

Anatomy of India's Merchandise Export Growth, 1993-94 to 2010-11

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This paper analyses the growth and pattern of India's merchandise exports during the post-reform period (1993-94 to 2010-11). The first decade after reforms (from 1993-94 to 2001-02) was characterised by a relatively low export growth rate of 8% a year, while the second decade (from 2002-03 to 2010-11) stands apart for its strong growth of 21% a year. The growth rate is at an impressive 24% per annum during the pre-financial crisis period of 2002-03 to 2008-09. These trends, based on India's official export data, have been further confirmed using "mirror statistics" that have been constructed on the basis of imports reported by India's trading partners. The composition of exports has undergone consistent changes in favour of capital and skill-intensive products.

The lack of dynamism in labour-intensive exports is a matter of concern because it is this sector that holds the potential to absorb the large pool of surplus labour from agriculture. The analysis shows a major shift in India's export destination from the traditional developed country markets to the emerging markets in Asia and Africa.

1 Introduction

Trade and exchange rate liberalisation has been central to the structural adjustment programmes implemented by India since the early 1990s. The quantitative restrictions (QRS) on importing capital goods and intermediates were mostly dismantled in 1992, although the ban on importing consumer goods continued, with some exceptions, until the late 1990s. Alongside the removal of QRS, customs duties in the manufacturing industries were gradually reduced. Following the new tariff reductions introduced in the March 2007 budget, India has emerged as one of the world's low protection and open industrial economies (Pursell et al 2007).

The focus of the export policy, by and large, shifted from product-specific incentives to more generalised incentives based primarily on the exchange rate. It was held that the overvalued rupee had created a bias against exports and that a more realistic market determined exchange rate would make exporting activities inherently more attractive. The government introduced a major downward adjustment in the rupee exchange rate against the major international currencies in July 1991. In February 1992, a dual exchange rate system was introduced, which allowed exporters to sell 60% of their foreign exchange earnings at the free market rate and 40% to the government at the official lower rate. In April 1993, a further move towards the deregulation of the external sector took place when the government adopted full convertibility on the trade account by unifying the official exchange rate with the market one. These steps culminated in India adopting full current account convertibility in August 1994.

We consider 1993 as the benchmark for defining the post-trade reform period since full convertibility on trade account was introduced in that year. The reforms, by reducing the anti-export bias of protectionist policies, were expected to improve export competitiveness and growth. During the first decade of the reforms (1993-94 to 2001-02), India's merchandise exports in dollars grew at the rate of about 8% a year. This is slightly better than the average growth rate of 7% a year in the 1980s but pales in comparison with the growth rate of 18% a year in the 1970s. In stark contrast to the first decade of the reforms, however, India's merchandise exports recorded an exceptionally high growth rate of 21% a year during 2002-03 to 2010-11.

Services exports grew relatively faster at the rate of 18% per year during 1993-94 to 2001-02 and at the rate of 25% a year during 2002-03 to 2010-11.¹ The increasing importance of services exports is evident from the fact that its share in India's total exports increased from about 19% in 1993-94 to 34% in 2010-11.

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India exported \$132 billion worth of services in 2010-11 while the value of merchandise exports in the same year stands at \$250 billion.

While India's export success in services has been widely acknowledged and studied,² the recent dynamism in India's merchandise exports has not been subjected to systematic and detailed analysis. The present paper focuses exclusively on merchandise exports and provides a detailed account of its growth and pattern during the post-reform period (from 1993-94 to 2010-11).³ The rest of this paper is structured as follows. Section 2 discusses the export growth performance. The composition and geographical direction of exports are analysed in Sections 3 and 4, respectively. Finally, Section 5 provides the concluding remarks.

2 Growth Performance

This section deals with an analysis of growth performance using two types of data on merchandise exports. First, we use the data reported by India's official statistical agencies, which is referred to as the "reported" data. Second, we use the "mirror export data", which has been constructed on the basis of imports reported by India's partner countries. While mirror data are generally perceived as second-best to own-country reported data, the former provides us with an obvious way of checking the reliability of the latter. We may also note that imports, because it generates tariff revenue, are usually recorded with more accuracy than exports.

2.1 Analysis Based on Reported Data

Using the Reserve Bank of India's balance of payment statistics, Table 1 reports the average annual growth rates of India's aggregate merchandise exports for different periods and sub-periods.

The value of exports grew at the rate of 14.5% a year during the 20 years after 1991, which compares somewhat favourably with the performance during the 20 years before 1991 when exports grew at the rate of about 11% a year. Comparison of performance over such a long time horizon, however, masks some important decadal variations. It is evident that the average annual growth rate in the 1970s (18%) was distinctly superior to that in the 1980s (7%). Similarly, the first decade of the 21st century witnessed markedly better growth performance (20%) than the 1990s (10%).

The analysis that follows focuses specifically on the post-reform period, which has been further divided into two sub-periods: (1) the first decade of reforms (from 1993-94 to 2001-02); and (2) the second decade of reforms (from 2002-03 to 2010-11).

Table 1: Growth Rates of India's Merchandise Exports (valued in \$ billion, %)

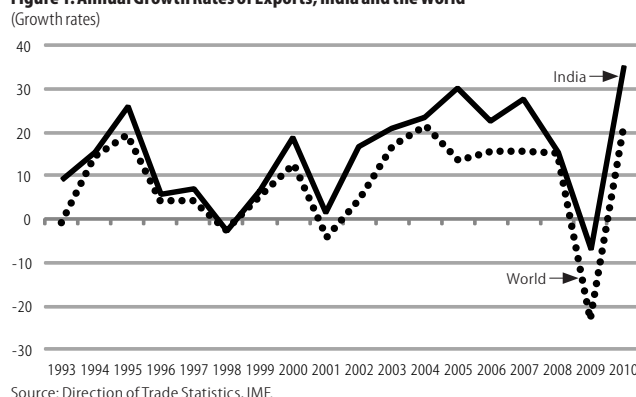
Period	Growth Rates	
	Total	Non-Oil
1970-71 to 1990-91	10.8	10.4
1991-92 to 2010-11	14.5	13.3
1993-94 to 2010-11	14.9	13.6
1970-71 to 1979-80	18.2	18.3
1980-81 to 1989-90	7.1	7.6
1990-91 to 1999-2000	9.8	10.1
2000-01 to 2009-10	20.3	18.1
1993-94 to 2001-02	8.0	7.7
2002-03 to 2008-09	24.0	21.1
2002-03 to 2010-11	20.6	18.4
2009-10	-3.6	-4.6
2010-11	37.4	35.4
2011-12 (April to November)*	33.2	na

(i) Growth rates are calculated using semi-logarithmic regressions.

(ii) * Based on revised (but still provisional) data released by Department of Commerce in December 2011 after correcting for errors.

Sources: Data up to 2010-11 are from the RBI (BoP statistics); data for 2011-12 and the data on oil exports are DGCIIS information from the Department of Commerce (Government of India).

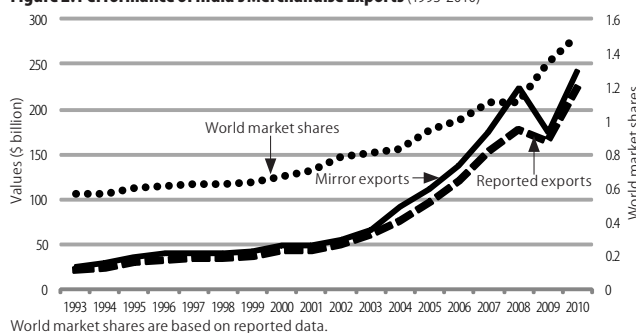
Figure 1: Annual Growth Rates of Exports, India and the World



The first decade of reforms is characterised by a relatively low growth of 8% a year, while the second decade stands apart for its strong growth rate of 21% a year. In general, the growth rate of Indian exports has been higher than the world exports throughout the post-reform period (see Figure 1 and Table 3, p 97). This is in contrast to the pre-reform period when the Indian growth rates had been below the world average (Veeramani 2007).

Looking at the level rather than growth, the value of exports stood at \$23 billion in 1993-94 which increased to \$45 billion in 2001-02. In other words, during the early phase of the reforms, it took as many as eight years to double the value of exports. However, within a matter of four years, the export value more than doubled from \$45 billion in 2001-02 to \$105 billion in 2005-06. Further, between 2002-03 and 2010-11, the value of exports increased nearly five times from about \$54 billion to \$250 billion. Consistent with this trend, India's share in the world exports first increased slowly from about 0.6% in 1993 to 0.7% in 2001 and then increased relatively faster to 1.5% in 2010 (Figure 2).⁴

Figure 2: Performance of India's Merchandise Exports (1993-2010)



World market shares are based on reported data.

Source: Direction of Trade Statistics, IMF.

Table 2 (p 96) shows the export growth rates across different groups of commodities disaggregated at the 1-digit Harmonised System (HS) classification level. It is evident that the growth acceleration since 2002 has been, by and large, broad-based with double digit growth in almost all the commodity groups. However, the capital-intensive groups such as transport equipment, machinery, and base metals registered higher growth than the traditional groups like textiles. The high growth of mineral products has been driven by petroleum products (HS 27), whose exports skyrocketed from \$2.3 billion in 2002 to \$38 billion in 2010. It may, however, be pointed out that the average annual growth rate of India's aggregate exports for the post-2002 period is still

very high even if we do not take into account petroleum oil exports (Table 1).

The share of petroleum products in India's export basket increased dramatically from about 2% in 1993 to as high as 18% in 2010. This export surge has been driven mainly by India's private sector oil refineries. According to the Centre for Monitoring Indian Economy's (CMIE) Prowess database, Reliance Industries had contributed to about 68% of the petroleum exports in 2010-11, and Essar Oil, another private sector refinery, contributed 8%.⁵ The data on gross export values, however, should be interpreted with caution for the private refineries import almost all the crude oil that they process. This implies that the net export earnings and the domestic value added are much smaller than what the statistics on gross exports would indicate.

Reliance had exported about \$31 billion in 2011-12 but it consumed \$39 billion worth of imported raw materials, a major part of the latter would be crude oil.⁶ According to the United Nations Industrial Development Organisation's (UNIDO) industrial statistics, the value added to output ratio for India's "refined petroleum products" industry is 0.155.⁷ Applying this ratio, the value added component of India's petroleum exports in 2010-11 is approximately \$6.5 billion while the gross export value, according to the official data, is as high as \$42 billion.

Table 2: Average Annual Growth Rates of Exports across Sections of Commodities (1993-2010, \$ million)

Sections	Descriptions	1993-2001	2002-08	2002-10
I	Live animals and products	5.4	10.8	11.1
II	Vegetable products	5.6	16.2	13.2
III	Fats and oils	7.4	23.5	20.3
IV	Foodstuffs, beverages and tobacco	-0.2	30.7	22.4
V	Mineral products	6.1	51.5	37.1
VI	Chemical products	11.8	24.8	20.6
VII	Plastics and rubber products	6.7	21.1	15.4
VIII	Hides, skins and leather	3.4	11.0	7.1
IX	Wood and cork	-5.9	27.0	18.6
X	Paper and paper products	14.7	18.0	15.6
XI	Textile and textile products	7.2	12.9	11.0
XII	Footwear, umbrellas, etc	3.1	18.5	14.4
XIII	Stone, glass, cement, etc	11.3	19.1	14.5
XIV	Natural/cultured pearls, gems, etc	8.4	14.7	17.4
XV	Base metals and products	9.2	32.2	22.5
XVI	Machinery	11.6	29.2	25.7
XVII	Transport equipment	4.1	39.8	36.4
XVIII	Instruments and apparatus	20.0	18.1	17.2
XIX	Miscellaneous manufactures	7.8	24.4	19.7
	Total	7.7	24.5	20.8
	Total (excluding HS 27)	7.5	21.2	18.5

(i) Growth rates are calculated using semi-logarithmic regressions.

(ii) Section XIX (arms and ammunition) and Section XXI (works of arts) are excluded. These sections account for a negligible share (less than 0.1%) in India's total exports.

Source: Author's estimation using Comtrade-WITS database.

2.2 Impact of the Global Financial Crisis

During the pre-financial crisis period of 2002-03 to 2008-09, exports had been growing at an impressive rate of 24% per annum. As a consequence of the financial crisis, the value of exports declined from \$189 billion in 2008-09 to \$182 billion in 2009-10. The next two years, however, exports recovered, registering a growth rate of 37% in 2010-11 and 33% during the first eight months of 2011-12 (April to November).⁸ It must be stressed that India's export performances in 2010-11 and 2011-12 reflect just a

continuation of the trend since 2002-03 and do not represent a structural break from the recent past. The exceptionally high growth rates in the past two years are mainly explained by the low base effect arising from the growth moderation in 2008-09 and the negative growth in 2009-10 in the aftermath of the financial crisis.⁹ This can be established by comparing the counterfactual values of exports with the actual values, as done below.

India's exports in 2010-11 would have been \$324 billion (against the actual value of \$250 billion) had it continued to grow at the same rate as during 2002-03 to 2007-08 (i.e., at the rate of 25% per annum). Under this counterfactual scenario, the value of exports for 2011-12 should be as high as \$406 billion, a figure that is significantly higher than what the government is hoping to achieve (i.e., about \$300 billion).¹⁰ Even if we assume a growth rate of only 20% per annum, the counterfactuals are still high at \$287 billion for 2010-11 and \$345 billion for 2011-12. The spike in growth rate in 2010-11 and the first half of 2011-12 is not unique to India either. A similar trend can be observed in other major exporting countries from the developing world.¹¹

That the Indian export sector is not insulated from the negative demand shocks emanating from the world economy is evident from Figure 1, which depicts a comparison of India's annual growth rates of exports with that of the world for the period 1993-2010. The co-movement of the two series suggests that the fluctuation in India's export growth rate is strongly tied to cycles in the world demand. The correlation coefficient between the annual growth rates of exports for India and the world is as high as 0.94. It is beyond doubt that the sustainability of India's ongoing export recovery and prospects for further growth are strongly contingent on the trends in world demand.

2.3 Export Surge: An Artefact of Over-Invoicing?

The high monthly growth figures during the first half of 2011-12 have been greeted with cynicism by some commentators in the business media, who speculate that this may reflect over invoiced exports to ship black money back into the country.¹² For one thing, given the slowdown in Europe and the United States, the exceptionally high Indian growth rates appeared "too good to be true" at the outset. Providing further fodder to the sceptics, some newspapers reported a sudden export surge to Bahamas, a tax haven, from a modest \$2.2 million in 2008-09 to \$2.2 billion in 2010-11. In this section, we assess the reliability of India's officially reported data by comparing it with the mirror statistics.

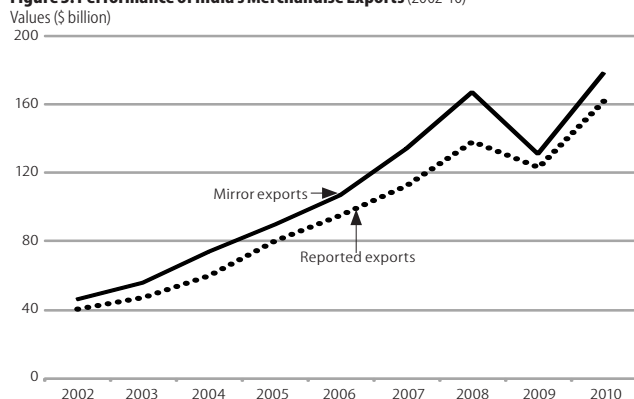
Figure 2 shows two different time series on export values (\$ billion), one based on "reported data" and the other based on "mirror data". The mirror export values shown in the figure is what the world as a whole had reported to the International Monetary Fund (IMF) as imports from India. For any country, its reported data does not match perfectly with the mirror data for many reasons. In general, the mirror export values would exceed the own country reported values because imports are inclusive of cost insurance and freight (cif), while exports are recorded on a free on board (fob) basis. As expected, India's mirror export values are always higher than its reported values and the two series almost always move together. In 2010, for example, the

reported value of India's exports was \$223 billion, while the mirror exports value was \$243 billion.

Note that all countries do not report trade data to the IMF (or to the UN) for all the years. Therefore, in order to derive the value of aggregate world imports (and exports), the IMF uses estimated/extrapolated data for the non-reporting countries. Alternatively, the mirror statistics may be obtained by aggregating the import values of only those countries that had reported the data (that is, by excluding the estimated/extrapolated values pertaining to the non-reporting countries). However, while doing so, it is important to keep in mind that the number of reporting countries varies from year to year. In order to make sure that the values are strictly comparable over time, the mirror statistics should be derived using data from a consistent set of reporting countries.

We notice that a set of 113 countries had consistently reported import data to the UN for every year in the period 2002-10.¹³ Using the import data reported by these countries, we construct India's mirror export series for the period 2002 through 2010. The aggregate mirror export values, obtained this way, are then compared with the aggregate export values reported by India to

Figure 3: Performance of India's Merchandise Exports (2002-10)



(i) "Reported Exports" are aggregate exports to 113 countries as reported by India.
(ii) "Mirror Exports" are the aggregate imports from India reported by 113 countries.
(iii) 113 countries have reported import data consistently during 2002-10.
Source: Author's estimation using Comtrade-WITS database.

the same set of 113 partner countries (Figure 3). Again, the mirror export values are higher than the reported values, but move in the same direction. It is clear then that India's official export figures are real, not an artefact of over invoicing

Table 3 reports the growth rates of exports using reported as well as mirror data for different periods and years. It is evident that, except for the year 2009, the growth rates generated by the two series are very similar. The reported data shows a negative growth rate of 7% in 2009, while the mirror data shows a much higher rate of decline with a negative growth rate of 22% for the same year. Observing Figures 2 and 3, the year 2008 immediately catches the eye with its large gap between the mirror and reported values.¹⁴ This relatively large difference in the base year value is

responsible for the observed difference in the growth rates based on reported versus mirror data in 2009.

Referring to the recent export trends, a popular business newspaper observed that "an amazing surge in India's exports to the Bahamas has stoked the lingering suspicion that a slice of the country's trades is sham transactions done to bring back money stashed in secret accounts with offshore banks".¹⁵ According to this report, India's reported data on exports, no way matches the data on Bahamas' global imports, which was \$2.8 billion in 2010.

A careful examination of data from various sources, however, reveals that the reported anomaly has been mainly caused by partial reporting of data by the statistical agencies in the Bahamas. While the reported value of imports of the Bahamas from the world as a whole in 2010 was indeed \$2.8 billion, the IMF's estimation, based on the partner country records, puts the value at a much higher \$12 billion. As per the data from the UN-Comtrade, the aggregate export to Bahamas from a set of reported countries stands at \$10 billion in 2010.¹⁶

The IMF's data manual states that the Bahamas does not report "oil products imported and exported on foreign client's accounts that do not add to the wealth or material resources of the country...". This information on the scope and coverage of the Bahamas' official data holds the key in understanding the reported anomaly. For petroleum products (HS 27) contributes to 92% of India's exports to the Bahamas in 2010 (and 95% in 2009) and much of these imports from India would not have been reported by Bahamas.¹⁷

It is very likely that the Bahamas has been used as a transshipment point for other destinations, especially in petroleum products.¹⁸ While the Bahamas did not report any export of petroleum products in 2010, other countries have reported petroleum imports worth \$1.5 billion from the Bahamas.¹⁹ Similarly, the partner countries have reported petroleum exports worth \$4.4 billion to the Bahamas in 2010, while the latter did not report any such imports. Indeed, these values on world exports and imports, based on partner country records, understate the true extent of Bahamas' trade since not all partners have reported data in 2010. The bottom line is that India's export surge to Bahamas is real and that the argument of over invoicing is flimsy.

3 Commodity Composition

Having established that the official export data are reliable, the discussion in the remaining part of the paper is solely based on the reported data. In the present section, we use disaggregated data to analyse changes in the commodity structure of exports.

According to the Heckscher-Ohlin model of trade, a country would specialise and export the products that use its relatively abundant resources intensively. Thus, for example, a country with abundant supply of labour has a comparative advantage in labour-intensive products. Viewed thus, it is appropriate to classify traded products according to factor intensities. To that end, we use the factor intensity classification of the International Trade Centre (ITC), adapted by Hinloopen and van Marrewijk (2008), which distinguishes between five broad factor-intensity categories at the 3-digit level of Standard International Trade Classification (SITC).²⁰ However, as explained below, we make a

Table 3: Average Annual Growth Rates of Exports (\$ billion)

	Reported Data		Mirror Data	
	India	World	India	World
1993-2001	8.6	5.9	7.5	6.2
2002-08	24.3	16.3	26.4	16.3
2002-10	20.3	11.0	20.3	11.0
2009	-7.0	-22.9	-22.1	-23.1
2010	35.1	20.6	38.6	20.7

(i) Growth rates are calculated using semi-logarithmic regressions.
(ii) Figures in parentheses are the growth rates of aggregate exports to a set of 113 countries that have consistently reported import data during 2002-10.
Sources: Direction of Trade Statistics (IMF) and Comtrade-WITS.

slight modification to this classification, but report the results according to both the original ITC classification as well as the modified classification.

Table 4 reports the commodity composition of exports, according to factor intensity classification, for selected years (1993, 2002 and 2010). Both the original and modified classifications show a consistent increase in the shares of human capital and technology-intensive products and a consistent decline in the shares of natural resource and unskilled labour-intensive products. According to the original classification, the share of primary products increased significantly from 22% in 2002 to 32% in 2010, which, at first sight, may appear surprising. A closer look at the data reveals that the increasing share of primary products is explained by the rapid export growth of “refined petroleum products” (SITC 334), which, as per the original ITC classification, is included in the “primary” category. The share of SITC 334 in India’s total exports increased from 1.8% in 1993 to 4.5% in 2002 and to a hefty 17% in 2010.

Table 4: Export Composition according to Factor-Intensity Classifications
(% shares of total exports)

	Original ITC Classification			Modified Classification		
	1993	2002	2010	1993	2002	2010
Primary	24.9	22.0	32.5	23.1	17.5	15.5
Natural resource-intensive	21.8	19.5	16.1	21.8	19.5	16.1
Unskilled labour-intensive	29.8	26.3	14.8	29.8	26.3	14.8
Capital-intensive	23.6	32.1	36.4	25.4	36.6	53.5
of which						
Human capital-intensive	13.4	15.2	17.0	13.4	15.2	17.0
Technology-intensive	10.2	16.9	19.4	10.2	16.9	19.4
Refined petroleum (SITC 334)	-	-	-	1.8	4.5	17.1
Unclassified (5)	0.0	0.0	0.2	0.0	0.0	0.2
Total	100	100	100	100	100	100

(i) In the modified classification, the constituents of capital-intensive category are human capital-intensive products, technology-intensive products and SITC 334; in the original classification, SITC 334 is part of the primary category.
Source: Author’s estimation using Comtrade-WITS database.

Since petroleum refining is a highly capital-intensive process, it is appropriate to include this product in the capital-intensive, rather than primary, category.²¹ Accordingly, we define the capital-intensive category as consisting of human capital-intensive products, technology-intensive products and SITC 334. Thus, according to our modified classification, the share of primary category is obtained by subtracting the share of SITC 334 from the original primary category.

Overall, the most striking aspect of the structural change in India’s exports is that while the share of capital-intensive products more than doubled from about 25% in 1993 to nearly 54% in 2010, the share of unskilled labour-intensive products halved from 30% to 15%. Although not as rapidly as the decline in the share of unskilled labour-intensive products, the shares of primary and natural resource-intensive products also show consistent declines over the years. The increase in the share of capital-intensive products has been driven by “refined petroleum products” followed by technology-intensive and human-capital intensive products. That India’s export basket is biased towards capital and skill-intensive products is an anomaly given the fact that the country’s true comparative advantage lies in semi-skilled labour-intensive activities (also see Kochhar et al 2006; and Panagariya 2008).

A recent study has shown that the export bundle of India is becoming increasingly more similar to that of the high-income Organisation for Economic Cooperation and Development (OECD) countries (Veeramani and Saini 2011). Specifically, an export similarity index (ESI), which captures the extent of product structure overlap between India and the high income OECD countries, has been computed using finely disaggregated (10-digit level) US bilateral import data. The rationale behind the use of the ESI is the idea that the OECD countries hold comparative advantages in products that are most sophisticated and, therefore, an increase in the value of ESI would imply catching up by India with the OECD (Schott 2008).

It has also been noticed that in a majority of the cases, the 10-digit level export unit values of India, in the US market, are higher than that of China. The higher export unit values may reflect India’s specialisation in capital- and skill-intensive varieties and production process. For, it may be argued that, the higher is the level of capital- and skill-embodied in a variety/product line, the higher is the price (unit value) that it commands in the export markets. A higher price that results from “distorted” specialisation, however, does not translate into an overall higher volume of exports.

Table 5 shows the changes in the shares of exports across nine major product groups disaggregated at the 1-digit SITC level. Consistent with the observations made above, the table displays a steady shift in the composition of exports in favour of relatively capital-intensive “mineral fuels and lubricants” (SITC 3), “chemical products” (SITC 5) and “machinery and transport equipments” (SITC 7). By contrast, it is evident that, the traditional agriculture and labour-intensive sectors such as “food and live animals” (SITC 0), “manufactured materials” (SITC 6) and “miscellaneous manufactured articles” (SITC 8) are losing their prominence. The combined share of traditional sectors (SITC 0, 6 and 8) declined from 76% in 1993 to 48% in 2010. As noted earlier, the remarkable increase in the SITC share 3 from 2% in 1993 to 17% in 2010 has been driven by refined petroleum products.

Table 5: Composition of Exports across 1-Digit Level, SITC
(% shares of total exports)

SITC Codes	Product Groups	1993	2002	2010
0	Food and live animals	15.2	11.6	7.0
1	Beverages and tobacco	0.7	0.5	0.5
2	Crude materials, inedible, except fuels	5.5	4.0	6.2
3	Mineral fuels and lubricants	2.2	4.6	16.9
4	Animal and vegetable oils	0.5	0.3	0.4
5	Chemical products	7.4	11.5	11.9
6	Manufactured goods classified chiefly by materials	40.9	38.2	28.4
7	Machinery and transport equipment	6.8	8.5	14.6
8	Miscellaneous manufactured articles	19.2	18.4	12.2
9	Commodities and transactions not classified according to kind	1.6	2.4	2.0

Source: Author’s estimation using Comtrade-WITS database.

A further disaggregated profile of exports, according to the HS nomenclature, is shown in Tables 6 and 7 (p 99). These tables report the export shares for the different “sections” of commodities as well as for the major 2-digit groups within each section. The major 2-digit groups have been identified as those having at least 1% of the total national export value either in 2010 or in 2002. For convenience, we have grouped the 21 sections into two broad groups, namely, capital-intensive category and traditional category. The

capital-intensive category comprises five sections: mineral products, chemical products, base metals and products, machinery and transport equipment. The remaining sections constitute what is referred to as the traditional category.

The export shares of capital-intensive and traditional categories are shown in Tables 6 and 7, respectively. It can be seen that the share of the capital-intensive category steadily increased, at the cost of the traditional category, from about 26% in 1993 to 56% in 2010. The decline in the share of the traditional category is reflected across all the major 2-digit groups. Compared to 1993, all the five sections within the capital-intensive category show higher export shares in 2010. Between 2002 and 2010, the share of chemical products remained constant while the shares of the remaining four sections increased significantly, with the increase being particularly pronounced in mineral products and transport equipment.

Table 6: Composition of Exports across 'Sections' and Major 2-Digit Groups, Capital-Intensive Category (% Shares), HS Classification

Sections	2-digit Codes	Descriptions	1993	2002	2010
V	(25-27)	Mineral products	5.7	7.6	21.3
	25	Salt, sulphur, earths and stone	1.2	1.0	0.5
	26	Ores, slag and ash	2.3	1.9	3.2
	27	Mineral fuels, mineral oils; bituminous substances; waxes	2.3	4.8	17.6
VI	(28-38)	Chemical products	7.2	10.3	10.2
	28	Inorganic chemicals	0.7	0.8	1.1
	29	Organic chemicals	1.9	4.1	4.0
	30	Pharmaceutical products	1.9	2.6	2.8
	32	Tanning or dyeing extracts	1.4	1.2	0.7
XV	(72-83)	Base metals and products	6.4	7.6	10.1
	72	Iron and steel	3.1	3.0	3.2
	73	Articles of iron or steel	1.6	2.2	2.9
	74	Copper and articles thereof	0.2	0.7	2.5
XVI	(84-85)	Machinery	4.5	6.3	7.8
	84	Nuclear reactors, boilers, machinery, etc	2.9	3.5	3.8
	85	Electrical machinery and equipments	1.6	2.8	4.0
XVII	(86-89)	Transport equipments	2.7	2.5	7.0
	87	Vehicles other than railway or tramway rolling-stock	2.5	2.1	4.3
	89	Ships, boats and floating structure	0.0	0.1	2.0
	Total		26.5	34.3	56.4

For each section, shares of only the major 2-digit codes are reported.
Source: Author's estimation using Comtrade-WITS database.

It may be noted that certain specific 2-digit product groups are primarily responsible for growth in the respective sections shown in Table 6. The phenomenal growth of "mineral products" has been driven by "mineral fuels and oils" (HS 27) while "organic chemicals" (HS 29) and "pharmaceutical products" (HS 30) are responsible for the export growth of "chemical products". The 2-digit groups that show significant growth within the broad group of "base metals" include "articles of iron or steel" (HS 73) and "copper and articles" (HS 74). The export growth of "machinery" has been driven primarily by "electrical machinery and equipments" (HS 85) while the growth of "transport equipments" has been brought about by "vehicles other than railway or tramway rolling-stock" (HS 87) and "ships, boats and floating structure" (HS 89).

Making use of further disaggregated data, at the HS 4-digit level, we have identified the fast growing export products from India (see Table A1, p 103 and Table A2, p 104 in Appendix). Specifically, we computed the percentage shares of different 4-digit

Table 7: Composition of Exports across 'Sections' and Major 2-Digit Groups Traditional Category (% Shares), HS Classification

Sections	2-digit Codes	Descriptions	1993	2002	2010
I	(1-5)	Live animals and products	4.4	3.6	2.0
	3	Fish and crustaceans, mollusc	3.7	2.8	1.0
II	(6-14)	Vegetable products	8.3	7.5	4.1
	8	Edible fruit and nuts	1.9	1.2	0.5
	9	Coffee, tea, mate and spices	2.8	1.4	0.9
	10	Cereals	1.9	3.2	1.4
III	(15)	Fats and oils	0.5	0.4	0.4
IV	(16-24)	Foodstuffs, beverages and tobacco	4.9	2.5	2.5
	23	Residues food industries; prepared animal fodder	3.4	0.8	1.0
VII	(39-40)	Plastics and rubber products	2.4	3.0	2.5
	39	Plastics and articles thereof	1.1	2.0	1.7
	40	Rubber and articles thereof	1.2	1.0	0.8
VIII	(41-43)	Hides, skins and leather	4.1	2.7	1.0
	41	Raw hides and skins and leather	1.2	1.0	0.4
	42	Articles of leather	2.8	1.7	0.7
IX	(44-46)	Wood and cork	0.2	0.1	0.1
X	(47-49)	Paper and paper products	0.3	0.6	0.5
XI	(50-63)	Textiles and textile products	26.2	23.2	12.5
	52	Cotton	6.2	4.4	3.2
	54	Man-made filaments	1.2	1.3	1.0
	55	Man-made staple fibres	0.6	1.1	0.8
	57	Carpets and textile floor coverings	2.8	1.2	0.6
	61	Articles of apparel and clothing	3.5	4.5	2.1
	62	Articles of apparel and clothing	8.4	6.7	2.8
	63	Other made up textile articles	1.9	2.5	1.3
XII	(64-67)	Footwear, umbrellas, etc	2.3	1.4	0.9
	64	Footwear, gaiters and the like	2.3	1.3	0.8
XIII	(68-70)	Stone, glass, cements, etc	0.8	1.2	0.8
XIV	(71)	Natural/cultured pearls, gems, etc	18.3	18.2	15.0
XVIII	(90-92)	Instruments and apparatus	0.4	0.8	0.7
XIX	(93)	Arms and ammunition	0.0	0.0	0.0
XX	(94-96)	Miscellaneous manufactures	0.5	0.5	0.5
XXI	(97)	Works of art	0.0	0.0	0.1
	Total		73.6	65.7	43.6

For each section, shares of only the major 2-digit codes are reported.
Source: Author's estimation using Comtrade-WITS database.

products in the total national exports and the fast growing ones have been identified as those having at least 0.05 percentage point increase in the shares in 2010 compared to 2002 (also see notes under the tables). A total of 68 such dynamic products have been identified, of which 50 belongs to the capital-intensive category and the remaining 18 belong to the traditional category. Note that these products have been identified from a total population of 1,202 products with a positive export value in 2010 (of which 556 belong to the capital-intensive category and the remaining 646 belong to the traditional category).

The combined share of these 68 products in India's total exports increased from about 13% in 1993 to 17% in 2002 and to a hefty 50% in 2010. Much of this increase is due to the 50 products belonging to the capital-intensive category, whose combined share increased from 9% in 1993 to 41% in 2010. The capital-intensive category as a whole contributed to 56% of India's total exports in 2010 (Table 6). It is clear that the bulk of this comes from the products listed in Table A1.

Though there are more than 1,200 products with positive values of exports, it is important to note that just 68 products

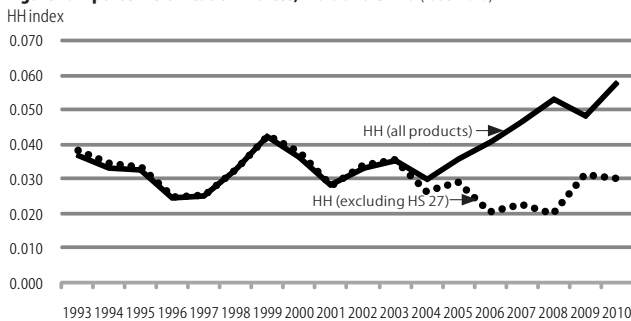
account for one-half of India's total exports in 2010. This indicates a high degree of concentration in export activity. The extent of export basket concentration (or diversification) can be measured using the Hirschman-Herfindahl Index (HH), which is defined as the sum of squared shares of each product in total export:

$$HH_{jt} = \sum_i (s_{jit})^2$$

where s_{jit} is the share of product i in country j 's aggregate exports in year t . The value of this index ranges from 0 to 1: higher values indicate that exports are concentrated in fewer products.

The HH index has been calculated using data disaggregated at the HS 6-digit level.²² The values of the HH index show significant increases during the period 2004-10, which might have been caused by the major rise in the export share of petroleum products during the same period. In order to eliminate the influence of petroleum products, we have recomputed the HH index after dropping the export values corresponding to all 6-digit codes within HS 27. These recomputed values of the HH index are also

Figure 4: Export Diversification Indices, India and China (1993-2010)



Source: Author's estimation using Comtrade-WITS database.

plotted in Figure 4: it is clear that the petroleum products are indeed responsible for the observed increasing trend in the original HH values. In fact, by contrast to what was observed based on the original values, the recomputed HH values show some definite improvement in India's export diversification during 2003-08. Despite this improvement, the HH values indicate a high degree of concentration in export activity.²³

4 Geographical Direction

Table 8 and Table 9 (p 101) presents the data pertaining to the geographical direction of India's exports. These report the shares of different geographical regions and of the major countries. The major countries have been identified as those having at least 1% of the total national export value either in 2010 or in 2002. Based on India's export growth performance over the years, it is convenient to club the different market regions into two broad groups. The first group is that of the "traditional markets" comprising Australia and New Zealand, Europe, Japan and North America (Table 8). The remaining group, for want of a better term, is referred to as "emerging markets", which include south and central America, the Caribbean and the various regions of Asia and Africa (Table 9).

Table 8 clearly shows the declining dominance of the traditional markets for India's exports. The aggregate share of these markets in India's exports declined steadily from about 63% in 1993 to 35% in 2010, with the decline being reflected across all

Table 8: Geographical Direction of Exports, Traditional Regions (1993, 2002 and 2010)

Region	Countries	% Shares of Total Exports			Trade Intensity		
		1993	2002	2010	1993	2002	2010
North America	Japan	8.1	3.7	2.2	1.5	0.8	0.6
	Canada	1.1	1.4	0.5	0.3	0.4	0.2
	United States	18.5	21.3	11.0	1.1	1.1	0.8
Eastern Europe		4.6	5.6	4.0	1.8	0.9	0.5
	Belgium	3.8	3.3	2.3	1.2	1.1	1.0
Northern Europe		7.8	6.2	4.0	0.8	0.6	0.6
	United Kingdom	6.4	4.9	3.0	1.2	0.9	0.8
Southern Europe		4.3	4.9	4.2	0.6	0.6	0.6
	Italy	2.8	2.6	1.9	0.8	0.7	0.6
	Spain	1.0	1.5	1.1	0.5	0.6	0.5
Western Europe		17.2	9.2	8.7	0.7	0.5	0.5
	France	2.3	2.1	2.3	0.4	0.4	0.6
	Germany	7.1	4.2	2.8	0.8	0.6	0.4
	Netherlands	2.4	2.0	3.1	0.7	0.6	0.9
Oceania		1.3	1.2	0.9	0.9	0.8	0.6
	Australia	1.1	1.0	0.8	1.0	0.9	0.6
Total		62.9	53.5	35.5	0.9	0.7	0.6

Source: Author's estimation using Comtrade-WITS database.

the major countries within the group. The emerging markets, shown in Table 9, account for nearly two-thirds of exports in 2010. India's export shares to most of the countries in this group increased over the years (Bangladesh, Hong Kong and Thailand being the major exceptions), with the increase being particularly pronounced for the UAE and China.

The geographical pattern of exports remains broadly the same even if we exclude petroleum exports (HS 27) from the total. The shift of India's export destination from the traditional markets to the emerging markets is in line with changes in the overall pattern of world demand. It may be noted that, the share of world exports going to the traditional markets declined from 73% in 2002 to 62% in 2010.²⁴

In addition to export shares, Tables 8 and 9 also report the values of India's trade intensity indices with different regions and countries. The trade intensity index is defined as: $TI = s_{jk}/s_{wk}$ where s_{jk} denotes the share of destination k in country j 's (India in our case) total exports and s_{wk} represents the share of destination k in the total exports from the rest of the world (w).²⁵ Thus, the TI index is a ratio of two shares. The value of the index indicates whether or not India exports more to a given destination (region or country) than the world does on average. A value greater than one indicates an "intense" trade relationship of India with the given destination while a value less than one would imply opportunities for trade expansion with the given destination. The denominator of the TI index (s_{wk}) has been computed using the aggregate bilateral export values of 84 countries that had consistently reported export data for all the three selected years.²⁶

These tables show that, compared to the traditional markets, India holds a more intense export relationships with the emerging markets and increasingly so. In particular, India's trade intensity is the highest with eastern Africa, followed by west Asia (mainly UAE), south and west Africa, and south and south-east Asia. In 2010, none of the regions from the traditional group showed a

trade intensity index greater than one. This is not surprising given that the largest share of world trade takes place among the countries in the traditional group, which implies that the τ_j index of any country j that does not belong to the traditional group would generally be less than one.²⁷

While India's τ_j value of less than one with the traditional markets is expected, its consistent decline over the years begs some explanation. A possible explanation for this declining trade intensity with the traditional markets has to do with the undue bias of India's export basket towards capital- and skill-intensive products, while the country's true comparative advantage lies in semiskilled labour-intensive activities. Arguably, India's product specialisation patterns provide it with a comparative advantage in relatively poorer regions (such as Africa) but at the cost of losing market shares in the richer countries.²⁸

Table 9: Geographical Direction of Exports, Emerging Regions (1993, 2002 and 2010)

	% Shares of Total Exports			Trade Intensity		
	1993	2002	2010	1993	2002	2010
Central Asia	0.0	0.2	0.1	0.4	1.7	0.5
Eastern Asia (excluding Japan)	8.3	9.6	14.5	1.0	1.0	1.0
China	1.3	3.1	8.1	0.4	0.8	1.0
Hong Kong	5.8	4.8	4.4	1.8	1.4	1.2
South Korea	1.0	1.3	1.7	0.5	0.6	0.7
South-eastern Asia	7.9	9.3	10.9	1.3	1.7	1.7
Indonesia	1.1	1.6	2.1	1.7	3.4	2.2
Malaysia	1.1	1.5	1.7	1.0	1.2	1.3
Philippines	0.3	1.0	0.4	0.5	1.6	0.7
Singapore	3.5	2.8	4.2	1.6	1.6	2.4
Thailand	1.7	1.5	1.0	1.5	1.7	1.0
Vietnam	0.1	0.6	1.2	1.0	2.3	1.8
Southern Asia	5.0	6.0	6.3	3.9	5.1	2.6
Bangladesh	2.0	2.1	1.4	23.6	21.8	8.3
Iran	0.7	1.0	1.2	2.0	4.1	3.5
Pakistan	0.3	0.4	1.0	1.3	2.9	5.3
Sri Lanka	1.3	1.7	1.5	14.9	26.6	21.8
Western Asia	11.0	12.8	19.9	3.1	4.4	5.0
Israel	0.6	1.2	1.3	1.3	2.8	3.6
Saudi Arabia	2.4	1.9	2.1	2.6	3.3	3.1
Turkey	0.5	0.7	1.1	0.8	1.2	1.1
UAE	5.4	6.4	12.7	9.8	10.2	14.0
Eastern Africa	1.7	1.6	2.6	4.8	7.2	8.2
Middle Africa	0.1	0.2	0.5	0.7	1.9	2.1
Northern Africa	1.0	1.3	1.8	0.9	1.5	1.5
Southern Africa	0.2	1.0	1.8	0.4	2.4	3.3
South Africa	0.2	1.0	1.7	0.4	2.4	3.3
Western Africa	0.9	2.1	1.7	1.6	5.0	2.6
Nigeria	0.6	1.0	0.9	2.9	5.6	3.5
South America	0.7	1.4	2.7	0.3	0.7	0.8
Brazil	0.3	0.7	1.7	0.4	0.9	1.3
Caribbean	0.1	0.3	1.1	0.1	0.5	2.3
Central America	0.4	0.8	0.5	0.1	0.3	0.2
Total	37.1	46.5	64.5	1.4	1.7	1.8

Source: Author's estimates using Comtrade-WITS database

India's export pattern of passenger motor vehicles (HS 8703) – a capital- and skill-intensive product group – is an example that may make the above point clearer. India's exports of passenger motor vehicles increased remarkably from \$151 million in 2002 to \$4,511 million in 2010, registering a growth rate of 44% a year. Low and middle income countries are the major destinations for

these exports from India. In 2010, the high-income countries accounted for only 8% of the Indian exports of passenger motor vehicles while the sub-Saharan Africa accounted for 11%. In contrast, the high-income countries accounted for 58% of India's total exports of HS 6105 ("men's or boy's shirts, knitted or crocheted") – a traditional labour-intensive group – while the sub-Saharan Africa accounted for just 1%. Thus, changes in specialisation have bearings on the geographical direction of exports. In general, India's movement out of labour-intensive industries implies loss of comparative advantage in the richer country markets.

Values of India's trade intensity indices suggest that the country holds a significant potential for intensifying its export relationships with the traditional markets.²⁹ The general perception, however, is that India should necessarily diversify to new markets in the developing world if it has to increase its export volume. Consistent with this perception, the Indian government had recently announced an export incentive scheme providing explicit financial support for market diversification.³⁰ The general slowdown in the developed countries may provide a short-term rationale for this diversification strategy. Viewed through the lens of the Heckscher-Ohlin model, the declining trade intensity with the traditional richer country markets is symptomatic of distortions in India's specialisation patterns. It is important to remove bottlenecks and policy induced rigidities (for example, labour laws) so that the pattern of India's specialisation can be realigned on the basis of its true comparative advantages. This would result in India's greater participation in the vertically integrated global supply chains and a consequent increase in the trade intensity with the developed country markets.

A list of India's fast growing export destinations is provided in Appendix Table A3 (p 104). These countries have recorded at least 0.05 percentage point increase in export shares in 2010 compared to 2002 (also see notes under the table). A total of 33 such dynamic markets have been identified, of which the large majority (28) belongs to the emerging market regions. The largest percentage point increase was in UAE followed by China. It is plausible that some of the export growth to the UAE may represent transit trade to Pakistan. If we do not take into account petroleum products (HS 27), all the 28 countries from the emerging regions remain in the list while three countries from the European region (Netherlands, Malta and Gibraltar) would drop out. The combined share of the 33 markets increased from about 21% in 1993 to 28% in 2002 and to a hefty 51% in 2010. Table 9 shows that the emerging markets account for nearly two-thirds of India's exports in 2010 and it is clear that the bulk of this comes from the countries listed in Table A3.

5 Conclusions

This paper has provided a detailed account of the growth and pattern of India's merchandise exports during the post-reform period (1993-94 to 2010-11). The first decade of reforms (from 1993-94 to 2001-02) was characterised by a relatively low export growth rate of 8% a year, while the second decade stands apart for its strong growth rate of 21% a year. The average annual growth rate stood at an impressive 24% during the pre-financial

crisis period of 2002-03 to 2008-09. Though there was a slump in the aftermath of the financial crisis in 2009, exports recovered in the subsequent years with a growth rate of 37% in 2010-11 and 33% during the first eight months of 2011-12.

While the growth performance on the export side has been impressive, imports have been growing faster than exports throughout the post-reform period resulting in increasing merchandise trade deficit. The surpluses in services trade and private transfers have helped to partially offset the growing deficit in the merchandise trade account. In 2010-11, for example, the merchandise account shows a huge deficit of \$130 billion, which was partially offset by surpluses in services trade (\$48 billion) and private transfers (\$53 billion).³¹

The commodity composition of exports underwent consistent changes in favour of capital and skill-intensive products. The share of these products in India's export basket more than doubled from about 25% in 1993 to nearly 54% in 2010 while the share of unskilled labour-intensive products halved from 30% to 15%. The lack of dynamism in labour-intensive manufacturing is a matter of concern because it is this sector that holds the potential to absorb the large pools of surplus labour from India's agriculture sector.³² The experience of the successful east Asian countries showed that export-led industrialisation based initially on labour-intensive industries is crucial for sustained employment generation and poverty reduction. India seems to be skipping this important intermediate stage of industrialisation and moving directly to the next stage based on capital- and skill-intensive industries. This is an anomaly given the fact that India's true comparative advantage lies in semi-skilled labour-intensive activities. Due to its idiosyncratic specialisation, India has been locked out of the vertically integrated global supply chains in many manufacturing industries.³³

The undue bias of its export basket towards capital and skill-intensive products have provided India with a comparative

advantage in relatively poorer regions (such as Africa) but at the cost of losing market shares in the richer countries. The analysis shows a major shift in India's export destination from the traditional developed country markets to the emerging markets in Asia and Africa. Contrary to the general perception, there exists a great potential for India to expand and intensify its export relationships with the traditional developed country partners. However, this would necessitate a realignment of India's specialisation on the basis of its true comparative advantage in labour-intensive manufacturing.

The performance of India's aggregate merchandise exports during the last 10 years is laudable compared to its own past record. The composition of exports, however, shows an increasingly disproportionate bias towards capital- and skill-intensive industries. The crucial question for the long term is whether this growth, driven by capital- and skill-intensive industries, can be sustained in a capital scarce but labour-abundant economy.

The fluctuation in India's export growth rate had been strongly tied to cycles in world demand. Consistent with the trends in world exports, the first decade of reforms was characterised by a moderate export growth from India while the second decade witnessed a high growth. What is in store for the next decade is hard to predict given the uncertain state of affairs in the world economy. In the short to medium term, the question of sustaining the current export growth looms large with the US economy in the doldrums and the Europe's debt crisis continuing to escalate. According to the IMF's latest "World Economic Outlook", the growth rate of world output started to decelerate on a broad front in mid-2011 and this slow growth is expected to continue into 2012 and 2013. It has also been projected that the growth rate of world merchandise exports would slow down considerably from about 20% in 2011 to 7% in 2012.³⁴ At this stage, it can be said with reasonable certainty that India's export growth will moderate considerably in the immediate future.

NOTES

- 1 The value of services exports declined from \$106 billion in 2008-09 to \$96 billion in 2009-10 registering a negative growth rate of 10%. However, services exports recovered in 2010-11 with a growth rate of 38% over the previous year.
- 2 See, for example, a recent analysis by Eichengreen and Gupta (2011).
- 3 See Veeramani (2007) for a comparison of the performance between the pre-reform (1962-90) and post-reform (1993-2005) periods.
- 4 Despite this improvement, we may, however, note that India's performance pales by comparison with the phenomenal increase of China's market share from 2.5% in 1993 to 10.6% in 2010.
- 5 The shares of public sector refineries are: Indian Oil Corporation (8%), Mangalore Refinery (7%), Bharat Petroleum (6%) and Hindustan Petroleum (3%).
- 6 These data are taken from the CMIE's Prowess database.
- 7 The ratio (0.155) is the five-year average for 2003-07. It has been computed using the data pertaining to "refined petroleum products" (ISIC 2320, Rev 3).
- 8 Growth rates on a monthly basis, however, indicate a gradual deceleration. Compared to November 2010, the value of exports grew marginally by 4% in November 2011. However, the growth rates had been much higher during the earlier months

(on a "like-to-like basis") – that is, 25% in October, 31% in September, 47% in August and 64% in July. The growth rates for 2011-12 have been calculated based on revised (but still provisional)

data released by the Department of Commerce after correcting for errors in the earlier data published through its press releases. It has been reported that software problems and data entry

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errors resulted in the earlier numbers being inflated by around \$9 billion for April-October 2011-12, which prompted the data revision. Data on engineering exports was inflated by around \$15 billion, while export of gems and jewellery and petroleum products was underestimated by \$12 billion. The revised data has been taken from *The Hindu Business Line*, 9 December 2011, viewed on 10 December 2011 (<http://www.thehindubusinessline.com/industry-and-economy/article2701501.ece>).

- 9 Since 2002-03, the annual growth rates had been consistently above 20% until 2008-09 when it declined to 14%. Thus, there was a significant moderation in growth rate in 2008-09 before recording a negative growth rate in 2009-10.
- 10 See, for example, the article in the *Hindu Business Line*, viewed on 4 November 2011 (<http://www.thehindubusinessline.com/industry-and-economy/article2538014.ece>).
- 11 For example, India's growth rate of 35% in the calendar year 2010 is comparable to that of Brazil (34%), China (31%), Indonesia (35%), Mexico (30%), Philippines (31%), Thailand (29%), Malaysia (26%), etc (Source: Direction of Trade Statistics, IMF). In general, the world exports registered a significant decline in 2009 (-23%) and then recovered swiftly in 2010 and 2011 registering a growth rate of over 20%.
- 12 See, for example, Swaminathan S Anklesaria Aiyar in *The Economic Times*, 16 October 2011, viewed on 20 October 2011 (<http://economictimes.indiatimes.com/news/economy/foreign-trade/is-the-export-boom-in-india-really-black-money/articleshow/10377910.cms>) and S Muralidharan in *Hindu Business Line*, 24 October, 2011, viewed on 20 October 2011 (<http://www.thehindubusinessline.com/opinion/columns/s-muralidharan/article2568211.ece?homepage=true>).
- 13 The number of countries in the set would decrease significantly if we consider the longer time period starting from 1993.
- 14 For the period 2002-10, the mirror export values shown in Figure 2 are, on an average, higher than the reported values by 15% (13% in Figure 1). This difference is expected since exports are recorded on free on board (fob) basis while imports are recorded on cost insurance freight (cif) basis. However, for the year 2008, the mirror export value (\$167 billion) was higher than the reported value (\$138 billion) by 21%, which is significantly higher than the average for the entire period. A closer scrutiny of the data shows that this relatively large discrepancy in 2008 is caused by a significant under-reporting by India of its exports to China in one product group, namely, "iron ore and concentrates" (SITC 281). While India reported to have exported \$5 billion worth of iron ore and concentrates to China in 2008, the value of China's reported imports of this product group from India for the same year is much higher at \$13 billion. When this difference (\$8 billion) is added to India's reported value (i.e., \$138 billion + \$8 billion = \$146 billion), the mirror value (\$167 billion) becomes higher than the reported value by just 14%, which is equal to the period average. In any case, such sporadic discrepancies between reported and mirror data, in specific years and/or products, are observed for most countries. It does not pose a problem in our analysis based on reported data for all years.
- 15 *The Economic Times*, 21 October 2011, viewed on 25 October 2011 (http://articles.economictimes.indiatimes.com/2011-10-21/news/30306606_1_tax-offence-black-money-bahamas).
- 16 Note that the UN-Comtrade data is an underestimation since not all countries have reported data in 2010. For the period 2005-10, the reported import values of Bahamas has been, on an average, only 27% of what other countries report as exports to Bahamas (Source: Estimated using Direction of Trade Statistics, IMF). However, for most countries, their reported import values would be higher than their "mirror" import values (i.e., reported export values by partners) because

Appendix

Table A1: List of Fastest Growing Export Products, Capital-Intensive Category (% shares in total exports)

Codes	Description	1993	2002	2010
2710	Petroleum oils, etc (excl crude); preparation	1.82	4.44	16.95
7403	Refined copper and copper alloys, unwrought	0	0.31	2.14
8703	Motor cars and other motor vehicles for transport of persons	0.41	0.31	2.09
2601	Iron ores and concentrates	2	1.59	2.84
8905	Navigation vessels, floating or submersible	0	0.04	1.26
7305	Other tubes and pipes, having CS diameter >406.4	0.05	0.12	1.16
7202	Ferroalloys	0.37	0.1	0.97
8525	Transmission apparatus for radio, TV	0.01	0.04	0.7
2902	Cyclic hydrocarbons	0.01	0.16	0.67
8803	Parts of goods of headings No 88.01, 88.02	0.02	0.18	0.69
3004	Medicaments of mixed or unmixed products	1.4	1.95	2.38
7901	Unwrought zinc	0.01	0	0.3
8419	Machinery, plant or lab equipment for all purpose	0.06	0.07	0.36
2707	Products of the distillation of coal	0	0.05	0.31
8704	Motor vehicles for the transport of goods	0.12	0.08	0.33
8538	Parts suitable for the apparatus of headings 85	0.02	0.03	0.25
8904	Tugs and pusher craft	0	0.03	0.24
8906	Other vessels including warships, lifeboats	0	0	0.21
2818	Artificial corundum; aluminium oxide	0.4	0.43	0.63
7408	Copper wire	0.01	0.02	0.22
8534	Printed circuits	0.02	0.08	0.28
8901	Cruise ships, excursion/ferryboats	0	0.04	0.24
8504	Electrical transformers, static converters	0.11	0.23	0.41
8708	Parts and accessories of the motor vehicles	0.52	0.72	0.89
8517	Electrical apparatus for line telephony or line telegraphy	0.03	0.05	0.22
8431	Accessory parts suitable for machinery	0.02	0.04	0.19
8701	Tractors (other than tractors of heading 87.09)	0.03	0.11	0.25
2901	Acyclic hydrocarbons	0	0.01	0.13
2608	Zinc ores and concentrates	0	0.01	0.11
8541	Diodes, semi-conductor devices	0.02	0.19	0.29
2704	Coke and semi-coke of coal, etc	0	0	0.09
2803	Carbon blacks and other forms of carbon	0	0.03	0.12
7304	Tubes, pipes and hollow profiles	0.04	0.1	0.19
8503	Parts suitable for machines of heading 8501 or 8502	0.01	0.06	0.14
8483	Transmission shafts, cranks, clutches	0.05	0.08	0.16
2915	Saturated acyclic monocarboxylic acids	0.02	0.1	0.18
8411	Turbo-jets, turbo-propellers	0.08	0.04	0.12
8537	Boards, panels, consoles, desks, etc	0.01	0.01	0.08
8702	Motor vehicles for the transport of >=10 person	0.09	0.08	0.14
3402	Non-soap surface-active agents; washing preparations	0.08	0.03	0.09
7207	Semi-finished products of iron or non-alloy steel	0.07	0.06	0.12
8414	Air or vacuum pumps, exhausting and compression	0.12	0.16	0.22
8421	Centrifuges, centrifugal dryers; filtering	0.03	0.05	0.11
8536	Electrical apparatus for making connections	0.1	0.13	0.19
8711	Motorcycles, motor fitted cycles	0.23	0.29	0.35
2607	Lead ores and concentrates	0	0	0.05
7801	Unwrought lead	0	0	0.05
8430	Other moving, grading, machinery	0.01	0.02	0.07
3817	Mixed alkylbenzenes and mixed alkylnaphthalenes	0.03	0.07	0.12
8544	Insulated wire, cable	0.03	0.13	0.18
	Total	8.47	12.89	40.47

(i) Five sections (V, VI, XV, XVI and XVII) are included in the capital-intensive sector.

(ii) The total number of products, with positive values of export, belonging to the capital-intensive sector increased from 527 in 1993 to 556 in 2002 and 2010.

(iii) HS 7308 (Structures and parts of structures) increased its share 0.14 in 2002 to 0.21 in 2010; however, this product was excluded from the above list because its 1993 share (0.25) was even higher.

- imports are recorded on cif basis while exports or on fob basis.
- 17 According to the UNCTAD's TRAINS database, Bahamas allowed duty free imports of petroleum products in 2010 while its average tariff rate on petroleum products were as high as 33% in 2006 (data for the intermittent years are not available). The sudden jump in India's exports of petroleum products to Bahamas could also be related to this development.
 - 18 There is a major free trade zone at Freeport located on the island of Grand Bahama of the north-west Bahamas and just 65 miles off the coast of Florida. The Bahamas Oil Refining Company (BORCO), the largest oil storage terminal facility in the Caribbean, trans-ships oil in the region.
 - 19 For the year 2009, Bahamas reported petroleum export of a paltry \$11 million while its partners reported petroleum imports of \$1.2 billion from Bahamas.
 - 20 A total number of 240 items, at the 3-digit level, have been grouped into five categories (number of items in each category in parentheses): primary (83), natural resource-intensive (21), unskilled labour-intensive (26), human capital-intensive (43), technology-intensive (62), and unclassified (5). The detailed classification is available at: (<http://www2.econ.uu.nl/users/marrewijk/eta/intensity.htm>) (viewed on 15 October 2011).
 - 21 India imports crude oil and specialises in the capital-intensive segment (that is, refining) of the value chain.
 - 22 At this level of disaggregation, India reported positive values of exports in as many as 4,460 items in 2010.
 - 23 For comparison, we computed the HH indices of China (not reported). The values of the indices confirm that, throughout the period, the export basket of India is far more concentrated (or less diversified) than that of China.
 - 24 These estimates are based on the data downloaded from the WTO's "Network of World Merchandise Trade".
 - 25 The trade intensity index has been used in a number of studies. See, for example, Drysdale and Garnaut (1982).
 - 26 The number of countries reporting the data varies from year to year. It is important to use data from

- a consistent set of countries so that the results are not sensitive to the reporting patterns.
- 27 The countries in the traditional group accounted for 58% of world exports in 2010 and as much as 73% of which occurred within the group. These countries accounted for 70% of world exports in 2002 of which 80% occurred within the group (Source: Network of World Merchandise Trade, WTO)
 - 28 By contrast, China's TI indices with the traditional market regions show significant increases over the years. We computed the TI indices of India and China with 30 major countries in the traditional group (this includes EU-27, Japan, Canada and the United States) for the years 1993 and 2010. Compared to 1993, China recorded a higher value of the TI indices with as many as 26 countries in 2010 while India showed a higher value with only 12 countries. The simple average of India's TI index with these countries declined from 0.58 in 1993 to 0.43 in 2010 whereas the average value of China's index increased from 0.47 to 0.65.
 - 29 Within the group of emerging regions, India has potential to increase exports to South Korea and south and central America.
 - 30 See the "Foreign Trade Policy 2009-14", Ministry of Commerce and Industry, Department of Commerce, Government of India, viewed on 1 November 2011 (<http://dgtf.gov.in/exim/2000/policy/ftp-plcontento910.pdf>).
 - 31 The current account deficit in 2010-11 is \$44 billion. Within the invisibles account, both services and transfers recorded a surplus, while investment income from abroad showed a deficit of \$14 billion. During the first eight months of 2011-12, merchandise trade deficit stands at about \$117 billion. Overall, the balance of trade and current account situation seems to be getting worse in the recent months.
 - 32 Agriculture accounts for about 17% of India's GDP, but employs about 52% of the total workforce.
 - 33 See Athukorala and Menon (2010), who show that India is a minor player in global production networks and vertical specialisation based trade. Evans et al (2006) observe that, in contrast to China, India's regional and global links are mainly through shallow, rather than deep, integration.
 - 34 See the IMF's "World Economic Outlook: Slowing Growth Rising Risks" (September 2011). The projected export growth rates can be seen on page number 194.

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Table A2: List of Fastest Growing Export Products, Traditional Sectors (% shares in total exports)

Codes	Description	1993	2002	2010
5201	Cotton, not carded or combed	0.94	0.01	1.38
7113	Jewellery and parts of precious metals	1.45	2.82	3.62
7114	Articles of gold/silversmiths wares	0.01	0.01	0.53
6302	Bed linen, table linen, toilet line	0.03	0.15	0.43
202	Meat of bovine animals, frozen	0.34	0.52	0.78
1005	Maize (corn)	0.01	0.04	0.25
3907	Polyethers and epoxide resins	0.01	0.1	0.26
7112	Waste, scrap of precious metal	0	0	0.14
7118	Coin	0	0	0.11
1202	Groundnuts, not roasted	0.25	0.08	0.18
9404	Mattress supports, articles of beddings	0.02	0.02	0.1
9701	Hand-made decorative materials	0	0.01	0.09
804	Dates, figs, pineapples..., etc	0.07	0.04	0.11
3921	Other plates, sheets, film, foil	0.04	0.03	0.1
5503	Synthetic staple fibres, not carded	0.04	0.05	0.11
1605	Crustaceans, molluscs and other aquatic invertebrates, prepared or preserved	0.01	0.03	0.08
5504	Artificial staple fibres, not carded	0.01	0.02	0.07
9403	Other furniture and parts thereof	0.03	0.11	0.16
	Total	4.39	4.47	9.15

(i) All sections except the five capital-intensive sections are included in the traditional sector.
 (ii) The total number of products, with positive values of export, belonging to the traditional sector is 597, 653, and 646 respectively for the years 1993, 2002 and 2010.
 (iii) A few products whose 1993 shares were higher than the 2010 shares were excluded from the list even if they had recorded 0.05 or higher percentage point increase in export shares between 2002 and 2010.

Table A3: List of India's Fastest Growing Export Destinations (% shares in total exports)

SlNo	Countries	1993	2002	2010	SlNo	Countries	1993	2002	2010
1	UAE	5.37	6.38	12.74	17	East Timor	0.00	0.00	0.25
2	China	1.29	3.15	8.11	18	Algeria	0.13	0.12	0.36
3	Singapore	3.49	2.84	4.21	19	Angola	0.02	0.07	0.28
4	Netherlands	2.37	1.99	3.05	20	Gibraltar	0.00	0.00	0.20
5	Brazil	0.27	0.74	1.71	21	Iran	0.74	1.01	1.17
6	Bahamas	0.00	0.00	0.93	22	Mozambique	0.10	0.09	0.23
7	South Africa	0.17	0.97	1.70	23	Malaysia	1.15	1.53	1.65
8	Pakistan	0.30	0.39	1.04	24	Romania	0.10	0.04	0.15
9	Kenya	0.33	0.38	0.93	25	Colombia	0.04	0.13	0.24
10	Indonesia	1.09	1.58	2.12	26	Israel	0.61	1.20	1.30
11	Vietnam	0.13	0.63	1.15	27	Peru	0.02	0.10	0.19
12	South Korea	0.96	1.28	1.69	28	Poland	0.24	0.20	0.29
13	Malta	0.03	0.05	0.46	29	Afghanistan	0.10	0.10	0.18
14	Turkey	0.52	0.71	1.08	30	Djibouti	0.05	0.06	0.14
15	Nepal	0.45	0.55	0.89	31	Argentina	0.16	0.11	0.17
16	Kuwait	0.49	0.45	0.77	32	Chile	0.06	0.16	0.22
17	Egypt	0.56	0.58	0.90	33	Ghana	0.08	0.20	0.24
18	Tanzania	0.30	0.23	0.52	Total		21.73	28.01	51.23

A few countries whose 1993 shares were higher than the 2010 shares were excluded from the list even if they had recorded 0.05 or higher percentage point increase in export shares between 2002 and 2010.