

## Content of Labour Value Added in Indian Exports: Post Liberalisation Period

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**Abstract:** India is one of the fastest growing economies of the world and high population dividend in terms of dependency ratio (percentage of working population in total population, 52.45). The economic reforms led to structural changes in Indian economy. In paper attempt has been made to find the contribution of labour in our exports, by using the newly developed World Bank Labour Content of Exports (LACEX) Database for 24 sectors, in case of India for 1995, 2001, 2007 and 2011. Paper has been divided into five sections. Section I considers the review of literature; section II discusses export performance; section III concentrates on trends and growth in labor value added content (skilled and unskilled labour); section IV discusses impact of exports on growth and correlation of skilled, unskilled and total labour content with exports and section V deals with conclusions and policy implications. The study reveals that in case of total share of labour content in exports, the share of unskilled labour remained high but the share of skilled labour had been increasing, while share of unskilled labour had been decreasing.

In the present scenario, trade plays very important role in development of each country. Today there is hardly any country without trade. Trade refers to exchange of goods and services within the country and outside the country. Exports play an important role in foreign exchange earnings and decides import capacity of a country.

Trade and exports in particular play a crucial role in supporting jobs and increasing labor earnings, consistent with the fact that 90 percent of jobs in the developing world are associated with private sector activities (World Bank, 2012). Thus role of exports is particularly important as jobs and labor earnings are key drivers of poverty reduction and increased shared prosperity in many developing countries (Azevedo et al., 2013).

Export growth can be a powerful avenue to increase employment and earnings, both directly within exporting firms and indirectly through these firms' demand for goods and services from the domestic economy. The extent to which exports support domestic labor depends on several factors, including the labor-intensity of export sectors and the linkages of exporting firms to domestic, input-supplying firms. Differences in the skills-intensity across sectors can also mean distributional implications of export growth. Surprisingly, though, only a scant literature provides empirical support that

the composition of exports matters for their labor impacts, as opposed to the more prominent literature on the nexus between the sectoral composition of exports and economic growth, or between import liberalization and labor impacts. For example, the boom in exports to the United States following the US–Vietnam Bilateral Trade Agreement of 2001 was particularly beneficial to wages of unskilled workers, reduced the skill premium, and was a key driver of poverty reduction in Vietnam because it was concentrated in unskilled, laborintensive manufacturing sectors, most notably textiles (Fukase 2013, McCaig 2011). At the other end of the spectrum, commodity exports are often concentrated in capital-intensive sectors that pay high wages but with few linkages to the rest of the economy and typically support relatively small levels of domestic employment (Berry 2008). The paucity of this literature is surprising, given that many countries' industrial policy is predicted on the basis that promotion of exports supports employment and wage growth (Cali and Hollweg, 2017). The growth of exports played a significant role in reduction of poverty rates in East Asian countries in last two or three decades.

In case of India very less work have done to find the labor content of exports. This paper helps in filling the gap by computing direct labour value added wages (skilled and unskilled labour) contained in exports.

### **Plan of Paper**

For this purpose paper has been divided into five sections. Section I considers the review of literature; section II discusses export performance; section III concentrates on relative contribution of skilled and unskilled labour in exports; section IV discusses relation between exports and growth and between labour content and exports and section V is related to conclusions and policy implications.

### **Database and Methodology**

To achieve objectives, the main data used in the analysis is the newly developed World Bank Labor Content of Exports (LACEX) database. The database encompasses information on the contribution of labor to a given country's domestic production and exports, measured as employees' compensation (wages) or the number of jobs. The LACEX database has been computed by Cali et al. (2016) on the basis of a panel of global input-output tables and other aggregate data spanning intermittent years from 1995 to 2011 from GTAP and employment data from ILO (Cali and Hollweg, 2017). The resulting data set for India covers exports, labour value added content (skilled and unskilled) for 24 sectors (6 services sectors, 3 primary sectors and 15 manufacturing sectors) for the period 1995-2011. To analyse the data, we have used various techniques like growth rate, openness (openness is measured as share of exports in total output of each sector), simple regression and correlation analysis.

We have used direct value added content in exports data from world bank LACEX for 24 sectors. It is calculated as below

**Direct\_lva\_x:** This variable is the direct (skilled/unskilled) labor value added/wages contained in exports in absolute dollar values. It is calculated as (skilled/unskilled) labor value added/wages share of output multiplied by the gross value of exports:

$$\text{Direct\_lva\_x}_i^r = b_i^r \cdot \text{gxwd}_i^r$$

where  $\text{dlvax}$  is direct labor value added in exports;  $b$  is labor value added share of output;  $\text{gxwd}$  is gross export values at world prices (as cited in Cali et al. 2016)

## I

Golder (2009) analyzed the impact of trade on employment generation in manufacturing sector of India using NSSO and ASI data for period 1995-96 to 2007-08. The results indicated that employment in organized sector had decreased from 1995. It was observed that increase in domestic demand had positive impact on employment, but this was neutralized by decline in labour intensity due to changes in relative factor prices. Exports had positive effect on industrial employment, but this effect was neutralized by negative effect of increase in imports. The net effect of manufacturing sector in employment was marginal. It showed that the failure of trade to raise industrial employment was due to changing product composition and direction of trade. The traditional labour intensive products had lost their share, whereas petroleum products had emerged as major item of Indian exports. The potential of petroleum products in employment generation had low content as compared to textile sector. The study suggested that there was need to enter into FTA/PTA with EU/USA/Japan to remove the restrictions on labour intensive exports from India.

Mitra (2009) tried to examine the impact of trade on service sector employment in India by using time series macro data from 1975 to 2005 period. It was observed that in context of India, service sector value added had been growing quite rapidly in last decade, but trade failed to contribute employment growth in organized service sector. The results indicated that the employment growth in informal sector was positive, whereas the formal sector growth was negative across sectors.

Otobe (2015) studied on export-led development, employment and gender in the era of globalization by using ILO global employment trends data for 1995 to 2015 period. It was found that women's constituted 40 percent of global workforce but still facing higher underemployment, unemployment, vulnerable employment, informal employment and living in poverty than men. It was observed that global unemployment rate for women's was 6.5, which was higher as compared to men's 5.4 percent. In case of developed economies

and EU, highest unemployment was observed for the period from 2007 to 2015 period. It was found that global sectoral share of employment in both women's and men's employment, service sector accounted for the largest share at 50.1 percent and 43.0 percent respectively. The manufacturing sector had more important share in men's employment at 27.3 percent as compared to 17.5 percent for women. The study revealed that end of Multi-Fiber Agreement and 2008 global crisis had negative impact on trade and women's employment.

Cali et al (2016) investigated the labor content of exports database for 129 countries from 1995 to 2011 period. It was found that global share of labor value added in exports had been declining since 1995, but it increased for the low income countries. The results revealed that in line with the standard Heckscher-Ohlin trade model, the composition of labor skewed towards skilled labor in high income countries relative to developing countries. It was observed that the manufacturing exports are key sector in labor demand as compared to other sectors, especially in low and middle income countries. The majority of indirect demand for labor by exports in service sector, where workers are the largest beneficiaries of exporting activities globally.

## II

### **Openness Ratio**

Openness ratio for India measured as ratio of exports to gross output given in Table 1 shows that the ratio increased from the 7 percent in 1997 to 10 percent in 2007 and declined to 9 percent in 2011. Five sectors mainly wearing apparel, minerals nec, leather products, manufacturers nec, textiles are more globalized (as ratio is varying between 40-60 percent) for these sectors. Other sectors experiencing double digit openness ratio included metals nec, chemicals, rubber, plastic products and metal products.

As compared to 1997, of 24 sectors considered, openness ratio increased for 15 sectors. Larger increase in openness ratio is found to be in five sectors namely energy extraction metals nec, transport equipment, other private services and ferrous metals; while two sectors namely wood products and wearing apparels witnessed very small increase in openness ratio. Wearing apparels witnessing 90 percent openness ratio in 2001 (increasing from 52 percent in 1995) experienced rapid decrease in ratio to 53 percent in 2011. Six sectors experienced decline in openness ratio; of which two sectors namely metal products and processed food witnessed rapid decline in ratio.

### **Growth of Exports**

Growth of exports of different sectors given in Table 2 shows that total exports increased at rate of 7.28 percent during period 1995-2011. Out of the 24 sectors considered, exports of 12 sectors, increased at higher rate than total exports. Exports of construction increased at highest rate of (1581.64 percent) followed by other private sectors (355.61 percent) and electricity, gas and water (195.73 percent).

**Table 1:** Share of Exports in Output (Openness Ratio)

Sr. No.	Sectors	Year				
		1997	2001	2004	2007	2011
1	Agriculture, Forestry, Fisheries	2	2	2	2	3
2	Beverages and Tobacco Products	1	1	1	2	2
3	Construction	0	0	0	0	0
4	Chemical, Rubber, Plastic Products	11	13	16	18	20
5	Dwellings	0	0	0	0	0
6	Electricity, Gas, Water	0	0	0	0	0
7	Energy Extraction	2	4	10	17	18
8	Metal Products	48	8	9	9	10
9	Ferrous Metals	5	7	13	14	12
10	Leather Products	47	44	50	46	42
11	Wood Products	7	9	11	10	9
12	Machinery and Equipment nec	9	12	9	11	14
13	Metals nec	5	10	24	40	24
14	Mineral Products nec	8	13	7	7	6
15	Manufactures nec	23	47	43	33	44
16	Minerals nec	44	40	59	64	63
17	Public Administration/Defence/Health/ Education	2	1	1	1	1
18	Other Private Services	7	10	16	22	16
19	Processed Foods	18	8	7	7	9
20	Paper Products, Publishing	2	4	5	5	5
21	Trade and Transport Services	5	5	5	5	4
22	Textiles	19	22	26	24	22
23	Transport Equipment	5	6	11	12	16
24	Wearing Apparel	52	90	63	55	53
	Total	7	7	9	10	9

Source: LACEX 24 Sectors Database, World Bank

Other sectors witnessing double digit rate of increase included beverages and tobacco, chemicals, rubber and plastic products, energy extraction, machinery and equipment, metals nec, manufacturer nec, trade and transport services and transport equipment's.

**Table 2:** Growth of Exports (Percentage)

Sr. No.	Sectors	Year					1995-2011
		1997	2001	2004	2007	2011	
1	Agriculture, Forestry, Fisheries	0.23	0.05	0.21	0.61	1.11	4.38
2	Beverages and Tobacco Products	1.03	0.73	0.71	0.82	1.18	23.25
3	Construction	68.87	-0.49	26.13	0.61	0.02	1581.64
4	Chemical, Rubber, Plastic Products	0.28	0.57	0.75	0.81	0.87	11.08
5	Dwellings	0	0	0	0	0	0
6	Electricity, Gas, Water	52.66	0.35	-0.49	4.27	0.01	195.73

contd. table 2

Sr. No.	Sectors	Year					1995-2011
		1997	2001	2004	2007	2011	
7	Energy Extraction	-0.16	2.96	3.86	2.75	0.01	59.97
8	Metal Products	0.30	0.46	0.48	0.73	0.58	6.80
9	Ferrous Metals	-0.13	0.44	1.73	0.94	0.18	6.87
10	Leather Products	-0.37	0.21	0.48	0.32	0.38	1.06
11	Wood Products	0.23	0.98	0.18	0.56	0.28	4.84
12	Machinery and Equipment nec	0.36	0.52	0.51	1.07	0.84	11.09
13	Metals nec	0.28	0.85	2.33	2.68	-0.34	18.20
14	Mineral Products nec	0.54	0.51	0.30	0.76	0.20	5.51
15	Manufactures nec	4.93	0.30	0.89	0.18	1.26	38.70
16	Minerals nec	-0.82	0.13	2.73	1.27	0.29	1.18
17	Public Administration/Defence/ Health/Education	-0.82	0.17	0.40	0.43	0.02	-0.58
18	Other Private Services	22.04	1.07	2.01	1.46	0.01	355.61
19	Processed Foods	0.16	-0.13	0.49	0.75	1.00	4.28
20	Paper Products, Publishing	-0.16	1.39	0.64	0.52	0.70	7.54
21	Trade and Transport Services	2.30	0.20	0.73	0.89	0.14	13.91
22	Textiles	0.43	0.17	0.27	0.47	0.43	3.52
23	Transport Equipment	0.19	0.18	1.73	0.90	1.14	14.72
24	Wearing Apparel	-0.04	0.30	0.17	0.32	0.48	1.86
	Total	0.20	0.33	0.87	0.95	0.40	7.28

Source: LACEX 24 Sectors Database, World Bank

Exports of three sectors namely leather products, minerals nec and wearing apparel increased at rate of about 1 percent only. Exports of Public Administration/Defence/Health/Education witnessed decline in growth rate, while exports of dwelling was negligible. Period-wise analysis revealed that exports increased at higher rate for the period 2001-07 as compared to other periods.

### Composition of Exports

Composition of exports given in Table 3 shows that out of 24 sectors considered, minerals constituted highest share in exports (i.e. 15 percent) followed by wearing apparel (11.9 percent), textiles (11.4 percent), public administration (9.61 percent), processed food (9.3 percent), chemical, rubber and plastic products (8.00 percent), agriculture, forestry and fishing (6.28 percent), leather products (5.64 percent) and machinery and equipment (5.06 percent in 1995). All these nine sectors constituted 80 percent share in 1995.

During 1995-2007 period, export share of all these sectors (except machinery and equipment and chemicals, rubber and plastic products) has been decreasing in 2001 as well as 2007 (rapid decrease has been observed in 2007). Rapid decline has been noticed in mineral nec (where the share decreased from 15 percent in 1995 to 4.48 percent in 2007) and public administration (share decreased from 9.61 percent in 1995 to 0.66 percent in 2007). Sectors

namely trade and transport, other private sectors and manufacturer nec with very low share in 1995 (i.e. with 4.36 percent, 0.37 percent and 2.46 percent) experienced rapid increase afterwards.

In 2011, other private sector constituted major share in exports (i.e. 15.78 percent) followed by manufactures nec (11.78 percent), chemicals, plastic and rubber products (11.68 percent), trade and transport (7.86 percent), machinery and equipment nec (7.40 percent) and energy extraction (7.00 percent), textiles (6.13 percent) and processed food (5.93 percent). All these sectors constituted about 74 percent share in exports.

Structural changes in composition of exports shows that as compared to 1995, export share of 7 sectors namely textiles, processed food, leather and agriculture, fish and forestry decreased, while rapid decrease has been noticed in wearing apparels, minerals nec and public administration in 2011. Sectors witnessing rapid increase in export share included chemicals, rubber and plastic products, energy extraction, manufacturers nec, other private sectors and trade and transport services.

**Table 3:** Composition of Exports (Percentage)

Sr. Sectors No.	Year					
	1995	1997	2001	2004	2007	2011
1 Agriculture, Forestry, Fisheries	2474.38 (6.28)	3050.73 (6.44)	3205.28 (5.07)	3908.10 (3.29)	6304.71 (2.72)	13314.18 (4.08)
2 Beverages and Tobacco Products	20.27 (0.05)	41.28 (0.09)	71.73 (0.11)	123.29 (0.10)	225.43 (0.10)	491.84 (0.15)
3 Construction	0.50 (0.00)	35.18 (0.07)	17.71 (0.03)	480.57 (0.40)	777.16 (0.34)	797.01 (0.24)
4 Chemical, Rubber, Plastic Products	3151.94 (8.00)	4060.09 (8.58)	6393.72 (10.1)	11219.07 (9.45)	20353.83 (8.78)	38080.09 (11.68)
5 Dwellings	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
6 Electricity, Gas, Water	0.19 (0.00)	10.67 (0.02)	14.45 (0.02)	7.35 (0.01)	38.84 (0.02)	39.15 (0.01)
7 Energy Extraction	376.43 (0.96)	316.08 (0.67)	1252.12 (1.98)	6091.06 (5.13)	22845.13 (9.86)	22951.6 (7.04)
8 Metal Products	803.96 (2.04)	1051.07 (2.22)	1540.86 (2.44)	2282.69 (1.92)	3958.60 (1.71)	6273.66 (1.92)
9 Ferrous Metals	1200.47 (3.05)	1039.26 (2.22)	1497.60 (2.37)	4102.75 (3.46)	7987.13 (3.45)	9453.97 (2.90)
10 Leather Products	2221.04 (5.64)	1378.82 (2.91)	1675.34 (2.65)	2493.96 (2.10)	3302.23 (1.42)	4579.80 (1.40)
11 Wood Products	150.75 (0.38)	186.24 (0.39)	370.48 (0.59)	438.10 (0.37)	685.58 (0.30)	881.06 (0.27)
12 Machinery and Equipment nec	1994.37 (5.06)	2721.54 (5.75)	4156.05 (6.57)	6302.08 (5.31)	13085.36 (5.65)	24125.76 (7.40)

contd. table 3

Sr. Sectors No.	Year					
	1995	1997	2001	2004	2007	2011
13 Metals nec	285.65 (0.73)	365.72 (0.77)	677.34 (1.07)	2259.39 (1.90)	8324.79 (3.59)	5485.63 (1.68)
14 Mineral Products nec	431.36 (1.10)	666.95 (1.41)	1007.75 (1.59)	1318.45 (1.11)	2324.01 (1.00)	2810.96 (0.86)
15 Manufactures nec	967.93 (2.46)	5748.99 (12.14)	7502.97 (11.8)	14229.48 (11.99)	16928.91 (7.30)	38427.62 (11.78)
16 Minerals nec	6144.04 (15.6)	1077.71 (2.28)	1226.01 (1.94)	4576.57 (3.86)	10391.06 (4.48)	13423.61 (4.12)
17 Public Administration/ Defence/Health/Education	3782.90 (9.61)	644.54 (1.36)	760.24 (1.20)	1069.61 (0.90)	1538.75 (0.66)	1577.18 (0.48)
18 Other Private Services	144.27 (0.37)	3325.22 (7.02)	6900.85 (10.9)	20767.21 (17.50)	51174.44 (22.0)	51450.28 (15.78)
19 Processed Foods	3662.26 (9.30)	4256.81 (8.99)	3679.28 (5.82)	5500.71 (4.63)	9658.24 (4.17)	19347.1 (5.93)
20 Paper Products, Publishing	157.50 (0.40)	132.22 (0.28)	316.97 (0.50)	520.60 (0.44)	791.53 (0.34)	1346.07 (0.41)
21 Trade and Transport Services	1718.93 (4.36)	5680.54 (12.00)	6839.20 (10.82)	11856.03 (9.99)	22466.73 (9.69)	25643.57 (7.86)
22 Textiles	4425.56 (11.4)	6342.14 (13.40)	7434.72 (11.76)	9493.88 (8.00)	13952.04 (6.02)	19986.42 (6.13)
23 Transport Equipment	822.02 (2.09)	979.29 (2.07)	1162.17 (1.84)	3175.88 (2.68)	6049.14 (2.61)	12929.5 (3.96)
24 Wearing Apparel	4445.62 (11.9)	4235.7 (8.95)	5529.07 (8.74)	6478.05 (5.46)	8596.66 (3.71)	12715.29 (3.90)
Total	39382.47 (100)	47346.88 (100)	63232.01 (100)	118695 (100)	231760.4 (100)	326131.4 (100)

Source: LACEX 24 Sectors Database, World Bank

Note: Figures in brackets show the percentage share

### III

Table 4 shows that total labour value added/wages contained in India's exports has been continuously increasing reaching from \$7706 million in 1995 to \$56754 million in 2011 (i.e. increased by 636 times). The significant increase in labour value added has occurred mainly due to larger increase of skilled labour content. Regarding the relative contribution of skilled and unskilled labour value added in exports, Table shows that the share of unskilled labour wages is higher as compared to skilled labour wages. However relative contribution of skilled labour has increased, while of unskilled labour has decreased.

#### Trends in Labour Value Added/Wages

Table 5 showing the aggregate trends in labour value added/wages across different sectors reveals that leading export sectors in terms of total labor



**Table 4:** Total Labor Content in Exports (\$M.)

<i>Year</i>	<i>Skilled Labour Content</i>	<i>Unskilled Labour Content</i>	<i>Total Labour Content</i>
1995	1740.17(22.57)	5966.48(77.43)	7706.65
2001	2293.94(19.59)	9410.31(80.39)	11704.25
2007	10674.16(25.89)	30550.46(74.07)	41224.62
2011	15612.78(27.50)	41141.29(72.49)	56754.07

*Source:* LACEX 24 Sectors Database, World Bank

*Note:* Figures in the brackets are percentage share

content (skilled and unskilled) included trade and transport services and other private services (except 1995) during the period 1995-2011. Public Administration/Health/Defence/Education was leading export sector in terms of labour value added in 1995; textiles in 1997 and 2001; minerals in 2007 and agriculture, forestry and fishing in 2011. Skilled labour content in exports of public administration/defence/health/education was found to be high during the study period; while of unskilled labour content in exports of manufacturers nec was found to be high during the study period and in agriculture, forestry and fishing in 2011 only.

### **Growth in Labour Value Added/Wages**

Table 6 depicts that growth in wages paid to produce exports directly was 6.34 percent during the period 1995-2011 reaching \$56754 million in 2011 (up from \$7706 million in 1995); which was mainly due to growth in wages paid to skilled labour as compared to unskilled labour. Wages paid to skilled labour increased at rate of 7.97 percent, while of unskilled labour increased at rate of 5.89 percent. This higher increase in wages paid to skilled labour to produce exports has primarily occurred in 2007-11 as compared to earlier period.

Sector-wise analysis reveals that wages paid to construction sector increased at highest rate of 2387 percent followed by other private services (280 percent), beverages and tobacco products (70.13 percent), energy extraction (63.15 percent) and manufacturers nec (40.93 percent) in 2011 as compared to 1995. All these sectors (except other private sectors) witnessed larger increase in wages of unskilled workers as compared to skilled workers during the period 1995-2011.

Period-wise analysis reveals that construction and other private services witnessed highest increase wages paid to skilled as well as unskilled labourers during earlier period i.e., 1995-2007 but afterwards, unskilled workers witnessed larger increase in wages. Sectors namely manufacturers nec and beverages and tobacco witnessed larger increase in wages paid to unskilled workers in later period i.e., 2007-11. Other sectors witnessing larger increase in wages paid to skilled labour included agriculture forestry and fishing, and trade and transport equipment during 2007-2011.

Table 5: Direct Labour Value Added/ Wages contained in Exports in Absolute \$ Million

Sr. No.	Sectors	1995			2001		
		Skilled	Unskilled	Total	Skilled	Unskilled	Total
1	Agriculture, Forestry, Fisheries	0.58(0)	577.18(100)	577.76(100)	0.89(0)	885.67(100)	886.56(100)
2	Beverages and Tobacco Products	0.17(12)	1.26(88)	1.43(100)	1.22(12)	9.08(88)	10.3(100)
3	Construction	0.02(18)	0.09(82)	0.11(100)	0.82(15)	4.78(85)	5.6(100)
4	Chemical, Rubber, Plastic Products	54.76(17)	265.46(83)	320.22(100)	55.68(17)	269.96(83)	325.64(100)
5	Dwellings	0(0)	0(0)	0(100)	0(0)	0(0)	0(100)
6	Electricity, Gas, Water	0.01(25)	0.03(75)	0.04(100)	0.69(33)	1.38(67)	2.07(100)
7	Energy Extraction	1.65(14)	10.15(86)	11.8(100)	11.25(13)	74.96(87)	86.21(100)
8	Metal Products	24.01(15)	139.33(85)	163.34(100)	13.89(15)	80.59(85)	94.48(100)
9	Ferrous Metals	23.85(14)	145.29(86)	169.14(100)	10.03(14)	61.13(86)	71.16(100)
10	Leather Products	35.23(13)	233.73(87)	268.96(100)	27.71(13)	183.79(87)	211.5(100)
11	Wood Products	3.14(11)	25.7(89)	28.84(100)	12.19(11)	99.65(89)	111.84(100)
12	Machinery and Equipment nec	60.33(18)	282.43(82)	342.76(100)	49.39(18)	231.22(82)	280.61(100)
13	Metals nec	2.43(15)	13.47(85)	15.9(100)	7.05(15)	39.01(85)	46.06(100)
14	Mineral Products nec	10.77(14)	65.05(86)	75.82(100)	13.15(14)	79.47(86)	92.62(100)
15	Manufactures nec	17.32(11)	146.11(89)	163.43(100)	137.66(11)	1160.98(89)	1298.64(100)
16	Minerals nec	165.18(12)	1188.72(88)	1353.9(100)	32.15(12)	231.38(88)	263.53(100)
17	Public Administration/Defence/ Health/Education	922.98(61)	592.58(39)	1515.56(100)	328.12(61)	210.67(39)	538.79(100)
18	Other Private Services	24.37(42)	33.38(58)	57.75(100)	779.41(42)	1067.54(58)	1846.95(100)
19	Processed Foods	43.5(17)	209.69(83)	253.19(100)	118.91(16)	627.84(84)	746.75(100)
20	Paper Products, Publishing	3.5(15)	19.35(85)	22.85(100)	6.23(15)	34.5(85)	40.73(100)
21	Trade and Transport Services	142.92(17)	692.87(83)	835.79(100)	292.51(17)	1418.06(83)	1710.57(100)
22	Textiles	114.45(13)	739.65(87)	854.1(100)	202.09(13)	1306.07(87)	1508.16(100)
23	Transport Equipment	32.62(15)	179.21(85)	211.83(100)	32.69(15)	179.56(85)	212.25(100)
24	Wearing Apparel	56.38(12)	405.75(88)	462.13(100)	160.21(12)	1153.02(88)	1313.23(100)
	Total	1740.17(22.57)	5966.48(77.42)	7706.65(100)	2293.94(19.59)	9410.31(80.39)	11704.25(100)

contid. table 5

Sr. No.	Sectors	Year					
		2007			2011		
		Skilled	Unskilled	Total	Skilled	Unskilled	Total
1	Agriculture, Forestry, Fisheries	1.64(0)	1634.49(100)	1636.13(100)	19.99(1)	3552.7(99)	3572.69(100)
2	Beverages and Tobacco Products	5.24(12)	39.2(88)	44.44(100)	6.91(7)	94.82(93)	101.73(100)
3	Construction	36.52(15)	213.59(85)	250.11(100)	17.61(7)	245.09(93)	262.7(100)
4	Chemical, Rubber, Plastic Products	222.2(17)	1077.19(83)	1299.39(100)	186.7(7)	2562.93(93)	2749.63(100)
5	Dwellings	0(0)	0(0)	0(100)	0(0)	0(0)	0(100)
6	Electricity, Gas, Water	1.6(33)	3.22(67)	4.82(100)	2.45(47)	2.8(53)	5.25(100)
7	Energy Extraction	94.6(13)	610.73(87)	705.33(100)	34(4)	722.99(96)	756.99(100)
8	Metal Products	89.17(15)	517.42(85)	606.59(100)	59.9(7)	822.24(93)	882.14(100)
9	Ferrous Metals	84.93(14)	517.39(86)	602.32(100)	47.93(7)	658.01(93)	705.94(100)
10	Leather Products	92.61(13)	614.33(87)	706.94(100)	67.01(7)	919.83(93)	986.84(100)
11	Wood Products	23.57(11)	192.67(89)	216.24(100)	19.49(7)	267.55(93)	287.04(100)
12	Machinery and Equipment nec	204.28(18)	956.41(82)	1160.69(100)	138.98(7)	1907.93(93)	2046.91(100)
13	Metals nec	64.18(15)	355.3(85)	419.48(100)	17.25(7)	236.77(93)	254.02(100)
14	Mineral Products nec	36.2(14)	218.73(86)	254.93(100)	22.46(7)	308.35(93)	330.81(100)
15	Manufactures nec	312.64(11)	2636.76(89)	2949.4(100)	465.38(7)	6388.62(93)	6854(100)
16	Minerals nec	251.97(12)	1813.39(88)	2065.36(100)	121.4(4)	2718.09(96)	2839.49(100)
17	Public Administration/Defence/ Health/Education	698.64(61)	448.55(39)	1147.19(100)	347.53(29)	839.61(71)	1187.14(100)
18	Other Private Services	6685.73(42)	9157.24(58)	15842.97(100)	8460.89(52)	7822.7(48)	16283.59(100)
19	Processed Foods	187.47(16)	970.78(84)	1158.25(100)	167.99(7)	2306.12(93)	2474.11(100)
20	Paper Products, Publishing	19.59(15)	108.47(85)	128.06(100)	15.95(7)	218.98(93)	234.93(100)
21	Trade and Transport Services	1018.56(17)	4937.94(83)	5956.5(100)	4943.3(68)	2372.33(32)	7315.63(100)
22	Textiles	239.49(13)	1547.77(87)	1787.26(100)	179.31(7)	2461.58(93)	2640.89(100)
23	Transport Equipment	119.85(15)	658.41(85)	778.26(100)	115.73(7)	1588.73(93)	1704.46(100)
24	Wearing Apparel	183.48(12)	1320.48(88)	1503.96(100)	154.62(7)	2122.52(93)	2277.14(100)
	Total	10674.16(25.89)	30550.46(74.11)	41224.62(100)	15612.78(27.51)	41141.29(72.49)	56754.07(100)

Source: LACEX 24 Sectors Database, World Bank

Note: Figures in the bracket are percentage share

**Table 6:** Growth in Labour Value Added/Wages contained in Exports

Sr. No.	Sectors	Year					
		1995-2001			2001-2007		
		Skilled	Unskilled	Total	Skilled	Unskilled	Total
1	Agriculture, Forestry, Fisheries	0.53	0.53	0.53	0.84	0.84	0.84
2	Beverages and Tobacco Products	6.17	6.20	6.20	3.29	3.31	3.31
3	Construction	40	52.11	49.90	43.53	43.68	43.66
4	Chemical, Rubber, Plastic Products	0.01	0.01	0.016	2.99	2.99	2.99
5	Dwellings	0	0	0	0	0	0
6	Electricity, Gas, Water	68	45	50.75	1.32	1.33	1.32
7	Energy Extraction	5.81	6.38	6.30	7.40	7.14	7.18
8	Metal Products	-0.42	-0.42	-0.42	5.42	5.42	5.42
9	Ferrous Metals	-0.58	-0.57	-0.58	7.46	7.46	7.46
10	Leather Products	-0.21	-0.21	-0.21	2.34	2.34	2.34
11	Wood Products	2.88	2.87	2.87	0.93	0.93	0.93
12	Machinery and Equipment nec	-0.18	-0.18	-0.18	3.13	3.13	3.13
13	Metals nec	1.90	1.89	1.89	8.10	8.10	8.10
14	Mineral Products nec	0.22	0.22	0.22	1.75	1.75	1.75
15	Manufactures nec	6.94	6.94	6.94	1.27	1.27	1.27
16	Minerals nec	-0.80	-0.80	-0.80	6.83	6.83	6.83
17	Public Admin/Defence/Health/ Educat	-0.64	-0.64	-0.64	1.13	1.12	1.12
18	Other Private Services	30.98	30.98	30.98	7.57	7.57	7.57
19	Processed Foods	1.73	1.99	1.94	0.57	0.54	0.55
20	Paper Products, Publishing	0.78	0.78	0.78	2.14	2.14	2.14
21	Trade and Transport Services	1.04	1.04	1.04	2.48	2.48	2.48
22	Textiles	0.76	0.76	0.76	0.18	0.18	0.18
23	Transport Equipment	0.00	0.00	0.00	2.66	2.66	2.66
24	Wearing Apparel	1.84	1.84	1.84	0.14	0.14	0.14
	Total	0.32	2.24	0.51	3.65	2.24	2.52

Sr. No.	Sectors	Year					
		2007-2011			1995-2011		
		Skilled	Unskilled	Total	Skilled	Unskilled	Total
1	Agriculture, Forestry, Fisheries	11.18	1.17	1.18	33.46	5.15	5.18
2	Beverages and Tobacco Products	0.31	1.41	1.28	39.64	74.25	70.13
3	Construction	-0.51	0.14	0.05	879.5	2722.22	2387.18
4	Chemical, Rubber, Plastic Products	-0.15	1.37	1.11	2.40	8.65	7.58
5	Dwellings	0	0	0	0	0	0
6	Electricity, Gas, Water	0.53	-0.13	0.08	244	92.33	130.25
7	Energy Extraction	-0.64	0.18	0.07	19.60	70.23	63.15
8	Metal Products	-0.32	0.58	0.45	1.49	4.90	4.40
9	Ferrous Metals	-0.43	0.27	0.17	1.00	3.52	3.17
10	Leather Products	-0.27	0.49	0.39	0.90	2.93	2.66
11	Wood Products	-0.17	0.38	0.32	5.20	9.41	8.95
12	Machinery and Equipment nec	-0.31	0.99	0.76	1.30	5.75	4.97
13	Metals nec	-0.73	-0.33	-0.39	6.09	16.57	14.97

14	Mineral Products nec	-0.37	0.40	0.29	1.08	3.74	3.36
15	Manufactures nec	0.48	1.42	1.32	25.86	42.72	40.93
16	Minerals nec	-0.51	0.49	0.37	-0.26	1.28	1.09
17	Public Administration/Defence/ Health/Education	-0.50	0.87	0.03	-0.62	0.41	-0.21
18	Other Private Services	0.26	-0.14	0.02	346.18	233.35	280.96
19	Processed Foods	-0.10	1.37	1.13	2.86	9.99	8.77
20	Paper Products, Publishing	-0.18	1.01	0.83	3.55	10.31	9.28
21	Trade and Transport Services	3.85	-0.51	0.22	33.58	2.42	7.75
22	Textiles	-0.25	0.59	0.47	0.56	2.32	2.09
23	Transport Equipment	-0.03	1.41	1.19	2.54	7.86	7.04
24	Wearing Apparel	-0.15	0.60	0.51	1.74	4.23	3.92
	Average	0.46	0.34	0.37	7.97	5.89	6.36

Source: LACEX 24 Sectors Database, World Bank

### Structural Changes in Labour Content of Exports of India

Table 7 shows that in 1995, sectors mainly public administration/defence/health/education constituted higher share of direct labour content (20 percent) followed by minerals nec (18 percent), trade and transport equipment (11 percent) and textiles (11 percent). Public administration/defence/health/education contained highest share of skilled labour content (i.e., 53 percent); while mineral nec, trade and transport services contained larger share of unskilled labour content in exports (i.e. 20 percent and 12 percent).

In 2001, other private services witnessed an increased share of total labour content due to increased share of skilled labour content. Increased share of labour content in trade and transport equipment was due to increased share of both (skilled and unskilled); while increased share of only unskilled labour content led to increasing share of total labour content in textiles. Other sectors witnessing increasing share of unskilled labour content included wearing apparel and manufacturers nec. Share of skilled labour content in exports of public administration/defence/health/education decreased rapidly from 53 percent in 1995 to 14 percent in 2001. Similar situation happened in 2007 but with increased share of skilled as well as unskilled labour in exports of other private services.

In 2011, share of other private services was found to be maximum in terms of total labour content (i.e., 29 percent mainly due to larger share of skilled as well as unskilled labour content) followed by trade and transport equipment (13 percent, mainly due to larger share of skilled labour content) and manufacturers nec (12 percent, mainly due to higher share of unskilled labour content).

Regarding structural changes in labour content, Table shows that as compared to 1995, sectors witnessing rapid increase in labour content share included manufacturers nec and other private services and sectors witnessing rapid decline in labour content share included minerals nec and public administration/defence/health/education in 2011. Increased share of both

skilled and unskilled labour content led to increase in labour content share of other private services, while increased share of unskilled labour content led to increase in share of manufacturers nec. Decreasing share of both (skilled and unskilled labour content) led to fall in share of labour content in minerals nec and public administration/health/education. Trade and transport equipment witnessed increasing share of skilled labour content, while textiles witnessed decreasing share of skilled labour content.

**Table 7:** Sector-wise Analysis of Relative Contribution of Skilled and Unskilled Labour in Total Wages (Percentage)

Sr. No.	Sectors	Year					
		1995			2001		
		Skilled	Unskilled	Total	Skilled	Unskilled	Total
1	Agriculture, Forestry, Fisheries	0	10	7	0	9	8
2	Beverages and Tobacco Products	0	0	0	0	0	0
3	Construction	0	0	0	0	0	0
4	Chemical, Rubber, Plastic Products	3	4	4	2	3	3
5	Dwellings	0	0	0	0	0	0
6	Electricity, Gas, Water	0	0	0	0	0	0
7	Energy Extraction	0	0	0	0	1	1
8	Metal Products	1	2	2	1	1	1
9	Ferrous Metals	1	2	2	0	1	1
10	Leather Products	2	4	3	1	2	2
11	Wood Products	0	0	0	1	1	1
12	Machinery and Equipment nec	3	5	4	2	2	2
13	Metals nec	0	0	0	0	0	0
14	Mineral Products nec	1	1	1	1	1	1
15	Manufactures nec	1	2	2	6	12	11
16	Minerals nec	9	20	18	1	2	2
17	Public Administration/Defence/ Health/Education	53	10	20	14	2	5
18	Other Private Services	1	1	1	34	11	16
19	Processed Foods	2	4	3	5	7	6
20	Paper Products, Publishing	0	0	0	0	0	0
21	Trade and Transport Services	8	12	11	13	15	15
22	Textiles	7	12	11	9	14	13
23	Transport Equipment	2	3	3	1	2	2
24	Wearing Apparel	3	7	6	7	12	11
	Total	100	100	100	100	100	100

Sr. No.	Sectors	Year					
		2007			2011		
		Skilled	Unskilled	Total	Skilled	Unskilled	Total
1	Agriculture, Forestry, Fisheries	0	5	4	0	9	6
2	Beverages and Tobacco Products	0	0	0	0	0	0
3	Construction	0	1	1	0	1	0

4	Chemical, Rubber, Plastic Products	2	4	3	1	6	5
5	Dwellings	0	0	0	0	0	0
6	Electricity, Gas, Water	0	0	0	0	0	0
7	Energy Extraction	1	2	2	0	2	1
8	Metal Products	1	2	1	0	2	2
9	Ferrous Metals	1	2	1	0	2	1
10	Leather Products	1	2	2	0	2	2
11	Wood Products	0	1	1	0	1	1
12	Machinery and Equipment nec	2	3	3	1	5	4
13	Metals nec	1	1	1	0	1	0
14	Mineral Products nec	0	1	1	0	1	1
15	Manufactures nec	3	9	7	3	16	12
16	Minerals nec	2	6	5	1	7	5
17	Public Administration/Defence/ Health/Education	7	1	3	2	2	2
18	Other Private Services	63	30	38	54	19	29
19	Processed Foods	2	3	3	1	6	4
20	Paper Products, Publishing	0	0	0	0	1	0
21	Trade and Transport Services	10	16	14	32	6	13
22	Textiles	2	5	4	1	6	5
23	Transport Equipment	1	2	2	1	4	3
24	Wearing Apparel	2	4	4	1	5	4
	Total	100	100	100	100	100	100

Source: LACEX 24 Sectors Database, World Bank

#### IV

Regarding the inter-sectoral impact of exports on economic growth, Table 8 reveals that exports have significantly and positively affected the economic growth at very low level i.e., 10 percent for all the years (except 2007, when exports affected economic growth at 5 percent level). The value of regression co-efficient has been found to be decreasing over the study period. i.e., 6.70 in 1997 to 5.57 and 4.076 in 2001 and 2007 respectively, however it slightly increased to 4.30 percent in 2011, indicating slowing down of impact of exports on economic growth.

**Table 8:** Simple Regression Results

Year	1997	2001	2007	2011
<b>Regression</b>	16528.526+6.708*X	21004.629+5.579*X	58729.546+4.076**X	86645.571+4.306*X
<b>Coefficients</b>	(1.965)	(1.888)	(2.372)	(1.932)

Note: \* significant at 10 percent level, \*\* significant at 5 percent level

Note 2: Figures in brackets are t value

Regarding the correlation between labour content and exports, Table 9 reveals that correlation coefficient between total labour content as well as unskilled labour content and exports were highly significant (at 1 percent level) and correlation coefficient also increased during the study period. However, correlation coefficient between skilled labour content and exports

was low in 1995 and significant at 5 percent level, improved in 2001 and 2007 but decreased in 2011. However as compared to 1995, correlation coefficient increased in 2011 and was significant at 1 percent level.

**Table 9:** Correlation coefficient of Direct Value Added Content in exports of labour Force

Year	1995	2001	2007	2011
Skilled	0.432**	0.580***	0.818***	0.626***
Unskilled	0.862***	0.884***	0.889***	0.870***
Total	0.814***	0.874***	0.882***	0.824***

Note: \*\* significant at 5 percent level (two tailed test),  
\*\*\* significant at 1 percent level (two tailed test)

## V

### Conclusions and policy Implication

The study reveals that openness ratio of India has increased only from 7 percent in 1995 to 9 percent in 2011. However, sectors witnessing larger increase in openness ratio included energy extraction, other private services and trade and transport equipment. Sectors witnessing higher growth rate of exports included construction, other private services and electricity, gas and water. Exports have increased at higher rate during period 2001-07. Labour content was found to be highest in trade and transport and other private sector. Category wise, analysis revealed that skilled labour content was found to be highest in public administration/health/education, while agriculture, forestry contained high share of unskilled labour content. Further, the share of unskilled labour remained high in total labour content but the relative contribution of skilled labour has been increasing and unskilled labour has been decreasing. Share of skilled labour content increased for trade and transport, while of unskilled labour content increased for manufacturers nec. Other private sector witnessed increased share of skilled as well as unskilled labour content.

Correlation Co-efficients between total labour content, and exports, between unskilled labour content and exports was positive and highly significant. However, Correlation Co-efficient between skilled labour content and exports (low in 1995) improved till 2007 and significant. Impact of exports on output has slowed down during study period. Therefore the study suggests that there is need to imparting skills among the youths to increase our exports because we are providing degrees but not skills. As per the world report related to competitiveness of our graduates it finds that 90 percent of Indian graduates are not able to do any job, so there is need to implement skill India mission at ground level. The Indian textiles, minerals nec are the largest source of employment but due to various restrictions on Indian textiles and restrictions on mining their share in total exports has decreased from 1995 to 2011, so



there is need to make reforms in both sectors and India should engage in Free Trade Agreements to remove trade restrictions. The study findings are consistent with Leontiefparadox that India is a labour abundant country but India is exporting more of manufacturing goods (i.e., 60 percent of total exports) by more use of unskilled labour than primary goods (i.e. 8.34 percent of total exports)in 2011.

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