56	0.61	0.26	0.89	1.49
32	Coal, coke and briquettes	0.10	0.07	0.10	0.08	0.51	0.45	0.39	0.49	0.12	0.10	0.23	0.15
33	Petroleum and petroleum products	1.83	1.07	5.04	11.31	5.54	5.18	6.78	8.60	0.21	0.14	0.63	1.25
34	Gas, natural and manufactured	0.34	0.02	0.04	0.12	0.78	1.09	1.25	1.24	0.28	0.02	0.03	0.10
35	Electric energy	0.00	0.00	0.00	0.00	0.15	0.15	0.17	0.22	0.00	0.00	0.00	0.00
4	<i>Animal and vegetable oils and fats:</i>	0.46	0.52	0.34	0.30	0.42	0.50	0.41	0.37	1.27	1.52	1.96	2.19
41	Animal oils and fats	0.00	0.00	0.00	0.01	0.04	0.03	0.03	0.02	0.01	0.01	0.13	0.44
42	Fixed vegetable oils and fats	0.41	0.44	0.23	0.23	0.31	0.40	0.31	0.29	0.84	0.72	0.64	0.74
43	Oils and fats, processed	0.05	0.08	0.10	0.06	0.08	0.07	0.07	0.05	0.42	0.80	1.19	1.01
5	<i>Chemicals:</i>	7.49	10.30	11.91	12.24	9.27	9.77	10.96	11.85	4.13	5.42	7.57	7.79
51	Chemical elements and compounds	2.36	3.74	4.21	5.19	2.84	2.93	3.08	3.28	0.53	0.84	1.16	1.50
52	Crude chemicals	0.00	0.00	0.09	0.13	0.04	0.08	0.06	0.08	0.03	0.01	1.41	1.55
53	Dyeing, tanning and colouring materials	1.41	1.41	1.17	0.83	0.64	0.64	0.58	0.54	1.39	1.45	1.69	1.44
54	Medicinal and pharmaceutical products	2.21	2.78	3.44	2.82	1.48	1.60	2.73	3.19	0.94	1.14	1.07	0.84
55	Perfume materials, toilet and cleansing	0.69	0.54	0.55	0.50	0.75	0.78	0.88	0.93	0.59	0.46	0.53	0.51
56	Fertilisers, manufactured	0.02	0.02	0.01	0.01	0.26	0.30	0.25	0.23	0.05	0.04	0.02	0.04
57	Explosives and pyrotechnic products	0.02	0.04	0.02	0.01	0.05	0.04	0.03	0.03	0.25	0.68	0.40	0.33
58	Plastic materials, etc	0.34	0.74	1.46	1.65	2.12	2.27	2.26	2.45	0.10	0.22	0.55	0.64
59	Chemical materials and products, nes	0.43	1.03	0.97	1.11	1.10	1.14	1.11	1.11	0.25	0.60	0.74	0.94
6	<i>Manufs classified chiefly by material:</i>	41.56	39.26	39.14	33.08	16.14	15.84	14.28	14.50	13.43	13.05	18.19	17.33
61	Leather and products and dressed fur skins	2.47	1.91	1.67	0.97	0.49	0.46	0.41	0.33	3.14	2.67	3.40	2.74
62	Rubber manufactures, nes	1.11	0.94	0.91	0.86	0.83	0.83	0.78	0.77	0.85	0.74	1.00	1.07
63	Wood and cork prodts excluding furniture	0.21	0.09	0.07	0.09	0.71	0.66	0.57	0.54	0.19	0.09	0.10	0.15
64	Paper, paperboard and manufactures	0.16	0.24	0.49	0.40	1.84	1.82	1.74	1.50	0.05	0.09	0.24	0.25
65	Textile yarn, fabrics, made-up articles	13.32	15.35	11.72	8.15	3.36	3.10	2.59	2.08	2.47	3.18	3.72	3.62
66	Non-metallic mineral manufactures	17.86	14.32	16.16	12.87	2.13	1.98	1.96	1.98	5.07	4.58	6.58	5.87
67	Iron and steel	3.62	3.62	4.55	5.24	2.87	2.84	2.38	3.21	0.80	0.84	1.61	1.54
68	Non-ferrous metals	0.60	0.78	1.20	1.84	1.73	2.01	1.74	1.95	0.22	0.26	0.58	0.89
69	Manufactures of metal, nes	2.20	2.02	2.37	2.67	2.19	2.15	2.11	2.13	0.64	0.62	0.95	1.19
7	<i>Machinery and transport equipments:</i>	6.92	8.15	8.63	10.98	39.46	41.33	42.13	41.12	0.33	0.39	0.52	0.77
71	Machinery, other than electric	2.87	3.47	3.45	4.28	14.93	15.75	14.89	15.04	0.12	0.15	0.20	0.27
72	Electrical machinery and apparatus	1.39	2.05	2.74	2.68	11.74	13.62	14.32	14.03	0.08	0.10	0.16	0.18
73	Transport equipment	2.66	2.64	2.44	4.01	12.79	11.96	12.92	12.05	0.13	0.15	0.16	0.32
8	<i>Miscellaneous manufactured articles:</i>	19.56	18.80	18.55	16.56	14.97	13.93	13.70	12.57	5.48	5.80	7.27	8.30
81	Sanitary, plumbing, and heating	0.07	0.07	0.07	0.07	0.36	0.34	0.35	0.34	0.13	0.13	0.17	0.19
82	Furniture	0.05	0.05	0.14	0.27	0.98	1.00	1.10	1.03	0.03	0.03	0.11	0.25
83	Travel goods, handbags and similar	0.91	0.92	0.66	0.54	0.31	0.29	0.26	0.25	1.82	2.03	2.11	2.00
84	Clothing	13.62	12.83	11.85	9.12	3.83	3.56	3.33	2.60	2.22	2.33	2.96	3.25
85	Footwear	1.28	0.86	0.84	0.81	0.99	0.84	0.71	0.57	0.82	0.67	1.00	1.35
86	Scientific and control instruments	0.33	0.43	0.50	0.51	3.29	3.23	3.14	3.28	0.06	0.09	0.14	0.15
89	Miscellaneous manufactured articles	3.30	3.65	4.50	5.24	5.21	4.67	4.81	4.50	0.40	0.51	0.79	1.11
9	<i>Commodities and transactions not classified according to kind:</i>	0.00	0.00	0.00	0.01	0.16	0.12	0.10	0.07	0.01	0.01	0.01	1.52
94	Animals, nes, incl zoo animals	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00
95	Firearms of war and ammunition	0.00	0.00	0.00	0.00	0.15	0.11	0.09	0.06	0.01	0.00	0.01	0.04
96	Coin, other than gold coin	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00	1.48
	Total	100	100	100	100	100	100	100	100	0.63	0.66	0.85	0.95

Note: (a) India's exports excluded from world exports for computing the market distribution of world exports.

IV Concluding Remarks

The paper attempted to investigate the sources of India's export growth during the pre- and post-reform periods. The pace of India's export growth has not been distinctly high in the most part of the post-reform period (1993-2005), though it has accelerated since 2002. In contrast to the pre-reform period, however, India's exports have been growing faster than the rate of growth of world exports during the post-reform period. Further, the export growth during the post-reform period, by and large, has been broad-based. The structure of merchandise exports at the 2-digit level showed a high degree of persistence over time. The analysis using highly disaggregated data, however, indicates significant growth of intra-industry trade in India during the post-reform period. This is a manifestation of resource reallocation within the narrowly defined industries. Intra-industry trade is expected to grow under liberalisation as a result of greater specialisation in narrow product lines (or distinct varieties) by the individual plants.

Decomposition of export growth showed that the actual export growth of India had been far below the potential offered by the growth of world trade in the most part of the pre-reform period. The negative competitiveness effect and negative commodity composition effect had been the major retarding factors of export growth in the pre-reform period. In contrast, the actual export growth of India, in the case of both merchandise and services, has been above the potential throughout the post-reform period. It is significant that the gap between the actual and potential has been mainly explained by the positive competitiveness effect. In particular, the competitiveness effect appears to be the major positive source of growth in the case of services exports.

While the analysis indicates an improvement in the overall competitiveness of India's exports in the post-reform period, the rapid growth of merchandise exports since 2002 gives no room for complacency since it has been mainly driven by a buoyant world economy. The competitiveness effect, though positive, has not been the major contributing factor to the acceleration in the growth rate of merchandise exports in recent years. That exports did grow rapidly since 2002 despite the appreciation of the REER should not be taken to mean that the latter had no adverse effect on the former. The actual growth of exports might have been larger (and hence the competitiveness residual) had the REER not appreciated. The positive value of the competitiveness residual despite the appreciation of the REER in some of the post-reform years might reflect improvements in non-price factors.

It appears that exports have been adversely affected by the appreciation of the exchange rate during the post-reform period. But, should the RBI intervene to avoid the appreciation is a larger question of overall macroeconomic management. Export promotion cannot be the sole criterion in deciding for or against the intervention. Artificial depreciation of the currency through central bank intervention comes with its costs, including inflation. Export policy should instead focus on other measures that can improve the competitiveness of Indian exports on a sustained basis. [27]

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Notes

[I would like to thank R Nagaraj for motivating me to write this paper. The usual disclaimer applies.]

1 The system of partial convertibility introduced in 1992 established a dual exchange rate for the rupee, which allowed exporters to sell 60 per cent

Table A-2: Market Distribution of Exports, India and World

Regions (1)	Distribution of India's Exports (2)				Distribution of World Exports ^a (3)				India's Share in World Exports (4)			
	1993	1997	2002	2005	1993	1997	2002	2005	1993	1997	2002	2005
<i>Africa total</i>	3.68	5.45	5.93	6.74	2.45	2.14	2.10	2.84	0.95	1.68	2.42	2.23
Eastern Africa	1.68	1.81	1.58	1.75	0.34	0.26	0.22	0.24	2.99	4.34	5.80	6.50
Middle Africa	0.08	0.18	0.26	0.32	0.12	0.13	0.13	0.19	0.40	0.94	1.70	1.51
Northern Africa	0.92	1.14	1.28	1.51	1.03	0.89	0.86	1.25	0.56	0.84	1.26	1.12
Southern Africa	0.17	1.15	0.97	1.52	0.42	0.44	0.41	0.63	0.25	1.68	1.95	2.23
South Africa	0.17	1.15	0.92	1.48	0.42	0.44	0.40	0.61	0.25	1.68	1.92	2.23
Western Africa	0.84	1.17	1.85	1.64	0.53	0.42	0.48	0.53	0.98	1.81	3.21	2.81
<i>Americas total</i>	20.09	22.62	24.56	20.77	25.15	25.06	26.42	23.81	0.50	0.59	0.79	0.82
Caribbean	0.06	0.15	0.30	0.18	0.56	0.47	0.54	0.50	0.07	0.21	0.47	0.33
Central America	0.36	0.49	0.72	0.61	2.30	2.37	2.78	2.30	0.10	0.13	0.22	0.25
South America	0.67	1.38	1.53	2.12	2.42	2.96	1.80	2.05	0.17	0.31	0.72	0.96
Northern America	19.01	20.60	22.01	17.86	19.87	19.26	21.29	18.97	0.60	0.70	0.88	0.88
US	17.98	19.36	20.68	16.87	16.13	15.62	17.71	16.03	0.70	0.81	0.99	0.98
Canada	1.02	1.23	1.32	0.99	3.70	3.61	3.50	2.90	0.17	0.22	0.32	0.32
<i>Asia total</i>	39.07	37.18	41.83	46.49	23.89	24.60	23.68	26.09	1.03	0.99	1.51	1.67
Central Asia	0.03	0.13	0.16	0.16	0.08	0.20	0.17	0.29	0.26	0.44	0.83	0.53
Eastern Asia	15.91	14.51	13.82	15.14	13.28	13.66	13.93	14.52	0.75	0.69	0.84	0.97
China	1.25	2.06	3.75	6.56	2.89	3.05	4.17	5.39	0.27	0.44	0.76	1.13
Japan	7.83	5.44	3.54	2.41	5.24	5.06	4.57	4.08	0.93	0.70	0.66	0.55
Southern Asia	4.85	5.19	6.52	6.54	1.36	1.17	1.28	1.88	2.20	2.84	4.18	3.17
South-eastern Asia	7.65	7.09	8.76	10.11	5.71	6.42	5.23	5.01	0.84	0.72	1.41	1.86
Western Asia	10.63	10.26	12.56	14.54	3.46	3.17	3.08	4.41	1.90	2.08	3.37	3.00
<i>Europe total</i>	32.86	31.08	24.99	24.22	43.01	43.37	42.75	40.50	0.48	0.47	0.50	0.56
Eastern Europe	4.41	3.44	2.02	1.50	2.37	3.71	3.89	5.49	1.16	0.61	0.44	0.26
Russian Federation	2.92	2.74	1.34	0.71	0.85	1.10	0.90	1.76	2.12	1.61	1.25	0.38
Northern Europe	7.57	7.61	6.03	6.33	9.02	9.88	9.61	8.45	0.53	0.50	0.53	0.70
UK	6.20	6.02	4.74	4.91	5.31	5.36	5.30	4.10	0.73	0.73	0.76	1.11
Southern Europe	4.21	5.21	4.85	5.08	7.03	7.37	7.86	7.08	0.38	0.46	0.52	0.67
Western Europe	16.66	14.83	12.09	11.31	24.59	22.40	21.39	19.49	0.43	0.43	0.48	0.54
<i>Oceania total</i>	1.27	1.49	1.21	0.98	1.47	1.40	1.39	1.54	0.54	0.70	0.74	0.60
Australia and New Zealand	1.26	1.47	1.09	0.94	1.35	1.30	1.28	1.41	0.58	0.74	0.72	0.62
Rest of Oceania	0.01	0.02	0.13	0.04	0.12	0.10	0.11	0.13	0.05	0.14	0.97	0.32
All other countries	3.03	2.18	1.48	0.80	4.03	3.43	3.67	5.22	0.47	0.42	0.34	0.14
Total	100	100	100	100	100	100	100	100	0.63	0.66	0.85	0.94

Note: (a) India's exports excluded from world exports for computing the market distribution of world exports.

- of their foreign exchange in the free market and 40 per cent to the government at the lower official price. The official and market exchange rates were unified with the introduction of full convertibility.
- 2 See Bhagwati and Desai (1970) and Nayyar (1976). The June 1966 devaluation was seen as a substitute for the existing export promotion measures. However, the expected push on export sales did not occur after the devaluation, and therefore re-introduction of subsidisation became inevitable. See Bhagwati and Srinivasan (1975) for a detailed analysis of the 1966 devaluation.
 - 3 In particular, when compared to China, India's export performance leaves much to be desired. China's share in world exports is as high as 8 per cent in 2006 while India's share is only 1 per cent. See Veeramani (2007b) for an analysis of India's export performance in comparison to China.
 - 4 The indices of REER reported in different parts of the paper are based on the 36 currency bilateral (export) weights (base: 1993-94 = 100) taken from the RBI's *Handbook of Statistics*. The annual averages for the calendar years are selected.
 - 5 It may be noted that the growth rate of services exports for the period 1999-2001 shown in Table 1 (9.5 per cent) is significantly different from the one reported in Table 3 (5 per cent). Growth rates in Table 1 are based on the UN-COMTRADE database while those in Table 3 are based on the RBI data.
 - 6 Exclusion of SITC 9, however, does not significantly affect the overall growth rate due to its small share in total exports.
 - 7 At the same time, a major increase in India's merchandise trade deficit can be noticed since 2002. This has been mainly on account of the oil import bill, which posted a hefty increase, though a higher non-oil import bill also contributed to the widening trade deficit since 2004. The rising non-oil imports could be reflective of enhanced domestic activity, and if so, can be considered a healthy development. The strong performance of services exports has not been sufficient to check the rising current account deficit, which, however, is not a cause for immediate concern due to a healthy capital account surplus.
 - 8 The white paper on 'Methodology for Computation of Growth Rates for Exports and Imports' published by the department of commerce states that it is appropriate to compare the provisional figure of the current year with the provisional (rather than the revised) figure of the previous year.
 - 9 Srinivasan and Tendulkar (2003, p 34) note that "the negative elasticity of exports with respect to exchange rate movements did not change significantly from the 1980s to the 1990s". References to a number of other studies on the relationship between exchange rate and exports can be seen in Mallik (2005).
 - 10 The most visible change in the structure of merchandise exports is the rise in the share of petroleum (SITC 33) exports from about 2 per cent in 1993 to about 11 per cent in 2005. Available estimates for the year 2006 show that the share has further increased to 16 per cent. The structure of services exports show significant changes over the years. In 1993, travel accounted for the highest share (42 per cent) of India's services exports, followed by miscellaneous (28 per cent) and transportation (27 per cent). In 2005, however, miscellaneous accounted for the highest share (75 per cent) of India's services exports: software accounted for 68 per cent of miscellaneous in 2002, which declined to 51 per cent by 2005. In the recent years, business services has become the second largest component of India's services exports (source: estimated from the RBI data).
 - 11 A detailed discussion of this issue is beyond the scope of this paper.
 - 12 Dividing the share of product group *i* in India's exports by the share of product group *i* in world exports gives the index of revealed comparative advantage [Balassa 1965]. A value greater than 1 implies that India has a comparative advantage in the product group *i* and vice versa.
 - 13 The revealed comparative advantage (RCA) index at the 2-digit level can mask important heterogeneities within the 2-digit group. Veeramani (2007b) shows that almost all the product groups contain certain product lines where the RCA values are greater than 1. This implies specialisation in narrow product lines within the product groups.
 - 14 1962 is the earliest year for which data are available in COMTRADE and 2005 was the most recent year for which data were available at the time the analysis was carried out.
 - 15 The market groups are according to the UN classification of geographical regions. These are the same as shown in Table A-2 in the Appendix.
 - 16 We believe that the market distribution effect is much less important for services exports compared to merchandise exports as the demand sources of the former are geographically more concentrated than the latter.
 - 17 Just three primary and resource based commodity groups – food and live animals (SITC 0); crude materials (SITC 2) and textiles (SITC 65) – accounted for nearly 85 per cent of India's total exports in 1962. The world demand for these commodities, however, had grown relatively slowly from 1962 to 1970. This explains the negative commodity composition effect.
 - 18 Just four commodity groups accounted for nearly 81 per cent of India's total exports in 1970, which includes the three groups mentioned above (SITC 0, SITC 2 and SITC 65) and "other manufactured goods classified chiefly by material" (SITC 6 – (65 + 66)). All these groups, showed a decline in their shares in the total world exports in 1980 compared to 1970, which means that the world demand for these commodities grew relatively slowly. Therefore, the negative commodity composition effect during 1970-80 is not surprising.
 - 19 This contradicts Joshi and Little (1994, p 270) who argue that "inadequate competitiveness must take a large part of the blame although slow growth of world demand contributed to some extent".
 - 20 The commodity composition effect remains negative for the post-reform period. This could be related to one of the following. First, India's comparative advantage lies in commodities where the growth rate of world demand has been relatively small. Second, domestic factor market rigidities (like those in the organised labour market) and other bottlenecks (for example, infrastructure constraints) might be standing in the way of reallocating resources on the basis of the considerations of comparative advantage and changing international demands for different commodities. See Banik (2001) for a discussion on the various supply side constraints that the Indian exporters have been facing in the post-reform period.
 - 21 For example, India's increasing intra-industry trade reflects improvements in the non-price factors such as product differentiation and scale economies.
 - 22 A similar pattern can be observed for the 1980s: the competitiveness residual was 11 per cent for the first half of the 1980s (period of slow export growth from India and stagnant world exports) but it turned negative for the second half of the 1980s (period of relatively higher export growth for both India and world).
 - 23 When the authorities aim at putting a break on the recent trend of the exchange rate movement, it is called "lean-against-the-wind" interventions. For example, when the rupee has appreciated, the interventions to sell the rupee are regarded as the lean-against – the-wind operations. This can be further subdivided into an intervention that is intended to reverse the trend (that is, the rupee depreciates due to intervention), and an intervention that is intended only to slow down the speed of appreciation [Ito 2002]. Kohli (2003) finds that the central bank intervention behaviour during 1993-99 in India was characterised by a significant effort to lean-against-the-wind.

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