

# Growth and Structure of Trade: India and China in a Comparative Perspective

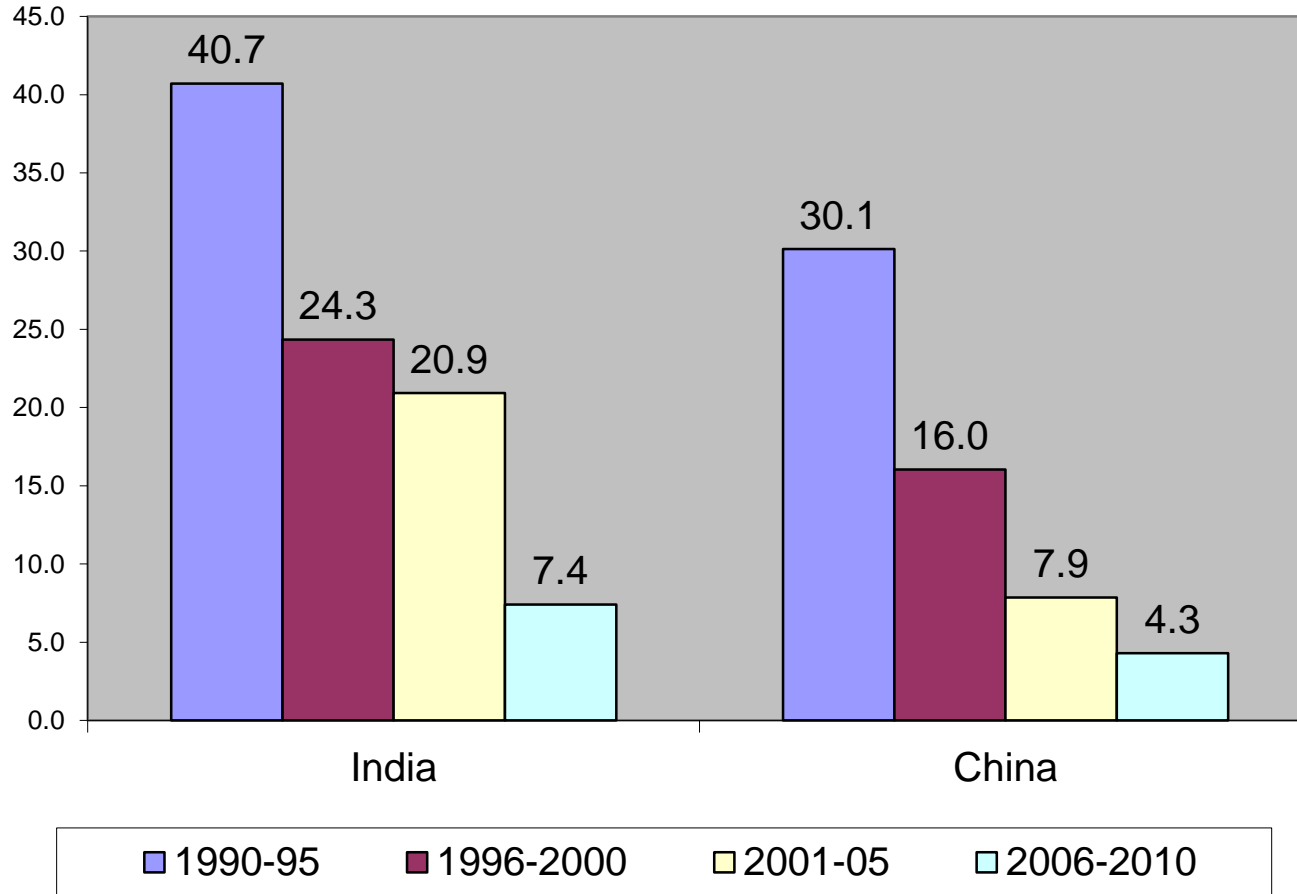
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# Trade Liberalisation

- China started trade liberalization process in earnest since 1978
- India:
  - Cautious liberalization during the 1980s; internal deregulation rather than external trade liberalization
  - Comprehensive and systemic liberalization since 1991
    - Currency devaluation in 1991
    - Current account convertibility in 1993
    - Removal of QRs on imports of capital and intermediate goods in 1992
    - QRs in consumer goods remained till 2000 / 2001
    - Tariff reduction and its rationalization
    - Liberalization of FDI

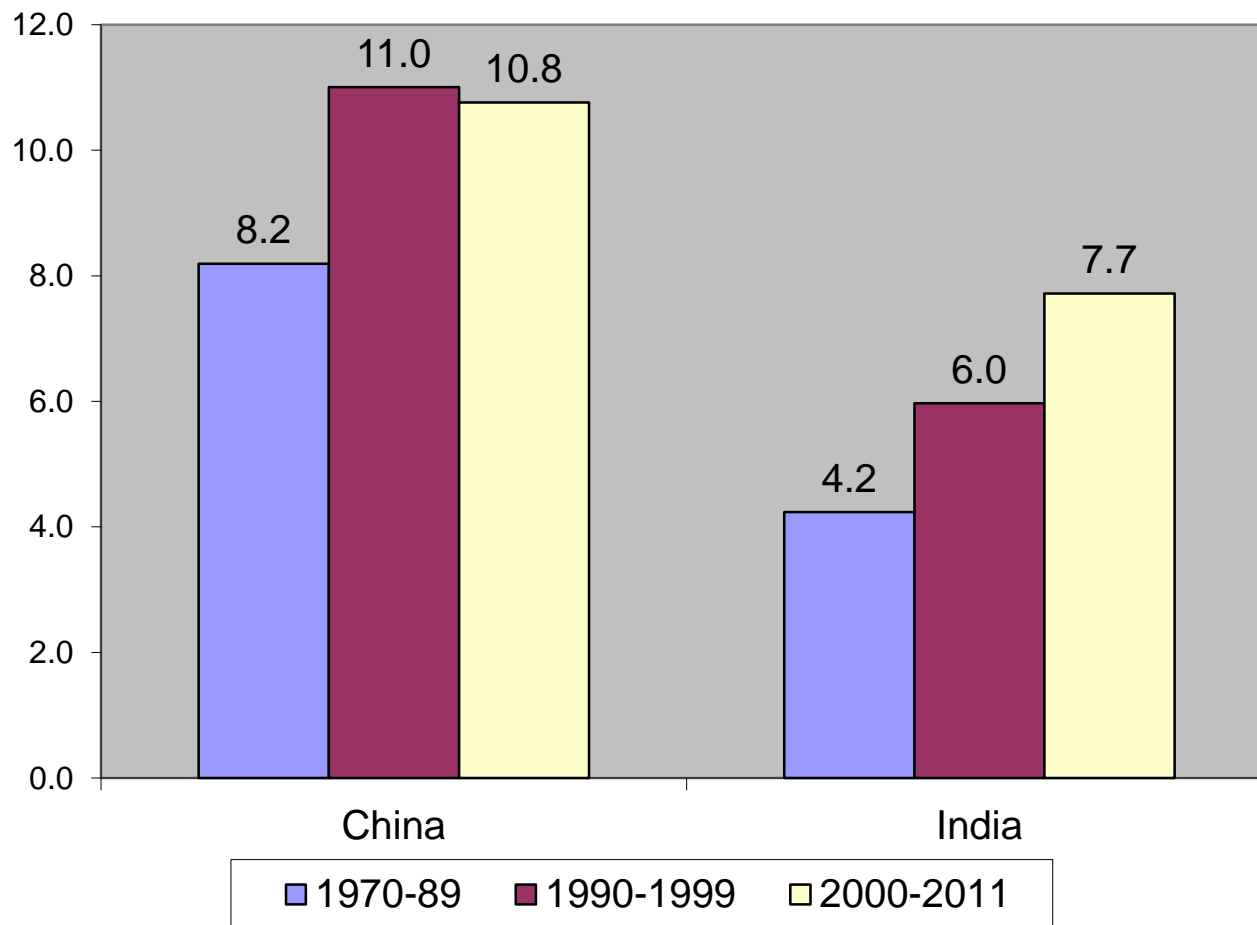
**Fig 1: Applied Tariff Rates, Import Weighted Averages, All Products**



# Areas kept out of the reform process

- Agriculture
- Labour and land markets
  - Labor and bankruptcy laws create multiple exit barriers in the manufacturing sector
  - Mandatory for firms with more than 100 workers to seek prior consent from the govt. before any retrenchment or closure of a part of the enterprise
  - Retrenchments and layoffs extremely difficult

**Figure 2: Average Annual Growth Rates of GDP (Constant 2000 US\$)**



## Contrasts in Growth Process: China

- Conventional pattern of shifting labour from agriculture to labour-intensive manufacturing.
  - Transformation from traditional to modern sectors until the surplus labour in the traditional sectors is exhausted and real wages start rising (Lewis model)
- Strategy of integrating domestic industries with the global production networks (GPNs).
  - Exports and FDI played an important role
- Employment intensive growth with impressive poverty reduction

# Contrasts in Growth Process: India

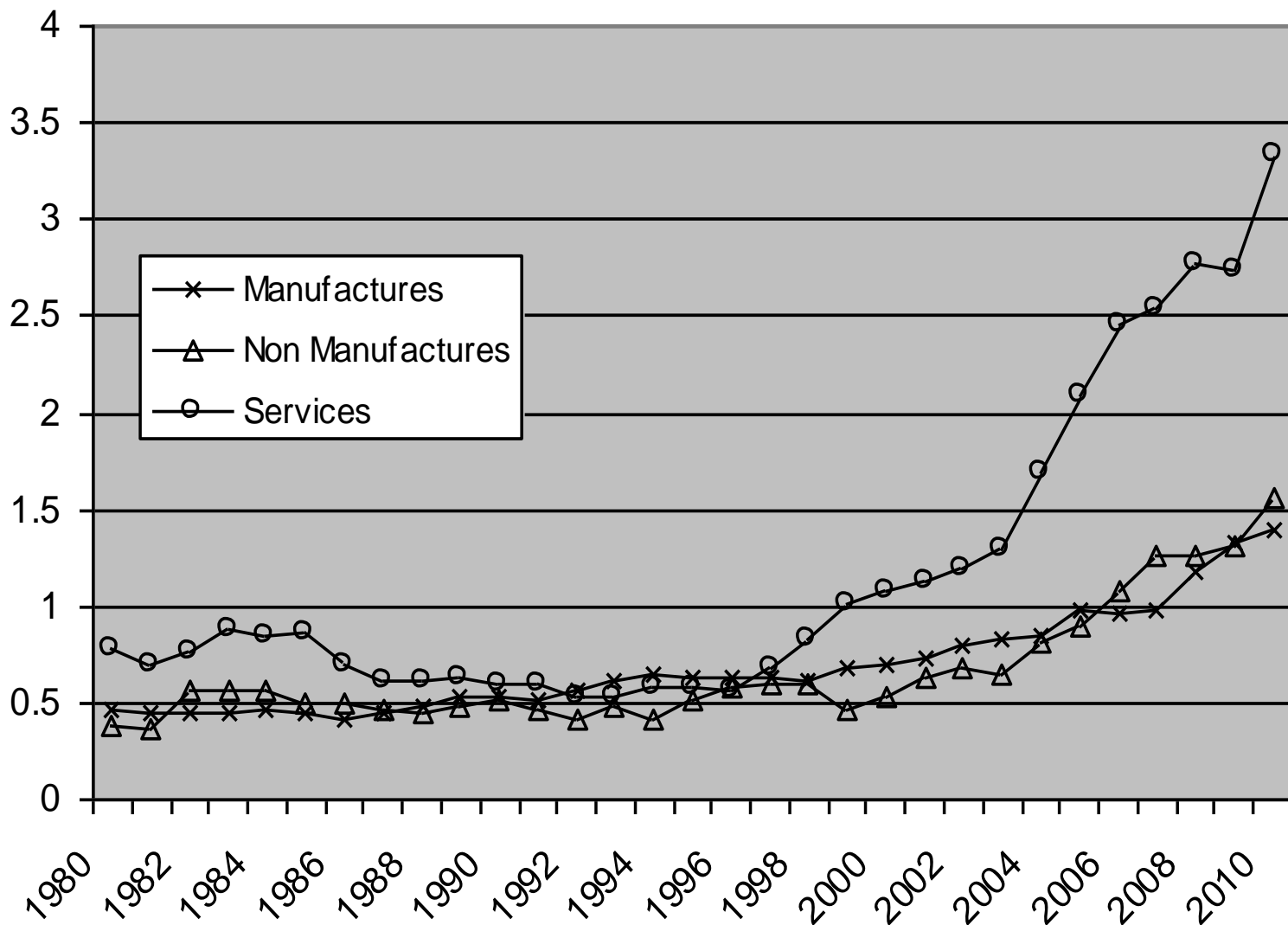
- Idiosyncratic pattern of growth
  - Skipping industrialization; services led growth.
  - Capital and skill-intensive growth path (in organized manufacturing and services)
- Cut-off from the GPNs in manufacturing
  - Less important role for exports and FDI
  - Slow growth in labour-intensive manufacturing:
  - Agriculture accounted for 17% of GDP but employs 52% of the total workforce
- Less impact on employment and low growth elasticity of poverty reduction

# Trade Performance

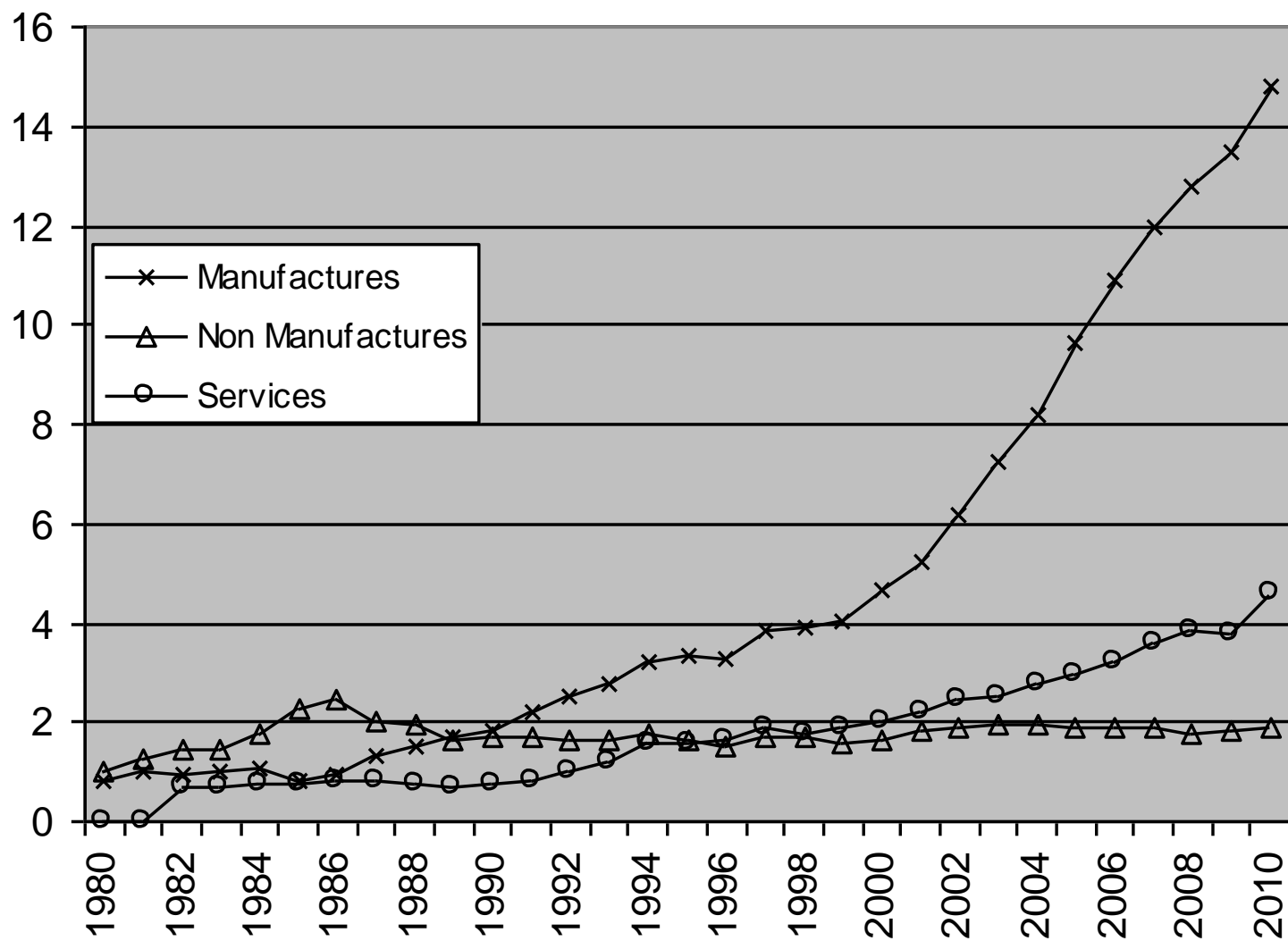
- Growth and structure of exports
- Growth and pattern of FDI
- Participation in global production networks (GPNs)



**Figure 4: World Market Shares of Exports, India**



**Figure 5: World Market Shares of Exports, China**



## Export Growth under liberalization

- Decomposition of country  $i$ 's export growth
- (i) World trade effect: overall growth of world demand
- (ii) Commodity composition effect: differences in the growth rates of world demand across commodities
- (iii) Market distribution effect: differences in the growth rates of world demand across different destination countries
- (iv) Competitiveness effect: residual growth in export

## Constant market share analysis (CMS)

- Change in the value of exports ( $\Delta X$ ) between two periods can be written as:

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

$r$  = % increase in total world exports

$r_i$  = % increase in world exports of commodity  $i$

$r_{ij}$  = % increase in world exports of commodity  $i$  to region  $j$

$X_i$  = India's total exports of commodity  $i$  in the base year

$X_{ij}$  = India's exports of commodity  $i$  to region  $j$  in the base year

## Data

- Merchandise export data from *COMTRADE-WITS*
- Total world exports and Indian exports (in US \$) during 1962-2010.
- 59 commodity groups ( $i = 1...59$ ) and 20 market groups ( $j = 1.... 20$ )

Decomposition of export growth: Pre-Reform Period (1962-90),  
 Values in millions of US\$, merchandise

Period	$\Delta X$	World trade	Commodity composition	Market distribution	Competitiveness
1962-70	625 (100)	2121 (339)	-641 (-102)	246 (39)	-1101 (-176)
1970-80	5495 (100)	10294 (187)	-2668 (-48)	2654 (48)	-4785 (-87)
1980-86	2245 (100)	337 (15)	1101 (49)	553 (25)	254 (11)
1986-90	7820 (100)	7615 (97)	-470 (-6)	948 (12)	-273 (-3)

Decomposition of export growth – Post-Reform Period (1993-05),  
Values in millions of US\$, merchandise

Period	$\Delta X$	World trade	Commodity composition	Market distribution	Competitiveness
1993-2001	23300 (100)	17100 (73)	-5300 (-23)	600 (3)	10900 (47)
2002-2008	142200 (100)	73600 (52)	-72319 (-51)	70218 (49)	70700 (50)
2002-2010	117000 (100)	46300 (40)	-7100 (-6)	6200 (5)	71600 (61)

Decomposition of export growth – Post-Reform Period (1993-05),  
Values in millions of US\$, Services

Period	$\Delta X$	World trade	Commodity composition	Competitiveness
1980-1986	275 (100)	650 (236)	241 (88)	-616 (-224)
1986-1990	1473 (100)	2328 (158)	34 (2)	-889 (-60)
1993-2005	51485 (100)	7208 (14)	202 (0.4)	44075 (85)
1993-2000	10995 (100)	2936 (27)	-106 (-1)	8165 (74)
2002-2005	36969 (100)	9724 (26)	353 (1)	26892 (72)
2000-2005	40064 (100)	9926 (25)	734 (2)	29404 (73)



# Factor Endowments and Export Structure

- H-O model: a country's export structure is intrinsically linked to its relative factor endowments.
  - a country would specialize and export products that are intensive in the use of the factor abundant in the country
- The evolution of East Asia's export structure is quite consistent with the prediction of the H-O model.
  - Abundant surplus labour during the initial stages of development
  - Comparative advantage in unskilled labour-intensive industries/ stages of production (e.g., textiles and clothing)
  - Accumulation of physical and human capital and increasing labour costs
  - Moving up the ladder of comparative advantage (expansion of machinery and transport equipments)

# Factor Endowments and Export Structure

- Relative factor endowments
  - Physical capital per worker
  - Human capital (educational attainment)
  - Arable land per worker
- Physical capital and skilled labour are relatively scarce in India compared to China
- Unskilled labour (those with no-schooling or only primary attainment) is relatively abundant in India

## India's Comparative advantage in unskilled-labour intensive goods

Educational Attainment in India and China, 2010				
	No Schooling (%)	Primary Attainment (%)	Secondary Attainment (%)	Post-Secondary Attainment (%)
India	32.7	20.9	40.7	5.8
China	6.5	24.1	60.4	9

# Pattern of Export Specialisation

- Extent of congruence between relative factor endowments and commodity specialisation
- Classification of traded products according to factor intensities (data at 3-digit level of SITC).
  - primary
  - natural resource-intensive,
  - unskilled labour-intensive,
  - capital intensive (human capital-intensive + technology-intensive).

## Composition of exports

<b>Code</b>		<b>1992</b>	<b>2002</b>	<b>2010</b>
<b>0</b>	<b>Food &amp; live animals</b>	<b>14.7</b>	<b>11.6</b>	<b>7.0</b>
1	Beverages & tobacco	0.9	0.5	0.5
2	Crude materials	5.1	4.0	6.2
3	Mineral fuels	2.8	4.6	16.9
4	Animal & veg.oils	0.3	0.3	0.4
5	Chemicals	7.1	11.5	11.9
<b>6</b>	<b>Basic manufactures</b>	<b>40.4</b>	<b>38.2</b>	<b>28.4</b>
7	Machinery & transport equipments	7.0	8.5	14.6
<b>8</b>	<b>Misc.manufacturing</b>	<b>20.1</b>	<b>18.4</b>	<b>12.2</b>
9	Others	1.6	2.4	2.0

## Export Composition according to factor intensity classification

	Year	Primary	Natural resource intensive	Unskilled-labor intensive	Capital-Intensive			
					Human-capital Intensive	Technology-Intensive	Refined Petroleum	Total
India	1995	20.9	20.2	33.6	12.2	11.5	1.7	25.4
	2005	18.1	17.7	22.3	16.1	19.0	6.6	41.7
	2010	18.0	13.5	16.1	13.3	22.7	16.3	52.3
China	1995	9.9	3.9	45.4	15.6	24.9	0.2	40.8
	2005	4.5	3.3	27.8	15.4	48.6	0.4	64.4
	2010	3.2	2.6	23.9	14.6	55.2	0.5	70.3

## India's bias towards capital and skill intensive industries

- India's specialisation is disproportionately biased towards capital and skill intensive industries.
  - Share of unskilled labour-intensive products in India's exports more than halved from 34% in 1995 to 16% in 2010.
- Anomaly since unskilled labour accounts for more than a half of India's working age population
- Share of capital / skill intensive products more than doubled from 25% in 1995 to 52% in 2010

## Global Production Networks

- Puzzle of China's machinery exports
  - Machinery contributes to about 50% of merchandise exports
  - China accounts for about 20% of the world exports.
- What explains this?
  - Rapid growth of fragmentation based trade and the integration of China with the regional and global production networks
  - China's emergence as a global hub for electrical and electronic goods assembly, based on imported parts and components



## Global Production Networks

- Certain stages of production (such as low-end assembly activities) within machinery are highly labour-intensive.
  - China specialises in the labour-intensive stages of machinery value chain
  - Underestimation of China's labour-intensive exports
- Measurement of vertical specialisation based trade –
  - (i) share of parts and components in total trade. –
  - (ii) index of vertical specialisation making use of input-output table
    - imported input content of exports (foreign value-added embodied in exports)

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
<b>India</b>	<b>3.0</b>	<b>10.4</b>	<b>17.5</b>	<b>22.9</b>
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

## Measurement of Vertical Specialisation

- Index of vertical specialisation (Hummels et al, 2001)

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

- $u = 1 \times n$  vector of 1's
- $A^M = n \times n$  imported coefficient matrix
- $A^D = n \times n$  domestic coefficient matrix
- $I =$  identity matrix,
- $X = n \times 1$  vector of exports
- $x_k =$  aggregate value of exports from country  $k$
  
- Numerator: all imported inputs needed to produce the exports of country  $k$  from all  $n$  sectors.
- Denominator: aggregate exports
- VS measures the share of country  $k$ 's exports attributable to imported inputs.

	VS Indices			
	OECD (for manufacturing)			Koopman et al (2010)
	Mid 1990s	Early 2000s	Mid 2000s	2004
China	0.17	0.21	0.30	0.36
<b>India</b>	<b>0.13</b>	<b>0.17</b>	<b>0.27</b>	<b>0.20</b>
Indonesia	0.23	0.28	0.23	0.23
Korea, RP	-----	0.41	0.42	0.34
Singapore	0.69	0.70	-----	0.63
Taiwan	0.40	0.43	0.55	0.41
Thailand	-----	-----	0.48	0.40
Vietnam	-----	0.46	-----	0.37

## Foreign Direct Investment

- Nature of FDI: Vertical (export promoting) or horizontal (domestic market seeking)
- Vertical FDI: international fragmentation of production process by multinationals, locating each stage of production in the country where it can be done at the least cost.
- China's inward FDI is mainly vertical (export promoting)
- Contribution of foreign funded enterprises in total Chinese exports steadily increased from less than 9% in 1989 to 55% in 2010
- FDI into India is mainly horizontal (market seeking)

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## Geographical Direction of Exports, Traditional Markets

Markets	% Shares of Total Exports		
	1993	2002	2010
Japan	8.1	3.7	2.2
North America	19.6	22.7	11.5
Eastern Europe	4.6	5.6	4.0
Northern Europe	7.8	6.2	4.0
Southern Europe	4.3	4.9	4.2
Western Europe	17.2	9.2	8.7
Oceania	1.3	1.2	0.9
Total	62.9	53.5	35.5

## Geographical Direction of Exports, Emerging Markets

	1993	2002	2010
Central Asia	0.0	0.2	0.1
Eastern Asia (excl Japan)	8.3	9.6	14.5
South-Eastern Asia	7.9	9.3	10.9
Southern Asia	5.0	6.0	6.3
Western Asia	11.0	12.8	19.9
Eastern Africa	1.7	1.6	2.6
Middle Africa	0.1	0.2	0.5
Northern Africa	1.0	1.3	1.8
Southern Africa	0.2	1.0	1.8
Western Africa	0.9	2.1	1.7
South America	0.7	1.4	2.7
Caribbean	0.1	0.3	1.1
Central America	0.4	0.8	0.5
Total	37.1	46.5	64.5



## Geographical Pattern of Exports

- India's disproportionate specialisation in capital and skill-intensive product lines
  - disconnect with the global production networks
- Comparative advantage in relatively poorer markets (such as Africa) but at the cost of losing market shares in the richer countries.
- India's capital and skill-intensive products are unlikely to make inroads into the quality conscious richer country markets.

## Geographical Direction of Exports

- Example: India's export of passenger motor vehicles increased from \$151 million in 2002 to \$4511 million in 2010 (44% growth rate per year).
  - high-income countries: 8%
  - Sub-Saharan Africa: 11%.
- India's export of "men's or boy's shirts"
  - high-income countries: 58%
  - Sub-Saharan Africa: 1%

## Conclusions and Implications

- India's export structure is disproportionately biased towards capital and skill intensive industries
  - locked out of the vertically integrated global supply chains in manufacturing industries
- 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.
  - focus of reforms on product market liberalization by easing entry barriers
  - factor markets (labour, land) are still plagued by distortions and policy induced rigidities
  - government interventions in factor markets → bias in the incentive structure against labour intensive manufacturing

## Will India become the next workshop of the world?

- China's image as a low-cost location is changing due to labor shortages and increases in wages.
  - Shifting specialization from basic to relatively more sophisticated manufacturing
- Basic labor-intensive manufacturers are moving elsewhere (Vietnam, Indonesia and Bangladesh).

# Constraint #1: Labor Laws

- Retrenchments and layoffs extremely difficult
- Incentive for firms to choose skill and capital intensive product lines and technologies
  - Industries that employ more white collar workers who are not classified as ‘workmen’
- A flexible labour market, with social safety nets, is a crucial necessary condition for manufacturing to take off

## Constraint #2: Infrastructure

- Inadequate supply of physical infrastructure (power, road and ports)
- Capital and skill-intensive industries (e.g., automobiles and pharmaceuticals) rely on high-cost internal sources of power.
- Not affordable to firms in the labour-intensive segments that operate with low margins in a highly competitive environment.

## Constraint #3: Land Acquisition

- A hassle free procurement of land is necessary to boost industrial development
- Inefficient and cumbersome land acquisition procedure.
- Land acquisition is currently practiced under the *Land Acquisition Act, 1894*
- Since 2011, the parliament has been considering a new law (Land Acquisition and Rehabilitation and Resettlement Bill).

## Will India become “the next China”?

- To become the “next China”, multinationals have to use India as an production platform for labor intensive manufacturing
- Number of big second-round reforms
  - Labor laws
  - Infrastructure
  - Land acquisition