

The 'Miracle' Still Waiting to Happen

Performance of India's Manufactured Exports in Comparison to China

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INTRODUCTION

At the end of the 1950s, India turned to a strategy of industrialization based on import substitution. China too adopted the heavy-industry oriented development strategy (also known as the leap forward strategy) during the early 1950s. Both the countries introduced a battery of trade and exchange controls, which severed the link between domestic and world relative prices. Exchange rates were overvalued creating a bias against exports in both the countries (Lal 1995). By contrast, the East Asian tiger economies adopted export promoting policies (Weiss 2005). Thus, India's 'Hindu rate of growth' under import substitution was often contrasted with the growth 'miracle' that the East Asian tigers had experienced under export promoting policies.

As the East Asian 'miracle' gained widespread attention and as doubts about the effectiveness of import substitution arose in other countries, it became common practice to recommend the East Asian model for other countries wishing to accelerate the pace of their industrialization and economic growth (Bhagwati 2002). China started

its trade liberalization process in earnest in 1978, while India introduced 'cautious' liberalization during the 1980s, focusing on internal deregulation rather than on trade liberalization. The most pronounced overhaul of India's trade policy regime occurred during the early 1990s in response to a severe balance of payment crisis. The post-1991 policy changes in India have gone a long way towards product market liberalization by easing entry barriers for domestic and foreign firms in manufacturing industries. However, it must be noted at the outset that India's factor markets (labour and land) are still plagued by severe distortions and policy induced rigidities.

Subsequent to market-oriented reforms, both India and China have been successful in achieving a turnaround in their economic growth rates. Today, India and China are among the fastest growing economies of the world. However, certain important contrasts are evident in the growth process in the two countries. China's growth pattern exhibits striking similarities with the manufacturing-based export-oriented growth of the East Asian tigers while Indian growth reveals some notable idiosyncrasies. China followed the conventional pattern of shifting labour from agriculture to labour-intensive manufacturing. By contrast, India seems to be skipping the intermediate stage of industrialization and directly moving to the final stage of services-led growth.

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During the last two decades (1990–2010), the share of manufacturing in India's GDP remained low in the range of 14–17 per cent as against 30–33 per cent for China. International comparisons suggest that the *actual* manufacturing share of GDP for India was lower than what was *predicted* while the opposite is the case for China (ADB 2007).¹ Further, in contrast to employment-intensive growth in China, India's manufacturing growth followed a relatively capital-intensive path.² The share of manufactures in India's merchandise exports declined from about 70 per cent in 1990 to 63 per cent in 2010. In contrast, the share of manufactures in China's merchandise exports increased from 71 per cent in 1990 to 94 per cent in 2010. Unlike in China, exports have not yet become a major engine of growth in India's manufacturing sector. Between 1990 and 2010, China's share in the world exports of manufactures steadily increased from about 2 per cent to a whopping 15 per cent while India's share increased from 0.5 per cent to just 1.4 per cent.

The lack of dynamism in labour-intensive manufacturing has considerably slowed down the process of transferring the large pools of India's surplus labour from agriculture into the well paying modern sectors.³ Agriculture accounted for 17 per cent of India's GDP in 2009, but employed 52 per cent of the total workforce. Thus, Indian growth has not been effective in reducing poverty on the scale that was possible in China and other industrialized countries of East Asia. The experience of the successful East Asian countries shows that rapid industrialization, based on the expansion of labour-intensive manufactured exports in the early phase of development is crucial for employment generation and sustained poverty reduction (Islam 2008).

Drawing upon the experience of China's export success in manufacturing, this chapter attempts to provide explanations for India's lacklustre performance. The chapter highlights certain idiosyncrasies pertaining to the pattern of

specialization, structure of trade, and the nature of inward foreign direct investment in Indian manufacturing.

The remainder of the chapter is organized as follows. The next section briefly discusses the relative contribution of the manufacturing sector to aggregate GDP and merchandise exports in India and China. As shown by the Heckscher-Ohlin model, the workhorse of international economics, a country's export structure is intrinsically linked to its relative factor endowments. Therefore, in order to put the empirical analysis in perspective, the next section discusses trends in relative factor endowments (physical capital, arable land, human capital etc.) in the two countries. In the section that follows, we analyse the changes in the commodity pattern of exports and interpret the findings in light of the observed changes in relative factor endowments in the two countries. The next section discusses the extent to which India's manufacturing industries are linked to the vertically integrated global production networks. The next section deals with the geographical direction of manufacturing exports from India and China. Finally, the last section provides a conclusion and draws some policy implications.

RELATIVE CONTRIBUTION OF THE MANUFACTURING SECTOR TO GDP AND EXPORTS

The decade-wise average growth rates of GDP across sectors in India and China during the period 1970–2010 are depicted in Figures 9.1 and 9.2 respectively. It is clear that throughout the period the service sector was the fastest growing sector in the Indian economy followed by industry. A similar trend can be observed in China during the 1970s and 1980s, but industry emerged as the fastest growing sector in that country during the more recent decades of the 1990s and the 2000s.

During the period 1950–2 to 1964–6, India's registered manufacturing output grew at a rate of about 5 per cent per annum, which is substantially below the growth rates recorded by a number of other comparable countries (Brazil, Mexico, Pakistan, Philippines, and Taiwan) during this period (Little et al. 1970). The years since the early 1970s witnessed some improvement with a growth rate of 6 per cent per annum for 1973–2003, but the trend growth rate during the post-1991 reform period showed little change (Gupta et al. 2010). Overall, this growth performance is respectable, but pales in comparison with the performance recorded by East Asian NIEs and China (Weiss 2011). During 2000–10, manufacturing GDP grew at a rate of 8.7 per cent per annum in India while it grew at a much higher rate of 11.6 per cent in China.

The major contrasts between the economies of India and China are clearly evident in Table 9.1 which presents the

¹ Predicted shares are calculated from a cross-country regression of manufacturing shares on GDP per capita, GDP per capita squared, population and foreign trade to GDP ratio. For 2000, the predicted shares are about 20 and 27 per cent respectively for India and China while the actual shares are 16 per cent for India and 35 per cent for China (ADB 2007: 294).

² That India's manufacturing growth followed a relatively capital-intensive path is evident from the much smaller growth rate of employment than capital stock and value added. During 1973–2003, registered manufacturing employment grew slowly (1.3 per cent per annum) while capital stock grew faster (7.3 per cent per annum) than manufacturing value added (6 per cent) (see Gupta et al. 2010).

³ Typically, employment in manufacturing only requires on-the-job training whereas employment in formal service sectors (such as banking, insurance, finance, communications, and information technology) requires at least college level education.

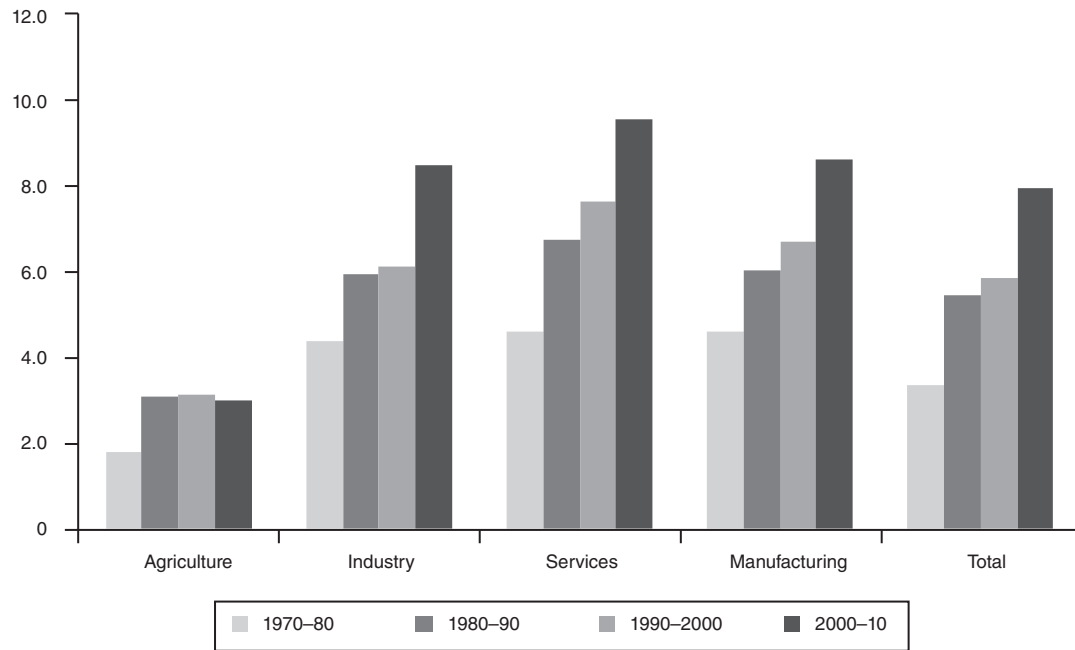


Figure 9.1 Average Annual Growth Rates Across Sectors, India, 1970-2010

Source: World Development Indicators, the World Bank.

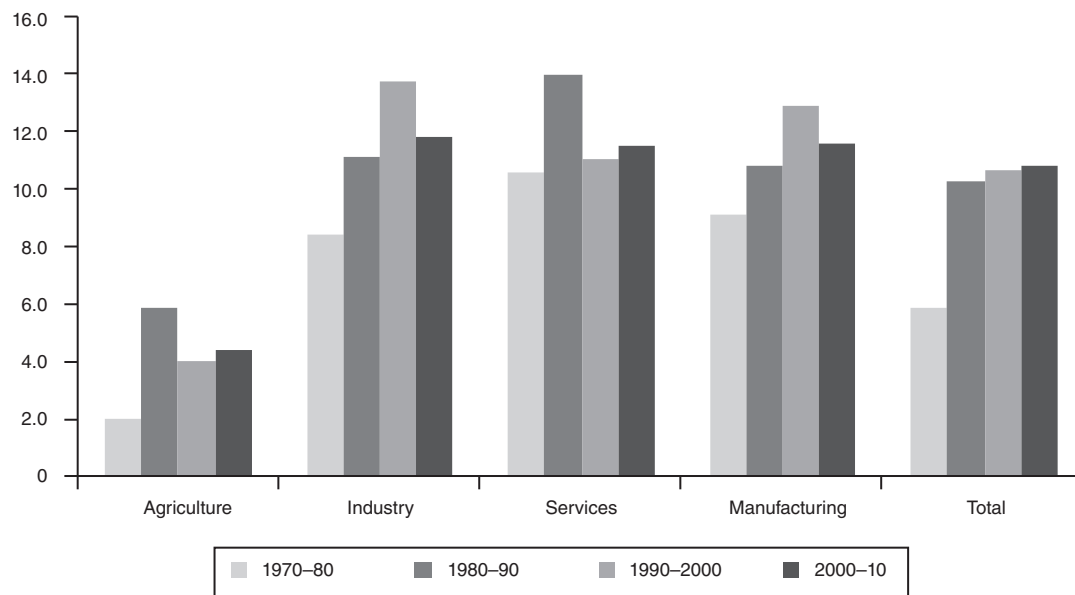


Figure 9.2 Average Annual Growth Rates Across Sectors, China, 1970-2010

Source: World Development Indicators, the World Bank.

sectoral composition of GDP in the two countries. In contrast to China, where the industrial sector always accounted for the largest share of GDP, services held the dominant share in India's GDP (except in 1970 when agriculture was the leading sector). As one would expect, the share of agriculture declined with growth in both the countries. The

share of manufacturing in India's GDP virtually remained constant in the range of 14-17 per cent during 1970-2010. During the same period, manufactures' share in China's GDP was in the much higher range of 30-40 per cent. In 2010, manufacturing accounted for about 14 per cent of India's GDP while its share was 30 per cent for China.

Table 9.1 Sectoral Composition of GDP (% shares)

	India					China				
	1970	1980	1990	2000	2010	1970	1980	1990	2000	2010
Agriculture	42.3	35.7	29.3	23.4	19.0	35.2	30.2	27.1	15.1	10.1
Services	36.9	39.6	43.8	50.5	54.7	24.3	21.6	31.5	39.0	43.1
Industry	20.8	24.7	26.9	26.2	26.3	40.5	48.2	41.3	45.9	46.8
<i>of which</i>										
<i>Manufacturing</i>	14.2	16.7	16.7	15.6	14.2	33.7	40.2	32.7	32.1	29.6
Total	100	100	100	100	100	100	100	100	100	100

Source: World Development Indicators, the World Bank.

Table 9.2 Sectoral Composition of Employment (% shares)

	India				China					
	1994	2000	2005	2010	1980	1990	1994	2000	2005	2008
Agriculture	61.9	59.8	55.8	51.1	68.7	60.1	54.3	50.0	44.8	39.6
Services	22.4	24.1	25.2	26.5	13.1	18.5	23.0	27.5	31.3	33.2
Industry	15.7	16.1	19.0	22.4	18.2	21.4	22.7	22.5	23.8	27.2

Source: Key Indicators of the labour market, ILO.

While services and industry accounted for the largest shares of output in India and China respectively, agriculture contributed to the largest share of employment in both the countries (Table 9.2). However, consistent with its declining share in GDP, workers moved out of agriculture, but the decline in the share of employment in agriculture was much larger for China. Agriculture's share in employment declined from 62 per cent in 1994 to 51 per cent in 2010 in India while it declined faster, from 54 per cent in 1994 to 40 per cent in 2008, in China.⁴ The contributions of the industrial and service sectors in total employment was higher for China than for India.

Since manufacturing output is far more tradable than services, India's low share of manufacturing output resulted in a low trade to GDP ratio. Thus, exports of goods and services as a percentage of GDP was much lower for India (average of 21 per cent for 2006–10) compared with China (average of 34 per cent for 2006–10). Likewise, as Panagariya (2007: 234) noted 'in labour-abundant economies such as China and India, the direct foreign investment is attracted principally to the manufacturing sector to take advantage of lower wages'. Thus, India's low share of manufacturing output also means less foreign direct investment (FDI). Hence, the

differences in the share of manufacturing output are part of the explanation why China is able to attract a much higher inward FDI flows compared with India.⁵

Figure 9.3 shows the changes in the share of manufacturing in total merchandise exports. It is interesting to note that during the 1980s manufacturing accounted for a higher share of India's export than that of China's. However, this pattern got reversed since the early 1990s, with the share of manufacturing in China's exports showing steady increases and remaining considerably higher than that of India's. In 2010, manufacturing constituted about 94 per cent of China's merchandise exports while the similar figure for India was 63 per cent.

Table 9.3 reports the average annual growth rates for different categories of exports—manufacturing, non-manufacturing, and services—for India, China, and the world. Compared to the previous two decade of the 1980s and 1990s, India's total exports (merchandise plus services) grew at a faster rate of 22 per cent per annum during the first decade of the 21st century, matching the growth rates of China for the first time. During 2000–10, India's service exports registered a higher growth rate than China's while India's merchandise exports registered a lower growth rate.

⁴ It is likely that China's statistics significantly overestimate its employment share in agriculture because a significant proportion of migrant workers employed in cities may be reporting their occupation as agriculture.

⁵ Inward FDI inflows as a percentage of GDP was 2.5 per cent for India (average for the period 2006–10) while the corresponding figure was nearly 4 per cent for China (estimated from *World Development Indicators*, World Bank).

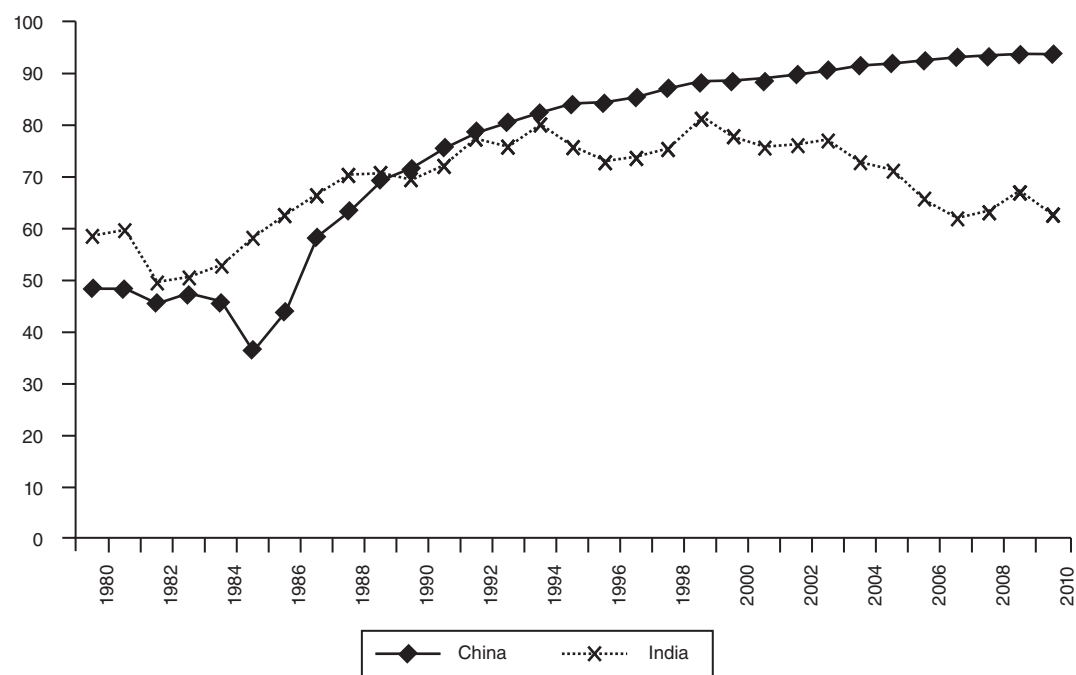


Figure 9.3 Share of Manufacturing in Total Merchandise Exports

Source: Estimated from the WTO database.

Table 9.3 Average Annual Growth Rates of Exports, Values in US\$

	Merchandise		Total Merchandise	Services	Total Merchandise plus Services
	Manufactures	Non-Manufactures			
India					
1980–90	10.6	2.1	7.3	4.7	6.7
1990–2000	10.2	7.1	9.5	13.8	10.5
2000–10	17.1	27.1	20.0	26.0	21.9
China					
1980–90	17.8	6.1	12.8	11.6*	14.4*
1990–2000	16.7	4.8	14.5	18.2	14.8
2000–10	23.2	14.6	22.4	20.3	22.2
World					
1980–90	9.2	0.8	5.9	8.0	6.3
1990–2000	7.4	5.1	6.8	6.8	6.8
2000–10	9.4	14.2	10.9	11.5	11.0

Note: * For the period 1982–90.

Source: Estimated from the WTO database.

Within the merchandise sector, India recorded a lower growth rate than China in manufacturing exports while the opposite was true for non-manufacturing exports. In short, during the last one decade, services and non-manufactured exports grew ~~growing~~ faster in India than in China while manufactured exports continued to grow faster in China.

It is remarkable that China is able to sustain rapid growth despite the fact that its base export value today is about seven times higher than that of India.

Figures 9.4 and 9.5 show the changes in the world market shares of India and China in different categories of exports. India accounted for a meagre 0.5 per cent or less in total

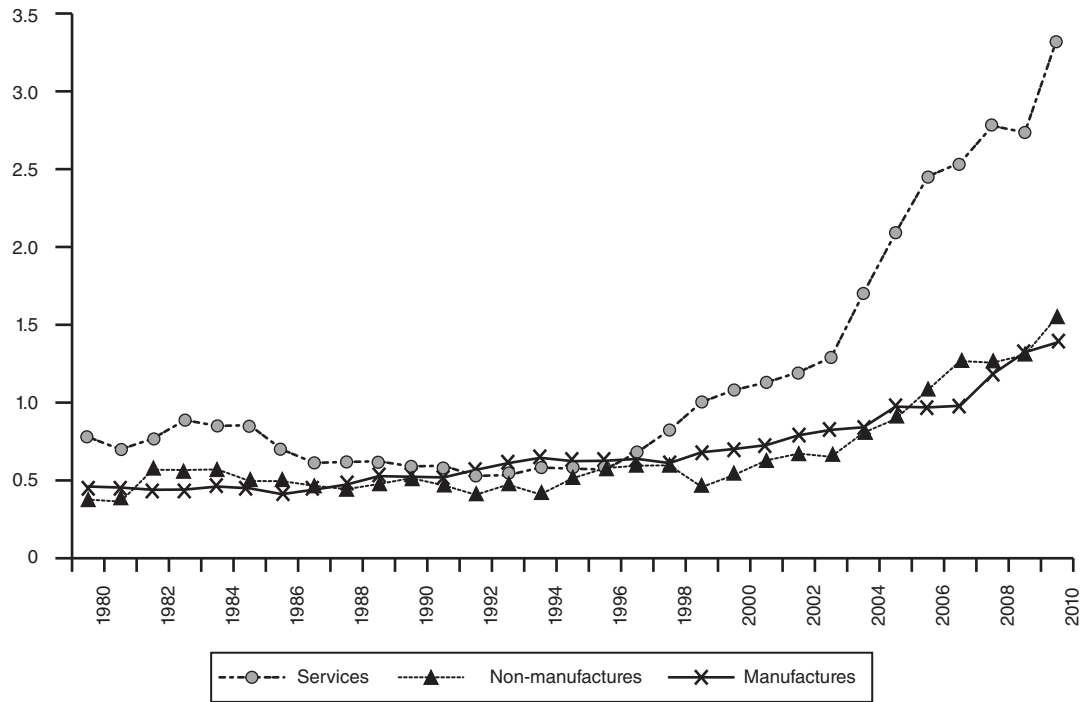


Figure 9.4 World Market Shares of Exports, India

Source: Estimated from the WTO database.

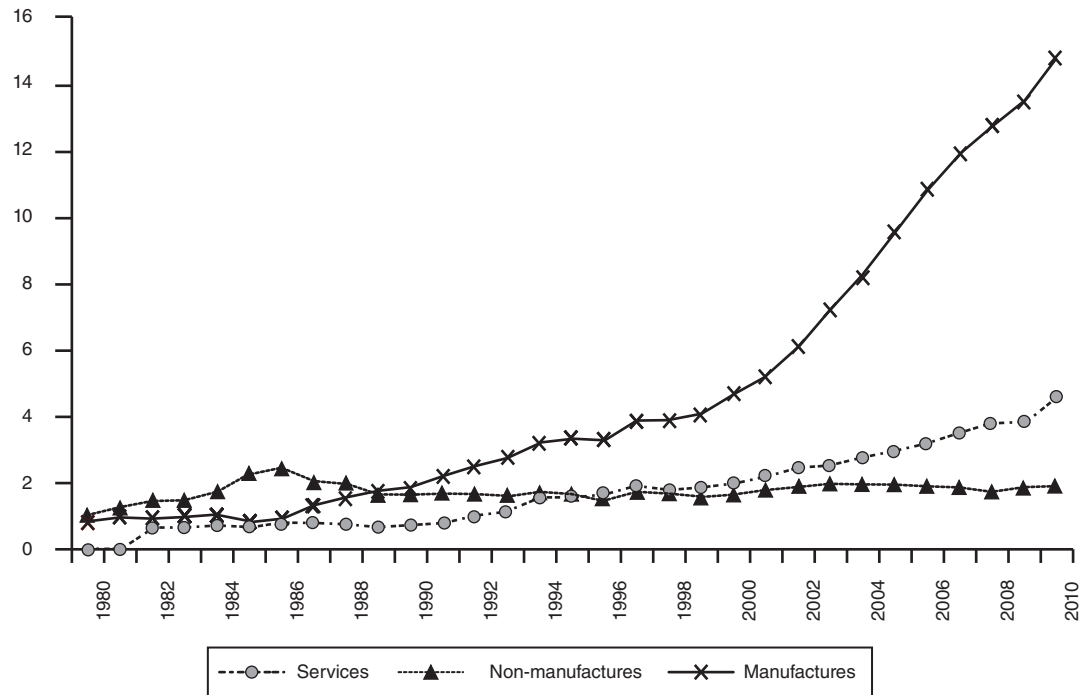


Figure 9.5 World Market Shares of Exports, China

Source: Estimated from the WTO database.

world exports of manufactured products during the 1980s, which increased marginally to 0.6 per cent in 1992 and remained at that level until 1998 before showing a relatively faster increase during the 2000s. In 2010, India accounted for 1.4 per cent of world exports of manufactures while China's share was a whopping 15 per cent. China's shares were higher than India's in services and non-manufactures as well, but the difference was not noticeably high as in the case of manufactured exports.

RELATIVE FACTOR ENDOWMENTS

The Heckscher-Ohlin model of international trade explains the specialization patterns of countries based on their relative factor endowments. According to this model, a country will specialize and export products that are intensive in the use of the factor that is abundant in that country. Thus, for example, a country with an abundant supply of labour has a comparative advantage in labour-intensive products. In order to put the empirical analysis that follows

in perspective, this section analyses the available data on relative factor endowments in India and China.

Tables 9.4 and 9.5 compare the relative endowment of physical capital, human capital, and arable land in India and China. Based on the availability of data, the periods covered in these tables are: 1961 to 2003 in Table 9.4 and 1960 to 2010 in Table 9.5. The tables also report the mean relative endowments of four groups of countries classified according to income: low income, lower-middle income (excluding India and China), upper-middle income, and high-income OECD. It is evident that physical capital and skilled labour are relatively scarce in both India and China compared to upper-middle income and high-income countries. Even compared to the group of lower-middle income countries, India was capital scarce throughout the period and China was capital scarce till the early 2000s.

In 1970 and 1980, India recorded a slightly higher value of capital stock per worker than China. However, during the subsequent years, China's physical capital endowment was much higher than that of India's, which was expected

Table 9.4 Relative Endowments

	1961	1970	1980	1990	2003
<i>Physical capital stock per worker</i>					
India	1,398	2,058	2,735	3,679	5,883
China	1,682	1,626	2,571	4,709	14,386
Low-income countries	2,438	2,519	2,974	2,677	2,641
Lower middle-income countries	7,539	9,574	13,184	14,271	13,909
Upper middle-income countries	19,139	21,951	25,602	24,073	29,113
High-income OECD	39,775	58,825	79,743	92,487	111,968
<i>Human Capital (average years of schooling)</i>					
India	1.46	1.90	2.71	3.68	4.77
China	2.80	3.18	3.61	5.23	5.74
Low-income countries	0.78	0.98	1.43	2.04	2.57
Lower middle-income countries	2.22	2.42	3.17	4.15	5.08
Upper middle-income countries	3.40	3.84	4.88	5.91	6.81
High-income OECD	6.40	6.97	8.15	8.86	9.51
<i>Arable land hectares per worker</i>					
India	0.77	0.67	0.54	0.45	0.36
China	0.30	0.24	0.18	0.18	0.18
Low-income countries	1.43	1.13	0.78	0.65	0.58
Lower middle-income countries	1.18	1.00	0.86	0.66	0.53
Upper middle-income countries	1.16	1.08	0.85	0.69	0.57
High-income OECD	1.46	1.33	1.04	0.92	0.75

Note: China and India are excluded from the group of lower middle-income countries; simple averages are calculated for income groups.

Source: Cadot et al. (2009).

Table 9.5 Educational Attainment

	1960	1970	1980	1990	2000	2010
<i>No schooling</i>						
India	72.1	66.2	66.3	51.6	43.0	32.7
China	58.3	41.9	27.1	22.2	11	6.5
Korea	42.6	24.3	13.1	11.4	5.9	3.6
Low-income countries	73.4	67.6	59.6	49.9	42.3	34.6
Lower middle-income countries*	56.0	47.8	37.8	30.5	24.0	18.2
Upper middle-income countries	38.4	30.1	21.9	15.0	10.0	6.8
High-income OECD	8.0	6.2	4.7	4.5	3.7	2.6
<i>Primary education</i>						
India	24.8	27.1	12.6	18.7	19.7	20.9
China	28.7	36.9	38.4	34.5	30.4	24.1
Korea	36.9	39.1	28	22	11.8	9.4
Low-income countries	21.4	24.2	26.5	30.6	33.5	35.6
Lower middle-income countries*	31.0	33.8	35.1	35.2	35.8	33.0
Upper middle-income countries	46.7	47.2	43.3	38.1	31.3	25.7
High-income OECD	63.4	54.0	43.3	35.6	25.7	19.0
<i>Secondary education</i>						
India	2.5	5.6	18.7	25.6	32.9	40.7
China	12.3	20.3	33.6	41.3	54.1	60.4
Korea	17.8	30.8	49.8	47.8	52	46.8
Low-income countries	4.5	7.3	12.4	17.4	21.8	26.7
Lower middle-income countries*	11.4	16.2	23.3	28.8	32.9	39.7
Upper middle-income countries	13.0	19.7	29.8	39.0	48.2	53.8
High-income OECD	23.9	33.0	41.5	45.1	51.2	55.4
<i>Tertiary education</i>						
India	0.6	1.1	2.3	4	4.5	5.8
China	0.7	0.8	0.9	1.9	4.6	9
Korea	2.6	5.8	9.1	18.8	30.2	40.1
Low-income countries	0.7	0.9	1.5	2.1	2.4	3.2
Lower middle-income countries*	1.7	2.3	3.9	5.5	7.1	9.1
Upper middle-income countries	1.9	3.0	5.1	8.0	10.6	13.7
High-income OECD	4.6	6.8	10.5	14.8	19.4	23.1
<i>Per capita income (constant 2000 US\$)</i>						
India	145	214	229	318	453	823
China	105	122	186	392	949	2425

Note: China and India are excluded from the group of lower middle-income countries; simple averages are calculated for income groups.

Source: Barro and Lee (2010).

due to the faster economic growth in the former compared to the latter since the early 1980s. As expected, the average years of schooling in both India and China were much below the level in high-income OECD and upper-middle income countries. Compared to the lower-middle income countries,

the average years of schooling were better in China but worse in India.

Highly skilled workers, that is, those with more than a secondary education were relatively scarce in both India and China. In 2010, about 23 per cent of the population in

high-income OECD countries and about 14 per cent in upper-middle income countries had attained tertiary education while these figures in China and India were about 9 per cent and 6 per cent respectively. The attainment of tertiary education in India was less than the mean attainment ratio in lower-middle income countries. In terms of secondary level education, China consistently ranked above India and other lower-middle income countries. In 2010, about 60 per cent of the population in China and 41 per cent of the population in India had attained secondary level education.

In terms of population without schooling, India has always been similar to the low-income economies. In 2010, about 33 per cent of India's population was without schooling compared to 6.5 per cent in China. Thus, unskilled labour, defined as those with no schooling, was more abundant in India as compared to China. The pattern remains the same even if unskilled labour is instead defined as those with no schooling or with only primary attainment. More than half of India's population had either no schooling or only primary attainment while 70 per cent of China's population had attained education either till the secondary level or above. In addition to being relatively skill and capital scarce, India and China are relatively land scarce compared to other countries (Table 9.4). However, land is relatively abundant in India than in China.

In sum, compared to high-income and middle-income countries, physical capital, skilled labour, and land are relatively scarce both in India and China but unskilled labour is relatively abundant. This is particularly true for India than for China. Therefore, it is beyond doubt that the true comparative advantage of India would lie in industries that intensively use unskilled labour rather than physical capital and skilled labour. For the more recent years, based on relative factor endowments, India's comparative advantage in unskilled labour-intensive goods appears particularly strong compared to China's.

PATTERN OF EXPORT SPECIALIZATION

Accumulation of factor endowments, such as human and physical capital, that characterize economic growth can bring about a dynamic process of changing comparative advantages. For example, the road to export success of the Newly Industrialized Countries (NICs) in Asia started with labour-intensive and low technology manufactures. However, as investments in physical and human capital rose and as labour costs increased with the accumulation of skills, relatively more sophisticated manufacturing activities expanded in these countries at the expense of traditional labour-intensive manufactures. This pattern of initial specialization in labour-intensive activities followed by a

move up the ladder of comparative advantage, as relative resource endowments change, is precisely the sequence envisaged in the 'stages of comparative advantage' thesis postulated by Balassa (1977).

In the light of the observed differences in relative factor endowments between India and China at given points in time and their changes over time, as shown above, we now analyse the commodity pattern of exports from the two countries. We are particularly interested in assessing the extent of congruence between the evolution of relative factor endowments and commodity specialization in the two countries.

In order to view the dynamics of specialization through the lens of the Heckscher-Ohlin model, we classify traded products according to factor intensities. First, using relatively aggregate data at the 1 and 2-digit level of the Standard International Trade Classification (SITC), we classify products into two broad categories: labour-intensive and capital-intensive. Second, using the factor intensity classification of the International Trade Centre (ITC), adapted by Hinloopen and van Marrewijk (2008), we classify the traded products into five specific categories: natural resource-intensive, unskilled labour-intensive, human capital-intensive, technology-intensive, and unclassified. The latter classification makes use of data disaggregated at the three-digit level of SITC (Revision 2).⁶

Based on the aggregate classification scheme mentioned above, the shares of different commodity groups in the export baskets of the two countries are shown in Table 9.6. It is evident that throughout the period 1962–92, labour-intensive products accounted for more than three-fourths of both India and China's total manufacturing exports. Between 1992 and 2008, however, the share of labour-intensive products declined from 78 per cent to 47 per cent in China while it declined from 84 per cent to 63 per cent in India.

World market shares of the two countries in different broad groups of commodities are shown in Table 9.7. It is evident that India's world market share in labour-intensive products was higher than China's in 1962. India's share declined from 1.6 per cent in 1962 to 0.9 in 1972. In 1982, China accounted for over 2 per cent of the world exports

⁶ The classification is available at: (<http://www2.econ.uu.nl/users/marrewijk/eta/intensity.htm>) (accessed on 15 October 2011). A total number of 240 items, at the three-digit SITC 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). For our purpose, we define an additional category, called the capital-intensive category, by adding human capital-intensive and technology-intensive categories.

Table 9.6 Composition of Exports

	Labour-Intensive				Capital-Intensive				
	Resource-based products (SITC 6)	Textile (SITC 65)	Misc. Manu facturing (SITC 8)	Clothing & Footwear (SITC 84+85)	Total (SITC 6+8)	Chemicals (SITC 5)	Machinery (SITC 71+72)	Transport Equipment (SITC 73)	Total (SITC 5+7)
1962									
India	89.4	73.4	4.8	2.9	94.2	3.4	2	0.3	5.7
China	79.6	39.4	10.5	5.4	90.1	8	1.3	0.7	10
1972									
India	80.3	47.8	9	5.7	89.3	3.3	5.2	2.3	10.8
China	57.5	35	25.8	12.5	83.3	11.5	4	1.2	16.7
1982									
India	57.5	19.1	27	20.2	84.5	3.6	7.3	4.6	15.5
China	42.3	24.6	39.2	25.8	81.5	11.8	5.7	1	18.5
1992									
India	52.2	17.5	31.8	25	84	8.1	5.4	2.5	16
China	17.9	9.2	59.6	31.8	77.5	4.3	16.9	1.2	22.4
2002									
India	48	14.3	24.8	16.2	72.8	16.1	8.8	2.4	27.3
China	14.2	4.7	44.7	17	58.9	3.6	36.1	1.5	41.2
2008									
India	43.1	8.1	19.4	11.6	62.5	18.4	14.8	4.2	37.4
China	16.3	3.2	30.7	11.1	47	5.2	45.4	2.4	53

Source: Estimated from COMTRADE-WITS using partner country import records (mirror exports).

of labour-intensive products, while India's share was below 0.9 per cent. China's share increased dramatically to about 8 per cent in 1992, 15 per cent in 2002, and to a whopping 20 per cent in 2008 while India's share increased marginally to about 2 per cent by 2008. In 2008, China accounted for 41 per cent of the world exports of clothing and footwear, while India's share was a mere 3 per cent. China also recorded a significant increase in its world market share of capital-intensive products, particularly machinery. China's share in the total world exports of machinery items increased from almost zero to as high as 20 per cent in 2008. By contrast, India's market share in machinery was a mere 0.5 per cent.

Table 9.8 reports the commodity composition of the two country's exports according to the more detailed factor intensity classification. Panel A shows the shares of the various factor intensity categories within aggregate merchandise exports while panel B shows the results for manufactured exports. A steady increase in the share of technology-intensive products (within aggregate merchandise as well as manufacturing) is a trend that is common for both India and China. This trend, however, is more pronounced for China

than for India: the share of technology-intensive products in India's manufactured exports increased from 10 per cent in 1980 to 33 per cent in 2010 while it increased from 17 per cent to as high as 57 per cent for China. Between 1980 and 2010, the share of human capital-intensive goods in India's manufactured exports increased from 14 per cent to 21 per cent while it declined from 19 per cent to 16 per cent for China.

In 1980, consistent with the two countries comparative advantages, unskilled labour-intensive goods constituted the largest share of manufacturing exports both in India (49 per cent) and China (58 per cent). However, the share of this category declined significantly in both the countries in subsequent years, with the latest share being 22 per cent in India and 25 per cent in China. It must be noted that though the share of unskilled labour activities declined in both the countries, the decline occurred from a much higher starting point for China than for India. This decline in the share of the unskilled labour-intensive category is broadly consistent with the steady decline in the endowment of unskilled labour (that is, those with either no schooling or

Table 9.7 World Market Shares

	Labour-Intensive				Capital-Intensive				
	Resource-based products (SITC 6)	Textile (SITC 65)	Misc. Manu facturing (SITC 8)	Clothing & Footwear (SITC 84+85)	Total (SITC 6+8)	Chemicals (SITC 5)	Machinery (SITC 71+72)	Transport Equipment (SITC 73)	Total (SITC 5+7)
1962									
China	1.03	2.33	0.48	0.80	0.91	0.33	0.02	0.03	0.09
India	1.89	7.07	0.36	0.71	1.55	0.23	0.06	0.02	0.09
1972									
China	0.93	2.69	0.90	1.31	0.92	0.48	0.07	0.04	0.15
India	1.17	3.31	0.28	0.54	0.89	0.12	0.09	0.07	0.09
1982									
China	1.80	6.08	2.71	5.41	2.15	1.00	0.22	0.07	0.35
India	0.94	1.80	0.71	1.61	0.85	0.12	0.11	0.12	0.11
1992									
China	3.42	8.82	12.49	20.08	7.75	1.40	2.18	0.31	1.53
India	1.28	2.16	0.85	2.02	1.08	0.34	0.09	0.09	0.14
2002									
China	7.42	14.60	23.47	29.81	15.43	2.40	9.37	0.96	5.98
India	2.19	3.86	1.14	2.46	1.67	0.93	0.20	0.13	0.34
2008									
China	12.72	24.00	29.97	40.59	20.39	5.01	19.64	2.82	12.61
India	2.63	4.73	1.48	3.32	2.12	1.39	0.50	0.39	0.70

Source: Estimated from COMTRADE-WITS using partner country import records (mirror exports).

just primary education) in both the countries (see Table 9.5). Similarly, the increase in the share of capital-intensive goods (that is, the combined share of technology and human capital-intensive goods) is consistent with the increase in the endowment of physical capital per worker and skilled labour in both the countries.

Overall, the evolution of industrial specialization in India and China seems consistent with the changes in their relative endowments. However, a comparison of the trajectories in the two countries brings out the fact that industrial specialization in India is disproportionately biased towards capital and skill-intensive industries than in China (also see Krueger 2010; Kochhar et al. 2006; Panagariya 2008). The following observations make this argument clearer.

First, between 1980 and 2010 both the countries experienced an equal rate of decline in the share of unskilled labour-intensive goods in exports (that is, about 56 per cent) though the corresponding decline in the share of unskilled labour in the total workforce was faster in China

(53 per cent) than in India (32 per cent). Thus, compared to China the extent of decline in the share of unskilled labour-intensive goods in India's exports seems disproportionately higher. Second, during the same period, the share of capital-intensive goods in India's exports more than doubled from 24 per cent to 54 per cent while it increased less rapidly from 37 per cent to 73 per cent in China. In contrast, the endowment of physical capital stock per worker increased significantly faster in China (from \$2,571 in 1980 to \$14,386 in 2010) than in India (from \$2,735 to \$5,883 in 2010). Thus, compared to China, the extent of increase in the share of capital-intensive goods in India's exports is disproportionately higher than what would be explained by the growth in the endowment of physical capital stock per worker.

Third, a recent study, using finely disaggregated 10-digit level US bilateral import data, has shown that India's export bundle to the US is becoming increasingly more similar to that of the high-income OECD countries (Veeramani and

Table 9.8 Export Composition According to Factor Intensity Classification

	India					China				
	1980	1990	2000	2005	2010	1980	1990	2000	2005	2010
Panel A: Total Merchandise										
Primary	38.7	28.5	20.7	23.2	30.1	51.4	19.4	7.3	4.9	3.6
Natural resource-intensive	16.2	24.3	20.0	20.0	17.5	3.4	2.9	3.1	3.3	2.6
Unskilled labour-intensive	30.2	30.6	29.1	20.0	14.3	27.8	46.5	39.3	28.2	24.4
Capital-intensive	14.8	16.5	30.1	35.2	35.4	17.3	31.1	49.3	63.6	69.3
human capital-intensive	8.5	9.1	14.0	16.8	13.8	9.2	15.5	14.4	15.6	14.9
technology-intensive	6.3	7.4	16.1	18.4	21.6	8.1	15.6	35.9	48.0	54.4
Unclassified	0.0	0.0	0.0	1.7	2.7	0.1	0.0	0.0	0.0	0.0
Total	100	100	100	100	100	100	100	100	100	100
Panel B: Manufacturing										
Natural resource-intensive	26.3	33.5	24.3	24.3	24.3	5.3	2.6	2.4	2.4	1.8
Unskilled labour-intensive	49.4	43.2	37.2	27.4	21.8	58.3	58.3	42.8	30.0	25.5
Capital-intensive	24.3	23.3	38.5	48.2	54.0	36.5	39.0	54.8	67.5	72.6
human capital-intensive	14.0	12.8	17.9	23.0	21.1	19.4	19.5	15.7	16.5	15.6
technology-intensive	10.3	10.5	20.6	25.2	32.9	17.1	19.5	39.1	51.0	57.0
Total	100	100	100	100	100	100	100	100	100	100

Note: Shares of the capital-intensive category have been obtained by adding the shares of human capital-intensive and technology-intensive categories.

Source: Estimated from COMTRADE-WITS using partner country import records (mirror exports) and the factor intensity classification of the International Trade Centre (ITC), adapted by Hinloopen and van Marrewijk (2008).

Saini 2011).⁷ It has 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 of India may reflect its undue specialization in capital and skill intensive varieties and production process. For, it may be argued that, the higher the level of capital and skill embodied in a variety/product line, the higher the price (unit value) that it commands in export markets.⁸

Finally, as discussed in detail in the next section, there are strong reasons to believe that Tables 9.6 and 9.8 overestimate the share of capital-intensive exports and underestimate the share of labour-intensive exports for both the countries, but significantly more so for China than for India. In other

⁷ 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 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).

⁸ A higher price that results from 'distorted' specialization, however, does not translate into an overall higher volume of exports.

words, it is likely that the actual share of labour-intensive exports was much bigger than what is shown in Tables 9.6 and 9.8 for China while this discrepancy was relatively smaller for India.

GLOBAL PRODUCTION NETWORKS AND VERTICAL SPECIALIZATION

China's export promotion policies since the 1990s have relied heavily on a strategy of integrating its domestic industries with global production networks. Global production networks refer to the links between a lead or a key firm and its suppliers in different countries (Weiss 2011). In certain industries, such as electronics and automobiles, technology makes it possible to sub-divide the production process into discrete stages. In such industries, the fragmentation of the production process into smaller and more specialized components allows firms to locate parts of the production in countries where intensively used resources are available at lower costs.

A high level of fragmentation (vertical specialization) based trade, which occurs when countries specialize in particular stages of a good's production sequence rather

than in the entire good, has been an important factor in driving the East Asian export growth (Athukorala 2012; Athukorala and Yamashita 2006). This type of trade is the result of increasing inter-connected production processes that form a vertical trading chain stretching across many countries, with each country specializing according to factor intensities involved at the different stages in production. Labour abundant countries like China tend to specialize in low skilled labour-intensive activities involved in the production of a final good while the capital and skill-intensive activities are carried out in countries where those factors are abundant. Thus, international firms might retain skill and knowledge-intensive stages of production (such as R&D and marketing) in the high-income headquarters (for example, the US, EU, and Japan) but locate all or parts of their production in a low wage country (for example, China or Vietnam).

The major driving forces behind the steadily increasing vertical specialization-based trade during the last two decades include: (i) world-wide reduction of tariff barriers, (ii) spatial inter-dependence and production sharing of multinational firms, and (iii) expansion of transportation and communication networks.

A manifestation of China's participation in global production networks is the growing importance of machinery items in its export basket (see Tables 9.6 and 9.7). In 2008, machinery contributed about 45 per cent of Chinese exports and China accounted for about 20 per cent of the world exports in this product category. The fast growth of China's machinery exports has been driven by its high degree of integration with regional and global production networks (Athukorala 2012).

In particular, based on imported parts and components, China has emerged as a global hub for electrical and electronic goods assembly. Typically, China imports the parts and components from other parts of East Asia and exports the finished goods to the United States and Europe. Since this strategy involves processing or assembly of imported parts and components, the net domestic value added *per unit* of the exported good is generally not very high. However, since the scale of operations is usually very large, the *total* domestic value addition from these activities is considerably high contributing to employment generation for a large number of migrant workers in China.

Though, machinery as a whole may be considered as a capital-intensive category, certain stages of production or tasks (such as low-end assembly activities) within this category are highly labour-intensive. The data disaggregated at the three-digit level does not fully capture these heterogeneities. The calculations shown in Table 9.8 ignore the fact that within the three-digit industries, that are grouped under the capital-intensive category, China

largely specializes in process and product lines that are mainly labour-intensive. Therefore, Tables 9.6 and 9.8 may significantly overestimate the shares of capital-intensive exports and underestimate the shares of labour-intensive exports from China. This discrepancy, however, is likely to be smaller for India since she remains a minor player in fragmentation-based trade.

A proxy variable for measuring the intensity of vertical specialization-based trade is the share of parts and components (henceforth referred to as 'components' for brevity) in total manufacturing trade. Based on estimates by Athukorala (2012), Table 9.9 reports the components shares for India, China, and several other countries for two time points, 1992–3 and 2006–7. That a growing share of world trade is based on vertical specialization and fragmentation is evident from the fact that the share of components in world manufacturing exports increased sharply from 19 per cent in 1992–3 to 27 per cent in 2006–7. This share increased at a much faster rate in developing Asian countries, from 17 per cent to 34 per cent.

Table 9.9 Share of Parts and Components in Manufacturing Trade (%)

	Exports		Imports	
	1992–3	2006–7	1992–3	2006–7
Developing Asia	17.3	34.0	29.0	44.2
China, PR	7.4	25.6	20.4	44.0
Hong Kong SAR	15.8	33.3	24.1	48.5
Taiwan	24.7	44.2	29.5	38.9
Korea, RP	18.1	47.3	30.1	31.9
ASEAN 6	22.7	44.2	36.0	47.9
Indonesia	3.8	21.5	27.0	21.8
Malaysia	27.7	53.6	40.5	50.0
Philippines	32.9	71.7	32.6	61.3
Singapore	29.0	49.3	39.9	60.4
Thailand	14.1	29.9	30.6	36.1
Vietnam	—	11.0	—	19.1
India	3.0	10.4	17.5	22.9
Memo items				
East Asia	20.2	34.1	27.2	42.1
Japan	23.9	34.4	19.3	29.9
NAFTA	28.4	31.2	37.4	28.8
EU 15	18.3	22.4	21.2	23.2
World	19.3	27.1	19.6	27.3

Note: shares for 1992–3 have been computed using the average trade values for the years 1992 and 1993 and analogously for 2006–7.

Source: Athukorala (2012).

For China, the components share in exports increased from 7 per cent to 26 per cent and its share in imports increased from 20 per cent to 44 per cent between 1992–3 and 2006–7. That the components share in China's manufacturing imports (44 per cent in 2006–7) was much larger than the corresponding share in its exports (26 per cent) is consistent with our earlier observation that China has emerged as a global hub for the final assembly activities in manufacturing.⁹

Despite its intrinsic comparative advantage in unskilled labour-intensive activities, India still remains a minor player in global production networks and vertical specialization-based trade. Table 9.9 reveals that India's components share, both in exports and imports, was much lower than the world average and the corresponding shares for all the regional groups and all the individual countries in Asia (with the exception of Indonesia and Vietnam in the import share in 2006–7). The share of components in India's exports increased from a paltry 3 per cent in 1992–3 to 10 per cent in 2006–7 while the components share in its imports increased from about 18 per cent to 23 per cent.

Using input-output tables, Hummels et al. (2001) proposed an index of vertical specialization, which is defined as the share of imported intermediates embodied in a country's exports. This index for country k is given as:

$$VS_k = uA^M [I - A^D]^{-1} X/x_k,$$

where u is $1 \times n$ vector of 1's, A^M is the $n \times n$ imported coefficient matrix (share of imported intermediate goods in total inputs by n sectors), A^D is the $n \times n$ domestic coefficient matrix, I is the identity matrix, X is an $n \times 1$ vector of exports, x_k is a scalar that denotes the aggregate value of exports from country k and n is the number of sectors. The numerator of the above equation measures all the imported inputs that are needed to produce the exports of country k from all n sectors. Dividing this by the amount of aggregate exports yields the share of country k 's exports attributable to imported inputs—that is, the share of foreign value added in exports. Recently, Koopman et al. (2010) have proposed a more comprehensive framework for measuring the foreign value added share of a country's exports taking into account the back-and-forth trade of intermediates across multiple borders.

OECD provides the estimates of the VS index for all the member countries as well as for selected non-member countries for three time points—the mid-1990s, early 2000s,

and the mid-2000s. Table 9.10 reports the VS indices for India and other Asian countries for which OECD estimates are available. It is evident that the import content of India's manufactured exports increased from 13 per cent in the mid-1990s to 27 per cent in the mid-2000s. Between the same periods, this share increased from 17 per cent to 30 per cent in China. India's VS values were significantly lower (except for Indonesia in the mid-2000s) than other Asian countries shown in Table 9.10. The VS values were much above 40 per cent for Singapore, Taiwan, Thailand, Korea, and Vietnam.

Table 9.10 Vertical Specialization in Manufacturing Across Selected Asian Countries (import content of exports), VS indices

	Manufactures		
	Mid-1990s	Early 2000s	Mid-2000s
China	0.17	0.21	0.30
India	0.13	0.17	0.27
Indonesia	0.23	0.28	0.23
Korea, RP	—	0.41	0.42
Singapore	0.69	0.70	—
Taiwan	0.40	0.43	0.55
Thailand	—	—	0.48
Vietnam	—	0.46	—

Source: OECD. StatExtracts.

Using more detailed data, Dean et al. (2008) have estimated the VS index for China for 2002. Depending upon the definition used, they show that about 25 to 46 per cent of the value of China's total merchandise exports to the world was attributable to imported inputs, with some individual sectors accounting for as much as 52–95 per cent. In general, vertical specialization was much higher in China's manufacturing sector accounting for over 50 per cent in many industries, and is growing over time.¹⁰

About half of China's exports represent processing trade with no tariffs charged on intermediate imports. The estimates for 2004 by Koopman et al. (2010), using a more comprehensive framework, showed that the share of foreign value added in China's processing exports was as high as 57 per cent. This share in China's non-processing exports was only 15 per cent and hence the average share stood at 36 per cent. Their estimate for India was 20 per cent which is the lowest in Asia and below the world average (22 per cent).

⁹ China imports parts and components mostly from other parts of East Asia and exports the finished goods to the United States and Europe. Therefore, China records long-run trade deficits with the former group and long-run trade surplus with the latter group.

¹⁰ Another proxy for fragmentation based trade is the Grubel-Lloyd index of intra-industry trade. Veeramani (2009) reports relatively lower levels of intra-industry trade for India compared to China in manufacturing (excluding diamonds and precious stones) during the period 1990–2005.

Vertical specialization is not a phenomenon restricted to East Asia alone. Between 1970 and 1990, growth in vertical specialization related exports accounted for about 30 per cent or more of the growth in overall exports of 10 OECD and four emerging market countries (Hummels et al. 2001).

Inward FDI was instrumental in integrating China's manufacturing with global vertical production chains. The bulk of the FDI flows to the manufacturing sector in China and other East Asian developing countries are vertical (export promoting) in nature. Vertical FDI represents international fragmentation of the production process by multinationals, locating each stage of the production in the country where it can be done at the least cost. The contribution of foreign funded enterprises in total Chinese exports steadily increased from less than 9 per cent in 1989 to 55 per cent in 2010.¹¹

In contrast, inward FDI into India was primarily horizontal (domestic market seeking) rather than vertical. FDI was much less important in driving India's export growth, accounting for less than 10 per cent of manufacturing exports. A recent OECD Investment Policy Review for India observes: 'despite the government's intention of promoting export-oriented FDI projects, the main objective of foreign investment in India was domestic market seeking and foreign-invested enterprises were characterised by a generally poor export performance, though no less poor than their domestic counterparts' (OECD 2009: 31). Krueger (2010: 424) notes that '... India has not succeeded in attracting foreign investors to use India as an export platform in many of the unskilled-labour intensive industries that have been attracted to east and southeast Asia.'

China, through specialization in labour-intensive processes, tasks, and product lines, has successfully integrated its manufacturing sector with global production networks. In contrast, India has been locked out of the vertically integrated global supply chains in manufacturing industries mainly because the country's incentive structures are not in alignment with its comparative advantage in unskilled labour-intensive activities. We elaborate on this in the concluding section.

GEOGRAPHICAL DIRECTION OF EXPORTS

The disproportionate bias of India's export specialization towards capital and skill-intensive product lines and the

resulting disconnect with global production networks have a bearing on the geographical pattern of India's exports. Arguably, India's product specialization patterns provide it with a comparative advantage in relatively poorer markets (such as Africa) but at the cost of losing market shares in the richer countries.

In the past, traditional developed country markets (comprising Australia and New Zealand, Europe, Japan, and North America) accounted for a major share of India's export basket. But their dominance has been steadily declining over the last two decades. The aggregate share of these markets in India's merchandise exports declined from about 63 per cent in 1993 to 35 per cent in 2010 (Veeramani 2012). The remaining group of countries (which include South and Central America, Caribbean, and the various regions of Asia and Africa), accounted for nearly two-thirds of India's merchandise exports in 2010.

The share of the high-income OECD countries in India's total manufacturing exports declined sharply from 58 per cent in 2000 to 41 per cent in 2010. For China, the corresponding decline in the share of high-income OECD countries was relatively slow from 62 to 53 per cent. In contrast to India, China continues to show a high trade orientation with traditional developed country markets.

What explains India's declining trade intensity with traditional developed country markets? A possible explanation for this trend lies in India's idiosyncratic pattern of specialization. India's capital and skill-intensive products are unlikely to make inroads into the quality conscious richer country markets. These products from India, however, may enjoy a competitive advantage in the relatively poorer country markets.

That the nature of specialization has a bearing on the geographical direction of exports is evident from the fact that the high-income OECD countries account for a much smaller share in India's total exports of capital-intensive products (for example, 'machinery & transport equipment') compared to their share in India's total exports of labour-intensive products (for example, 'textiles'). In 2010, the high-income OECD countries accounted for about 52 per cent of the total exports of 'textiles' from India while their share in 'machinery & transport equipments' was much smaller at 38 per cent (see Table 9.11). For China, however, the high-income OECD countries accounted for much above 50 per cent of its exports in both these product groups. The high share of OECD countries in China's exports of 'machinery & transport equipment' is consistent with its high degree of vertical specialization in the labour-intensive production stages within these industries.

A concrete example that should make our arguments clearer is related to India's export pattern of passenger motor vehicles (HS 8703), a capital and skill-intensive product

¹¹ The shares were 32 per cent in 1995 and 50 per cent in 2001. These shares (except for 1989) have been computed using data from the various issues of the *Chinese Statistical Yearbook* published by the National Bureau of Statistics of China. The share for the year 1989 is taken from the *World Investment Report, 2003*, published by UNCTAD.

Table 9.11 Share of High-Income OECD Countries in Exports from India and China

	India			China		
	1990	2000	2010	1990	2000	2010
Manufactures	48.9	58.1	40.8	29.9	61.8	53.2
Textiles	53.9	66.1	51.7	37.0	57.6	55.1
Machinery and transport equipment	17.4	46.7	38.3	12.8	59.1	51.6

Source: Estimated using COMTRADE-WITS database.

group. 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 per cent a year. Low and middle-income countries were the major destinations for these exports from India. In 2010, the high-income countries accounted for only 8 per cent of Indian exports of passenger motor vehicles while Sub-Saharan Africa accounted for 11 per cent. By contrast, the high-income countries accounted for 58 per cent of India's total exports of HS 6105 ('men's or boy's shirts, knitted or crocheted')—a traditional labour-intensive group—while Sub-Saharan Africa accounted for just 1 per cent. Clearly, changes in specialization have bearings on the geographical direction of exports. In general, India's movement out of labour-intensive industries implies a loss of comparative advantage in the richer country markets.

It is important to note that the overall size of developing country markets remains much smaller than traditional developed country markets.¹² Therefore, the undue dependence on developing country markets may put a natural limit on India's volume growth of exports. It is beyond doubt that India holds a huge unexploited export potential in traditional developed country markets despite the recent slowdown in these countries. 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 recently announced an export incentive scheme providing explicit financial supports for market diversification.¹³ The recent slowdown in the developed countries may provide a short-term rationale for this diversification strategy. Viewed through the lens of the Heckscher-Ohlin model, however, the declining trade intensity with traditional richer country markets is symptomatic of distortions in India's specialization patterns

¹² The countries in the traditional group accounted for about 70 per cent of world exports in 2002 and 58 per cent in 2010.

¹³ See the 'Foreign Trade Policy 2009-14', Ministry of Commerce and Industry, Department of Commerce, Government of India, available at: <http://dgft.gov.in/exim/2000/policy/ftp-plcontent0910.pdf> (accessed on 1 November 2011).

in favour of capital-intensive industries. In order to exploit the export potential in developed country markets, it is imperative to realign India's specialization on the basis of its intrinsic comparative advantage in labour-intensive manufacturing.

CONCLUDING REMARKS AND THE WAY FORWARD

The road to the success of exports in the East Asian countries started by specializing in low skilled labour-intensive and low technology manufactures. In contrast, the pattern of India's industrial growth, though still at the early stage, shows a bias in favour of relatively skill and capital-intensive industries. The fast growing exports from the country are either skilled labour-intensive (such as drugs and pharmaceuticals and fine chemicals) or capital-intensive (such as automobiles and parts). The share of capital-intensive products in India's manufacturing export basket more than doubled from about 23 per cent in 1990 to nearly 54 per cent in 2010 while the share of unskilled labour-intensive products nearly halved from 43 per cent to 22 per cent.

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 unskilled surplus labour from India's agriculture sector. Thus, Indian growth has not been effective in reducing poverty on the scale that was possible in China and other industrialized countries of East Asia. The experience of East Asian countries shows that export-led industrialization 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 industrialization and moving directly to the next stage based on capital and skill-intensive industries.

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 unskilled labour-intensive activities. While India's import substitution policy regime created a bias in favour of capital and skill-intensive manufacturing, the reforms since 1991 have not been comprehensive enough to remove this bias.

Though the post-1991 policy changes have gone a long way towards product market liberalization by easing entry barriers, factor markets (labour and land) are still plagued by severe distortions and policy induced rigidities. Arguably, government interventions in factor markets have had the unintended consequence of creating a bias in the incentive structure against labour-intensive manufacturing. Trade liberalization by itself does not guarantee specialization in line with the comparative advantage of a country if other policies militate against the efficient pattern of resource allocation.

In particular, India's archaic labour laws create severe exit barriers and hence discourage large firms from choosing labour-intensive activities and technologies (Krueger 2010; Kochhar et al. 2006; Panagariya 2007). A provision in the Industrial Disputes Act (IDA) 1948 stipulates that firms employing 100 or more regular workers must seek prior consent of the state government before any retrenchment or closure of firms.¹⁴ Based on a labour market survey and comparable research in other countries, an OECD report (2007: 13) notes that 'laws governing regular employment contracts in India are stricter than those in Brazil, Chile, China and all but two OECD countries.' Nagaraj (2011), however, questions the hypothesis that labour market rigidities are holding up India's industrial growth. He argues that the exemptions and loopholes built into the labour laws provide sufficient flexibilities to firms to retrench workers. It has also been argued that in order to surpass stringent labour laws, firms are increasingly using non-regular contract labour (for example, see Sharma 2006).

While illegal retrenchments and use of contract workers are not ruled out, the main charge against this legislation is that it raises the implicit cost of employing workers (including the costs of litigation and bribes to politicians and trade union leaders in the event of illegal retrenchments) and reduces the freedom of firms to decide the optimal way of choosing their product lines and employing the workers.¹⁵ These costs can be prohibitive especially in labour-intensive segments where firms generally operate with low margins in a highly competitive international environment. Overall,

¹⁴ The original post-independence legislation allowed employers to retrench workers as market conditions required, subject to minimum levels of protection through stipulated notice periods, severance payments etc. The legislation was tightened in 1976 for firms employing over 300 workers by making it mandatory for firms to obtain government permission to retrench workers. In 1982, this restriction was extended to all firms employing 100 or more workers.

¹⁵ Leaving the debate on the specific effect of IDA aside, it has been generally agreed that the 'Indian labour laws are so numerous, complex and even ambiguous that they promote litigation rather than the resolution of problems related to industrial relations' (Sharma 2006: 2078).

the legislation has created an incentive for firms to choose skill and capital-intensive product lines that employ relatively more white collar workers who are not classified as 'workmen' and therefore do not enjoy employment protection under IDA.

A number of econometric studies have attempted to analyse the impact of labour laws on employment and firm performance in India. Such attempts have been encumbered by difficulties in properly measuring the extent of labour market rigidities. Some recent studies, exploiting state-level variations in labour policies, suggest that labour market rigidities have constrained employment, firm performance, and industrial growth in India (see, for example, Hasan et al. 2007 and Aghion et al. 2008).¹⁶

Until the reforms, China had severe distortions in all its factor and commodity markets (Lal 1995). The Chinese labour market was characterized by direct allocation of jobs and administrative control of wages. China gradually liberalized the labour market, particularly in the non-state sector, providing greater flexibility in the allocation of resources (Brooks and Tao 2003; Meng 2000). Firms in special economic zones, in the very early stage of opening, had the authority to hire and fire. The government then extended this policy to other areas in the country (Panagariya 2007).

A flexible labour market, with appropriate social safety nets, is a crucial necessary condition for the growth of labour-intensive manufacturing in India. Other constraints that stand in the way of manufacturing growth include inadequate supply of physical infrastructure (especially power, roads, and ports) and a highly inefficient and cumbersome land acquisition procedure. Faced with power shortages, capital and skill-intensive industries such as automobiles and pharmaceuticals, might be in a position to rely on the high-cost internal sources of power. This option, however, is not affordable to firms in the labour-intensive segments that generally operate with low margins.

A high level of vertical specialization-based trade, which occurs when countries specialize in particular stages of a good's production sequence rather than in the entire good, has been an important factor in driving the East Asian export growth. China, through specialization in labour-intensive processes and product lines, has successfully integrated its manufacturing sector with global production networks. Inward FDI has been instrumental in integrating China's manufacturing with global vertical production chains. The bulk of the FDI flows to China's manufacturing sector has been vertical (export promoting) in nature, which represents

¹⁶ Bhattacharjea (2006) provides a critical review of these studies.

international fragmentation of the production process by multinationals.

In contrast, due to its idiosyncratic specialization, India has been locked out of the vertically integrated global supply chains in manufacturing industries. Inward FDI into India is primarily horizontal (market seeking) rather than vertical in nature. FDI has been much less important in driving India's export growth, accounting for less than 10 per cent of manufacturing exports.

What explains the fact that India has been attracting horizontal rather than vertical FDI while the opposite has been the case for China? The factors responsible for this are broadly the same as those that explain the relatively low degree of India's vertical specialization in general. First, there existed a powerful incentive for multinationals to undertake tariff jumping horizontal investment as Indian tariff rates, despite the reduction since 1991, remained relatively high until 2007. Higher tariff rates would have made India a relatively undesirable destination for vertical investments.

Second, vertical specialization has been discouraged in India also on account of labour laws, inefficient infrastructure, a burdensome regulatory environment, an inefficient land acquisition process, and poor trade facilitation.¹⁷ The World Bank's annual 'Doing Business 2012' ranked India 132nd out of 183 countries in ease of doing business while China's rank stood much better at 91st. The Logistic Performance Index (LPI) database of the World Bank, ranks countries on the basis of the quality of trade-related logistic provisions.¹⁸ According to the latest LPI index, India's rank stood at 47 out of 155 countries while China's rank was higher at 27.

Recognizing the importance of a strong manufacturing sector for employment generation, the Indian government recently announced the National Manufacturing Policy (NMP).¹⁹ This policy aims to create 100 million additional

jobs and to increase the share of manufacturing in India's GDP to 25 per cent by 2022. A major ingredient of this policy is the plan to establish national investment and manufacturing zones, with the units in the zones being given single-window clearance, a liberal exit policy, and certain tax exemptions. The good part of the policy is that it addresses, at least partly, some of the rigidities in the factor (labour and land) markets.

However, there has been little or no effort to situate NMP in the context of growing global production networks in manufacturing industries. Failing to recognize the importance of integrating domestic manufacturing industries with the vertically integrated global production networks, NMP erroneously assumes that a significant local value addition is a necessary condition for manufacturing to increase its size. The policy aims to improve domestic value addition by encouraging the local availability of most of the components, spare parts, and raw material (Mani 2011). This strategy will possibly result in realizing a higher net domestic value added *per unit* of the good produced but at the cost of a lower *total* domestic value addition ~~since~~ the domestic industries ~~are being~~ locked out of global production networks.

The grand idea of building a self-contained indigenous industry with local value chains is meaningless in the current landscape of international commerce, where countries engage in production and trade by specializing at the level of distinct product lines and processes within each industry. What is important is the creation of an environment that allows entrepreneurs to freely search and identify opportunities in the vertically integrated global supply chains of various industries. A deliberate strategy of promoting greater integration of domestic industries with global production networks will accelerate the process of shifting the surplus labour engaged in India's agriculture to labour-intensive manufacturing. Increased participation in global production networks must form an essential part of the strategy for achieving inclusive growth in India.

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¹⁷ For a long period, India had had a small scale reservation (SSR) policy under which a number of industrial activities (mostly unskilled labour-intensive) were 'reserved' for small scale units (see Mohan 2002 for a detailed analysis). Reduction in the list of SSR industries started in 1997 and continued till the late 2000s. Krueger (2010: 422–3) pointed out that 'because exporting many unskilled-labor intensive goods requires considerable fixed costs and fairly large scales of output, it is possible that there will be a delay between the time SS regulations are relaxed and exporting activity increases'. It may also be noted that the stringent labour laws applicable to the larger firms may act as a major disincentive for firms to expand in the de-reserved industries. In the absence of labour reforms, de-reservation alone is unlikely to generate significant growth in labour-intensive production and exports.

¹⁸ For details see <http://info.worldbank.org/etools/tradesurvey/Mode1a.asp>, last accessed on 18 September 2012.

¹⁹ See Mani (2011) for a critical evaluation of NMP.

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