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Inter-Linkages between Exports and Employment in India: An Update

Introduction

Potential realignment of the global value chains (GVCs) in the coming years provides an opportunity for India to replace China as an assembly hub for manufactured exports. This can create millions of jobs for the burgeoning youth population. In this context, it is important to understand the nature of the relationship between exports and domestic job creation.

The spread of GVCs implies that intermediate inputs cross borders several times during the manufacturing process, and hence the customs data on exports do not properly capture the domestic value added (DVA) content of a country's exports. However, understanding of the relationship between exports and employment requires reliable estimates of the DVA content of exports taking into account the input-output (IO) linkages of the exporting sectors that increasingly span borders.

Using IO analysis, the present study provides aggregate and sector level time series estimates of the number of jobs supported by India's merchandise and services exports during the period 1995-2018. Two sets of estimates have been reported. The first set of estimates, for the period 1995-2018 and for 45 sectors, is obtained from the OECD's 'Trade in Employment' (TiM) database. The second set of estimates, for the period 2011-12 to 2017-18 and for 63 sectors, is based on India's official Supply use tables (SUT) prepared by the Central Statistical Office.

Aggregate Level Estimates

As per the OECD-TiM estimates, the total number of jobs supported by Indian exports increased steadily from 35.7 million in 1995 to 73.9 million in 2008. This upward trend was halted briefly in the aftermath of the global financial crisis, as the number of export related jobs declined to 65.1 million in 2009 and 70.1 million in 2010. However, as export growth picked up, the number of jobs tied to exports further increased to 75.1 million in 2011 and reached an all-time peak of 75.6 million in 2012. As export growth slowed down during the post-2012 period, the number of jobs tied to exports gradually declined to 58.2 million in 2018. The SUT based estimates for the period 2011-12 to 2017-18 are similar to the TiM estimates. According to the SUT based estimates, India's exports supported 58.1 million jobs in 2017-18.

Export related jobs grew significantly faster than total employment until about 2012. The share of export-supported jobs in total employment increased from little over 9% in 1995 to the peak of 16.1% in 2012, before declining to 12.2% in 2018. Indirect employment through backward linkages accounts for over a half of total employment supported by exports. The estimates show that $1 million worth of exports supported 108 jobs in 2018, down from about 889 jobs in 1995. This trend, partly due to an improvement in labor productivity and partly due to changes in export composition towards skill-intensive and capital-intensive products, is consistent with the pattern observed for a number of other countries (Cali et. al, 2016). Despite the decline over the years, employment intensity of Indian exports is found to be higher than the similar estimates available for other major countries, including US and China. For example, $1 million worth of US exports supported only 6.6 jobs in 2009 and 5.2 jobs in 2014 (Rasmussen and Johnson, 2015). Available estimates for China suggest that $1 million worth of its exports supported 140 jobs in 2007 (Chen et al, 2012) as compared to 282 jobs for India for the same year.

Estimates for Sector Groups: Agriculture, Manufacturing and Services

The total number of jobs supported by exports of agricultural products increased from 3.2 million (accounting for 8.9 % of total export related jobs) in 1995 to the peak of 8 million in 2012 and then declined to 3.4 million (5.8 % of total export related jobs) in 2018. The SUT based estimates reveal a similar trend for agriculture, with a decline from 7.3 million jobs in 2012-13 to 4.3 million in 2017-18.

The number of jobs tied to manufactured exports more than doubled from 23.2 million in 1995 to 47.5 million in 2013. However, as India's export growth slowed down, this has gradually declined to 33 million by 2018. The SUT based estimates show that manufactured exports supported 43.4 million jobs (accounting for 74.7% of total export related jobs) in 2017-18 as compared to 54.1 million jobs (accounting for 78% of total export related jobs) in 2011-12.

The number of jobs supported by services exports increased steadily from 9.3 million (accounting for 26% of total export related jobs) in 1995 to 20.9 million in 2012 and 21.8 million (accounting for 37.5% of total export related jobs) in 2018. Unlike for agriculture and manufacturing, jobs attributed to exports from the services sector have not declined during the post-2012 period. The SUT based estimates suggest that about 10.4 million jobs can be attributed to services exports in 2017-18, up from 9.2 million in 2011-12[1].

Indirect employment generally accounts for more than 60% of total export-supported jobs for the manufacturing sector, implying that manufacturing exports plays an important role in generating employment in agriculture and services sectors through backward linkage effects. In contrast, a large share of employment attributed to exports of agriculture and services are due to the direct effects. It can be seen that $1 million worth of agricultural exports could generate about 350 jobs in 2018. Compared to agriculture, the number of jobs attributed to $1 million worth of manufacturing or services exports are much smaller – about 127 and 97 jobs, respectively, in 2018. It must be noted, however, that employment generated in manufacturing and services are generally better paying compared to those in agriculture.

Estimates by Gender

Table 1 provides the break-up of export related employment for males and females for the year 2017-18. In 2017-18, aggregate exports supported about 43.4 million jobs for males (accounting for about three-fourths of total export related employment) and 14.7 million jobs for females. Exports of agriculture products supported about 3 million jobs for males and 1.3 million jobs for females. Female employment constitutes about 29% of total export related employment in agriculture. Manufactured exports have supported about 32 million jobs for males and 11.4 million jobs for females. Exports of services supported 8.3 million jobs for males and 2.1 million jobs for females.

Within manufacturing, export of 'wearing apparel' support the largest number of export related jobs for women (about 2 million, of which about 80% are direct jobs), followed by 'textiles' (1.6 million), 'grain mill products' (1.5 million), 'meat, fish, fruit, vegetables, oils and fats' (1.3 million) and 'other manufacturing' (1.3 million). The manufacturing sectors that support the largest number of export related jobs for men include 'miscellaneous manufacturing' (5.8 million, mainly contributed by gems and jewelry), 'textiles' (3.6 million), 'grain mill products' (3.6 million), 'wearing apparel' (3.4 million) and 'meat, fish, fruit, vegetables, oils and fats' (3.2 million). Within services, the sectors that record the largest number of export related jobs for women include 'IT and information services' (0.8 million), 'education & research' (0.5 million) and 'other business services' (0.3 million). These sectors

Table 1: Export supported employment by gender, 2017-18, Millions

	Males			Females			Males plus Females		
	Total	Direct	Indirect	Total	Direct	Indirect	Total	Direct	Indirect
Agriculture	3.05	2.85	0.20	1.25	1.19	0.06	4.30	4.04	0.26
Manufacturing	32.03	12.96	19.06	11.37	4.22	7.15	43.40	17.19	26.21
Services	8.29	4.89	3.40	2.11	1.34	0.77	10.40	6.23	4.17
Total	**43.37**	**20.71**	**22.66**	**14.73**	**6.75**	**7.98**	**58.10**	**27.46**	**30.64**

Note: These estimates are based on SUT; TiM database does not provide gender break up of export related jobs.

[1] The number of jobs attributed to services exports is found to be higher in the TiM estimates as compared to the SUT based estimates. On the other hand, manufactured exports are found to support a higher number of jobs in the SUT based estimates as compared to the TiM estimates. Such differences are due to the fact that the IO tables used for estimation in the two sources are not identical in terms of sector disaggregation and data compilation methodology.

also support large number of jobs for men: 'IT and information services' (3.7 million), 'other business services' (1.9 million) and 'education & research' (0.7 million).

Female employment intensity (FEI, share of female workers in total employment) in exports may differ from that in total production as the product composition of the former could be different from the latter. At the aggregate level, the FEI in the export basket (25.4%) is higher than that in total production (23.3%). At the sector group level, manufacturing and services show a pattern similar to that at the aggregate level whereas an opposite pattern can be observed for agriculture. Thus, a strategy based on exports of manufacturing and services as the key driver of growth can support greater employment opportunities for women as compared to a strategy based on selling mostly in the domestic market.

Estimates by Educational Attainment of Workers

Table 2 provides the break-up of export related employment for workers with different levels of educational attainment for the year 2017-18. It can be seen that, at the aggregate level, about 21% (12.6 million) of total export related jobs went to workers with no formal schooling. The bulk of these jobs are supported by manufactured exports (10.2 million) and mainly (81%) due to its backward linkages. About 18% (10.7 million) of total export related jobs were created for workers with educational attainment up to the primary level. Again, the majority of these jobs (9 million) are attributed to manufactured exports. Workers with middle school attainment accounted for 22% (13 million) of total export supported jobs, of which 10.6 million jobs are tied to manufactured exports.

Out of the total number of jobs tied to exports, about 37.5% is found to be relatively high skilled jobs, consisting of 21.4% of jobs (12.4 million) for workers with secondary and higher secondary attainment and 16.1% of jobs (9.4 million) for the category of diploma holders, graduates and post-graduates. About 76% (9.4 million) of total export related jobs for workers with secondary and higher secondary attainment can be attributed to manufactured exports. On the other hand, more than half (55%, 5.1 million) of total export related jobs for the category of diploma holders, graduates and post-graduates can be attributed to exports from the services sector. As expected, about 76% of these high skilled jobs attributed to services exports are due to the direct effect.

More than three-fourth of the jobs (direct plus indirect) supported by agriculture exports went to relatively low-skilled workers – that is, those with middle school attainment or lower. The largest share of jobs supported by agriculture exports went to workers with no formal schooling (1.5 million, 35.3%). Workers with no formal schooling accounts for 23.5% (10.6 million) of total jobs supported by manufactured exports.

As expected, high skilled jobs accounted for only 22% of total jobs supported by agriculture exports - that is, workers with secondary and higher secondary attainment (0.8 million, 17.4%) and workers with diploma and above (0.2 million, 4.6%). High skilled jobs accounted for about 70% of export supported jobs by the services sector – that is, workers with secondary and higher secondary attainment (2.3 million, 21.4%) and workers with diploma and above (5.1 million, 48.5%). High skilled jobs constitute about 31% of total jobs tied to manufactured exports - workers

Table 2: Export supported employment by educational attainment of workers, 2017-18, Millions

	No formal schooling*	Up to Primary school	Middle school	Secondary and higher secondary	Diploma and above**	Total
Agriculture	1.53	0.91	0.94	0.75	0.20	4.33
Manufacturing	10.16	8.96	10.62	9.43	4.04	43.20
Services	0.92	0.80	1.46	2.26	5.13	10.58
Total	12.62	10.67	13.02	12.44	9.37	58.11

Note: These estimates are based on SUT; TiM database does not provide break up based on educational attainment; *this group includes workers who are "not literate" and "literate without formal schooling"; ** this groups includes workers who have passed "diploma/certificate course", "graduate" and "post graduate and above".

with secondary and higher secondary attainment (9.4 million, 21.8%) and workers with diploma and above (4 million, 9.3%).

Within services, the sectors that support the largest number of high-skilled jobs are 'IT and information services', 'other business services' and 'education & research'. Within manufacturing, exports from the top two sectors – 'miscellaneous manufacturing' and 'wearing apparel' – mainly support jobs for workers with middle school, secondary and higher secondary attainments. However, it is important to note that these sectors also support a significant number of jobs for workers with diploma and higher qualifications.

The skill composition of jobs supported by exports may differ from that by total production as the product composition of the former could be different from the latter. Exports offer a greater potential to support more skilled jobs as compared to production for the domestic market. For higher educational attainment categories starting from middle school level, export basket is associated with higher share of employment as compared to the basket of total production.

Workers with diploma and higher qualifications, for example, account for 22.2% of total export related jobs while this share is only 13.6% of jobs supported by domestic production. Similarly, workers with secondary and higher secondary attainment account for 23.3% of export supported jobs as compared to 21.4% of jobs supported by total production. On the other hand, domestic production seems to support higher shares of jobs for workers with no formal schooling and for workers with up to primary attainment.

Such differences are starker for services exports. It can be seen that 61.6% of jobs tied to services exports went to workers with diploma and higher qualifications; however, only 23% of jobs tied to total services output went to this highly skilled category of workers. For manufacturing, exports (as compared to total manufactured output) support higher shares of jobs for workers with middle school, secondary and higher secondary attainments. For agriculture, however, the skill composition of jobs supported by exports looks similar to that of total production. The patterns at the sector group level suggest that, as compared to the composition of total output, India's export basket in manufacturing and services are biased towards sectors that employ relatively higher proportion of skilled workers. Overall, the findings imply that, as compared to a strategy based on selling in the domestic market, a growth strategy based on export growth as the main engine can support greater employment opportunities for high skilled workers.

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