India in the International Production Network: The Role of Outward FDI

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Abstract

Outward FDI from India has expanded manifold since the liberalization of policy regime. The phenomenon is expected to improve India's involvement in international production network. The paper examines the role of outward FDI in the manufacturing sector on production network related trade over the period 2008-2012. The impact of bilateral outward FDI (in the form of equity, loan and guarantees) on exports of parts and components to FDI-host countries is investigated using within-transformed fixed effects and fixed effects Poisson Quasi Maximum likelihood method. The results reveal a positive and significant impact of outward FDI on production network related trade, suggesting to the crucial role that manufacturing outward FDI can play in expanding the outreach of Indian manufacturing in the global economy. Towards this end, promotion of outward FDI in the manufacturing sector needs to be accompanied by policy coordination with respect to inward FDI and trade facilitation in order to integrate manufacturing facilities in India with production hubs in the international production network for deriving benefits of global value chains.

Key Words: parts and components, production network, global value chain, outward FDI, India

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Introduction

Developing countries have started contributing significantly to outward FDI especially after the global financial crisis. The volume of outward FDI has doubled from 234.52 billion USD in 2009 to 468.15 billion USD in 2014 (World Investment Report, 2015). In terms of share in World outward FDI, the figure has gone up from 21 percent in 2009 to 35 percent in 2014. The phenomenon is spearheaded by a number of developing countries from Asia, and Latin America.

The rising volume of outward FDI from developing countries has been attributed to several factors. These include macroeconomic and institutional (Tolentino, 2010; Buckley et al., 2007; Goh and Wong, 2011; Kolstad and Wiig, 2012; Das, 2013; Stoian, 2013), financial (Gubbi et al., 2010; Sasidharan and Padmaja, 2016), home and host country-specific (Sethi, 2009; Buckley et al., 2012; Anwar and Mughal, 2013; Duanmu, 2014), industry and firm-specific factors (Nayyar, 2008; Kumar and Chadha, 2009; Wang et al., 2012; Amighini and Franco, 2013). The firm-specific factors contributing to outward FDI of developing country firms have been looked at from multiple perspectives. While economic factors such as the firm heterogeneity in terms of productivity differences[1] are found to be important in explaining internationalize (Demirbas et al., 2013; Wei et al., 2014; Goldar, 2016; Thomas and Narayanan, 2016; Hsu, 2016), there are alternative factors providing firms the strength to undertake outward FDI. For instance, the prediction provided by firm heterogeneity literature can be reversed due to low-cost foreign production (Head and Ries, 2003), and service quality risk (Bhattacharya et al., 2012). Further, in the environment of globalization, resource availability (Gaur et al., 2014; Wei et al., 2014; Jain et al., 2015; Tan and Mathews, 2015; Buckley et al., 2016) as well as the internationalization strategy adopted by developing country firms can result in outward FDI decisions (Wang et al., 2012; Tan and Mathews, 2015).

However, the literature examining the impact of outward FDI on home developing country has been sparse. In particular, in the context of outward FDI from emerging economies, an examination of production network related trade generated by outward FDI has been missing to a large extent. There are related studies that examine the impact of outward FDI on trade linkages (Kim and Kang, 1996; Kim, 2000; Pradhan, 2007; Goh et al., 2013; Das, 2015). Nevertheless, specific treatment of production network related trade is limited. Therefore, the impact of outward FDI on production network related exports to FDI-host countries warrants attention.

India has nimbly begun to encourage outward foreign direct investment (FDI), along with inward FDI, as a result India is one of the leading contributors to the phenomenon of outward FDI from developing countries. The investments are primarily led by private sector firms. The rise in outward FDI from India has been studied from several vantage points. These include internationalization of Indian firms (Nayyar, 2008; Kumar, 2008; Athukorala, 2009; Hansen, 2010; Verma and Brennan, 2011; Paul and Gupta, 2014), determinants and motivations behind overseas investment (Pradhan, 2004, 2010; Kumar, 2007; Balasubramanyam and Forsans, 2010; Hattari and Rajan, 2010; Tiwari and Herstatt, 2010; Narayanan and Bhat, 2011; Buckley et al.,

[1] Greenaway and Kneller (2007) provide a review of literature on firm heterogeneity and the globalization strategies. The literature has grown rapidly following Melitz (2003), Helpman et al. (2004), Tomiura (2007).

2012; Nunnenkamp et al., 2012; Das and Banik, 2015; Amann and Virmani, 2015), and to a limited extent the choice of entry mode (Kathuria, 2010; Nunnenkamp and Andres, 2014), and the impact of outward FDI (Pradhan, 2007; Pradhan and Singh, 2009; Das, 2015).

The current study is undertaken to contribute to the later issue as regards the impact of outward FDI. Whereas previous studies examined impact on exports in a limited way, this study examines the impact of Indian outward FDI on production network related exports in the manufacturing sector. This way the study contributes to the limited body of literature on the impact of outward FDI on production network related exports to FDI-host countries.

Outward FDI in the manufacturing sector forms a significant portion of total outward FDI made by Indian firms albeit it is lesser than the services sector. Given that the contribution of manufacturing sector to India's GDP is on a downward trend,[2] the integration of Indian firms into international production network can play a key role in strengthening the sector. It may be noted that India's participation in international production network has remained lower than developing Asia (Athukorala, 2011). The phenomenon of outward FDI in the manufacturing sector is expected to raise the level of India's participation in international production network.

Therefore, it is important to examine the role of outward FDI and other factors that may promote or create hindrance in enhancing participation in international production network. This paper thus examines the impact of India's manufacturing outward FDI on production-network related manufacturing exports by India to the FDI-host countries. The role of bilateral trade costs has also been examined.

The production-network related exports refer to the exports of parts and components of manufacturing industries. Production-network related trade is dominant in certain manufacturing industries (e.g. machinery, electronics) than others. However, there is no single measure of production-network related trade and it varies depending on the use of trade classification, coverage of industries and countries, level of disaggregation followed, nature and intensity of such trade, etc. (Ando and Kimura 2005, Athukorala 2010, Amighini 2012). Nevertheless, in the present analysis the classification developed by Athukorala (2010) has been used as it can capture production-network related trade in a wide range of manufacturing industries and thus not limited to machinery parts and components only.

It may be observed that the pace of increase in India's exports of parts and components has been slower than the overall manufacturing exports. As a result, the share of parts and components in total manufacturing exports has remained desultory (Figure 1).

With the development of World Input-Output Table, the quantification of international fragmentation of production in terms of domestic and foreign value added content of the product has become possible (see Dietzenbacher et al., 2013; Timmer et al., 2014, 2015). The foreign value added content of a product is an indicator of the international fragmentation of production (Timmer et al., 2014). Figure 2 presents an example of the transport equipment manufacturing industry. It may be noted that there is an increase in the foreign value-added content of transport

[2] The manufacturing sector contributed 15 percent to India's GDP in the year 2013-14.

equipment manufacturing in India compared to 1990s. The foreign value added share of the transport equipment manufacturing in India has been around 14 percent in 2010s, which is lower compared to countries with higher involvement in global value chains (e.g. in 2008 foreign value added share of the same industry in Germany was 34 percent, see Timmer et al., 2014). However, India is in a position to catch up with comparable developing countries (see Figure 2 for comparison with Indonesia).

Similar to the exports of parts of components, the manufacturing outward FDI has grown at a slower pace in comparison to the aggregate volume. Nevertheless, the manufacturing outward FDI constitutes a significant proportion of the total outward FDI (Figure 3), and its level has remained steady.

Another noteworthy feature of India's outward FDI, especially after the liberalization of policy regime[3], has been the diversification of investment to several destinations both in developed and developing countries (Table 1). The manufacturing outward FDI was not adversely affected despite the global financial crisis of 2008-09 (Table 1). However, manufacturing exports became sluggish especially during 2009 (Figure 1).

With this background, and given the importance of integration into international production network for boosting Indian manufacturing sector, this paper examines India's production network related trade of manufactured goods in relation to outward FDI and trade cost. The empirical analysis pertains to the period 2008-2012, chosen primarily based on data availability, using panel data models (within-transformed fixed effects, and fixed effects Poisson Quasi Maximum likelihood that accounts for zero trade values). The data sources include UN Comtrade, UN ESCAP, Reserve Bank of India (RBI), Ministry of Commerce & Industry (Government of India), UN Service Trade, and World Trade Organization.

The findings of the analysis suggest that manufacturing outward FDI has a significant positive impact on exports of parts and components to the FDI-host countries. The results hold after controlling for inward FDI in India from the partner country, services exports to partner country, and preferential trade agreements (PTA). On the other hand, bilateral trade costs indicate to a negative impact on the production-network related exports.

The results have pertinent implication for policy. In particular, encouraging outward FDI in the manufacturing sector could significantly improve India's participation in international production network. On the other hand, in line with the existing wisdom, trade facilitation to reduce trade costs may strengthen India's participation in international production network.

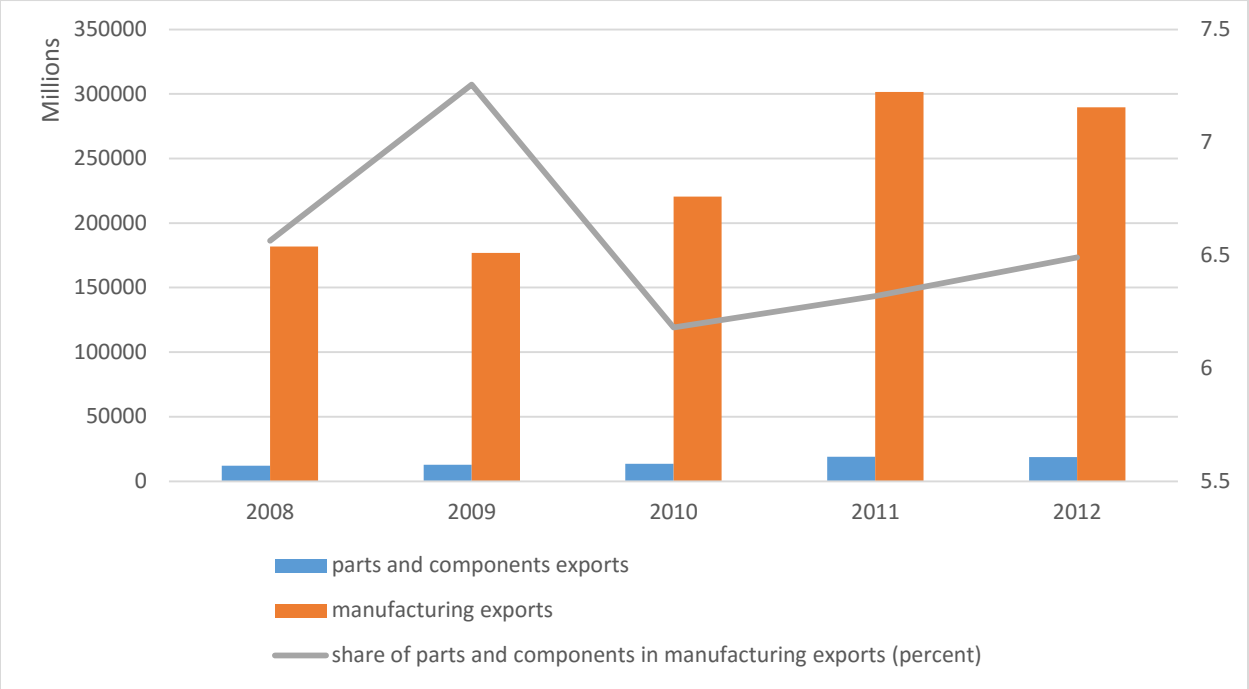
[3] The ceiling of investment by Indian entities (under the automatic route for overseas investment) was raised to 400 per cent of the net worth of the investing company in 2007-08 (RBI, 2010).

Table 1: Direction of India's outward FDI in manufacturing sector by destination (US $ millions)

A. Developed countries							
	2008	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**
Cyprus	313.87	2,110.92	180.20	182.55	180.09	236.67	193.18
Netherlands	440.47	656.06	1,317.93	964.00	1,316.28	1,346.10	794.96
USA	492.32	423.98	903.48	704.88	2,299.39	1,621.97	839.55
UK	50.80	198.16	161.42	195.70	138.91	373.22	142.36
Switzerland	223.38	172.67	211.06	797.66	372.90	676.15	694.02
Denmark	281.88	77.00	148.71	92.08	117.10	1.54	-
Australia	6.45	58.45	32.16	35.04	29.01	56.43	19.26
Italy	47.55	38.10	33.45	13.97	16.75	17.69	10.87
Germany	44.67	20.72	50.88	70.13	57.20	110.88	53.33
Canada	44.25	20.02	6.05	1.02	0.56	7.04	5.86
Spain	31.87	17.41	22.33	44.48	42.64	35.47	34.51
France	11.72	9.25	32.68	20.37	12.05	43.31	77.74
B. Developing Countries							
	2008	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**
Singapore	1,881.75	3,311.07	726.63	819.76	755.91	1,105.64	710.06
Mauritius	1,109.31	533.71	7,931.72	2,616.20	2,900.78	955.42	3,447.78
Russia	545.70	470.99	186.62	117.64	18.57	19.62	27.02
UAE	538.73	428.55	954.83	533.50	702.96	802.82	820.95
South Africa	12.54	82.51	2.96	18.13	58.49	7.11	6.71
Thailand	118.25	53.64	4.40	34.03	4.64	53.71	4.08
China	23.30	27.99	16.87	22.80	16.05	23.70	31.29
Panama	30.09	25.61	42.88	8.03	4.27	33.36	23.41
Tanzania	0.11	20.85	1.38	12.96	0.38	6.66	2.80
Chile	-	16.71	41.91	15.30	8.58	5.20	6.46
Sri Lanka	150.69	5.04	174.30	42.68	19.11	7.37	9.87
Indonesia	23.12	4.73	5.41	23.46	20.35	16.30	82.26
Malaysia	51.14	0.62	64.78	376.73	102.73	1.94	58.95
Total manufacturing	**7,878.45**	**9,055.58**	**13,803.74**	**9,420.46**	**9,808.67**	**8,894.08**	**8,600.83**

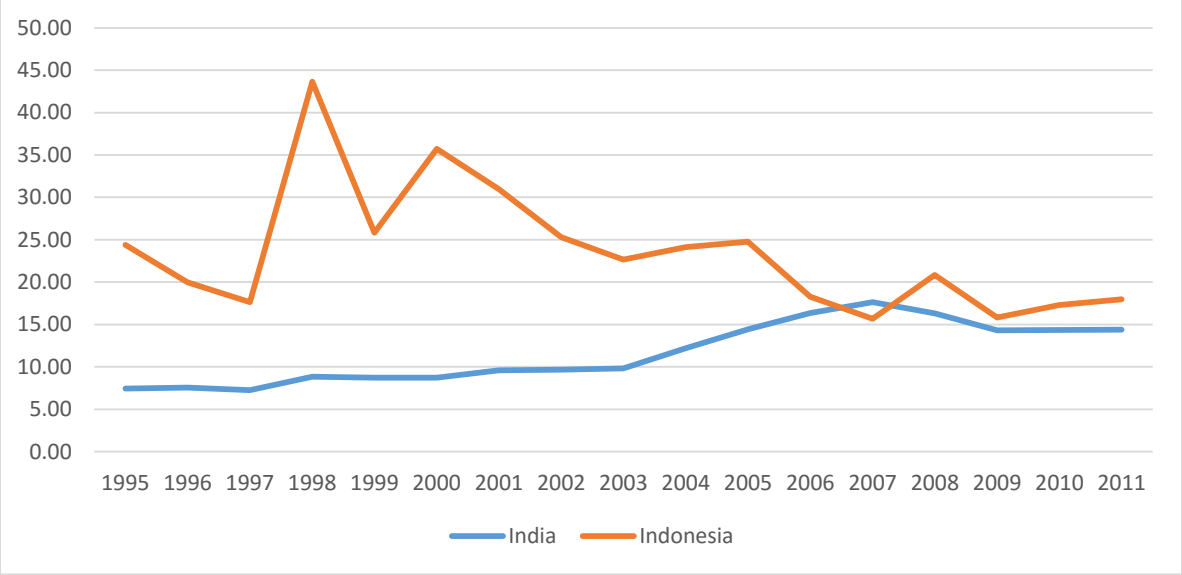
Source: Author's compilation from RBI

Figure 1: India's exports of parts and components (US $ million)



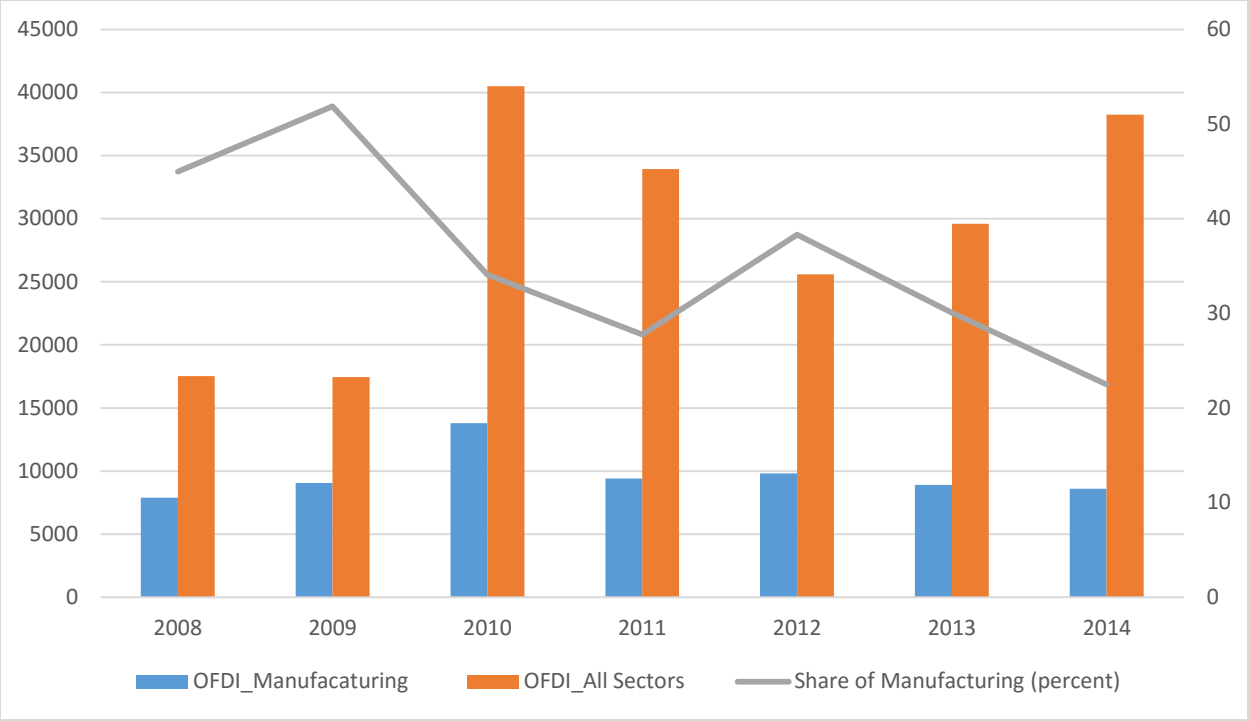
Source: Author's compilation from UN Comtrade (using SITC Rev. 3 data)

Figure 2: Foreign value-added of transport equipment manufacturing (% of final output value)



Source: Author's calculation based on World Input-Output Database (November 2013 release)

Figure 3: Outward FDI by Indian Firms (US $ million)



Source: Author's compilation from RBI (using firm level outward FDI data)

Empirical Examination

Empirical analysis has been carried out using panel data model[4] of the following form[5]

$$PC_{jt} = g(\pi_t + \chi_{jt} + \mu_j + \eta_1 OFDI_{jt} + \eta_2 TC_{jt} + \eta_3 X_{jt}) + \varepsilon_{jt}$$

The estimation is done using a) within-transformed (linear) fixed effects, and b) fixed effects Poisson (Quasi-Maximum Likelihood) regression to account for zero trade values.

In the model, PC_{jt} stands for India's exports of parts and components to country j at time t. $OFDI_{jt}$ is India's outward FDI in the export-destination country j, TC_{jt} is bilateral trade cost, and X_{jt} stands for additional control variables that include inward FDI, services exports. Further, the role of PTA is also examined in view of the prevalence of regionalism along with multilateral trading system. In fact, the complementary nature of PTAs to the multilateral trading system has been recognized (Low, 2014).

Data Sources and Variables

Exports of parts and components have been sourced from UN Comtrade. Following Athukorala (2010), the values of total exports of parts and components at the country-level are obtained by

[4] The specification comes from the gold standard gravity equation.
[5] The subscript for exporter (i) is suppressed as the analysis pertains to exports from one country (India).

aggregating the exports of the 5-digit SITC Rev. 3 commodities (see Appendix for the list of parts and components). The trade costs data come from the ESCAP-World Bank Trade Cost Database, and outward FDI from RBI (i.e. compiled by aggregating the firm-level data).

It is worth mentioning that the analysis uses a comprehensive measure of bilateral trade costs. The measure is based on Novy (2013) and captures costs associated with both exporting and importing goods between trading partners. Trade costs (ESCAP-World Bank Trade Cost Database) are provided in *ad valorem* equivalent form (see Arvis et al., 2012 for further methodological details). For instance, a country's trade costs value of (say) 142.87 with a partner country suggests that, on average, trading goods with the concerned partner country involves additional costs of approximately 143 percent of the value of the goods as compared to trading goods within borders of the two trading countries.

The variables used in the analysis are a) natural log of parts and components exports of India to partner country j (lpc), b) parts and components exports of India to partner country j (pc), c) trade cost in the manufacturing sector (tc), manufacturing outward FDI by India through equity mode in destination country j (eq), manufacturing outward FDI by India (equity plus loan mode) in destination country j (eq_loan), manufacturing outward FDI by India (equity, loan and guarantee mode) in destination country j (total). Additional control variables include inward FDI in India received from partner country j (ifdi), role of services proxied by India's exports of services to partner country j (ser_exp), and PTA with the partner country as beneficiary (pta_b).[6] Data sources for inward FDI and services exports are the Ministry of Commerce & Industry (Government of India) and UN Service Trade database respectively. The pta_b dummy is constructed using information from PTA database, WTO. Production network related exports of parts and components (pc) and service exports are measured in US dollar. The outward FDI (eq, eq_loan, total) and inward FDI (ifdi) are measured in millions of US dollar. The descriptive statistics of the variables are provided in Table 2.

Table 2: Descriptive Statistics

	Mean	**SD**	**Max**	**Min**	**Observations**
pc	1.97e+08	3.25e+08	2.54e+09	74134	258
lpc	17.99	1.81	21.66	11.21	258
tc	141.71	57.28	419.11	55.53	258
eq	56.14	228.67	2031.15	0	258
eqloan	77.41	254.23	2067.73	0	258
total	145.58	622.54	7931.72	0.0003	258
ifdi	527.47	1744.35	11207.87	0	197
ser_exp	1.39e+09	3.17e+09	1.80e+10	1900000	82
pta_b	0.34	0.48	1	0	258

Source: Author's calculation

[6] India has been beneficiary of PTAs provided by Australia, European Union, Japan, New Zealand, Norway, Belarus, Kazakhstan, Russian Federation, Switzerland, Turkey, and United States. Historically, India did not use PTAs as a trade policy instrument until the early 2000s (Mikic, 2011).

Results and Discussion

The baseline results of empirical analysis are reported in Table 3. Results presented in panel A are based on within-transformed fixed effects and provide estimate of semi-elasticities, whereas those in panel B pertain to fixed effects Poisson quasi maximum likelihood (that account for zero trade values within country pairs) and give the direction of impact. As expected the trade cost variable has negative impact on India's production network related exports of parts and components. The coefficient is significant in all the regression models. Higher the trade costs, the lesser is the exports of parts and components. The most interesting part of the results is the positive and significant impact of India's outward FDI on exports of parts and components to FDI-host countries, especially for total outward FDI. All the three measures of outward FDI yield similar results in the maximum likelihood model, which accounts for zero trade values.

Table 3: Baseline Results

	A. Within-transformed fixed effects			**B. Fixed effects Poisson (Quasi ML)**		
	lpc	lpc	lpc	Pc	pc	pc
tc	-0.011***	-0.011***	-0.011***	-0.019***	-0.019***	-0.020***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
eq	-0.00007			0.0002*		
	(0.0002)			(0.0001)		
eq_loan		-0.00007			0.0002*	
		(0.0002)			(0.0001)	
total			0.00007***			0.0002***
			(0.00003)			(0.0001)
Constant	19.55***	19.55***	19.57***	-	-	-
	(0.512)	(0.512)	(0.520)			
Observations	258	258	258	237	237	237
No of Countries	84	84	84	63	63	63
F test	4.73**	4.72**	6.01***			
Wald test				1.15e+09***	1.17e+09***	1.24e+09***
R square	0.603	0.601	0.603			
Log likelihood				-1.546e+09	-1.538e+09	-1.503e+09

Robust standard error in the parentheses. Coefficients of dummies are not reported. log values of the dependent variable in the within-transformed model are generated after adding one to parts and components exports i.e. to overcome zero trade values. Results are similar with zero trade values. ***<0.01, **<0.05, *<0.10.

Country Coverage: Argentina, Australia, Austria, Bahamas, Bahrain, Belgium, Benin, Bhutan, Botswana, Brazil, Canada, Central African Republic, Chad, Chile, China, Colombia, Congo Dem. Rep., Cyprus, Czech Republic, Denmark, Dominican Republic, Egypt, Ethiopia, Finland, France, Gabon, Georgia, Germany, Ghana, Guatemala, Honduras, Hong Kong, Hungary, Indonesia, Iran, Ireland, Israel, Italy, Japan, Jordan, Kazakhstan, Kenya, Korea, Kyrgyz Republic, Lebanon, Malaysia, Mauritius, Mexico, Morocco, Mozambique, Namibia, Nepal, Netherlands, New Zealand, Nigeria, Oman, Panama, Peru, Philippines, Poland, Portugal, Qatar, Romania, Russian Federation, Rwanda, Senegal, Singapore, Slovak Republic, South Africa, Spain, Sri Lanka, Switzerland, Syria, Tanzania, Thailand, Turkey, Ukraine, UAE, UK, USA, Uzbekistan, Venezuela, Viet Nam, Yemen**.**

Further, robustness check exercise was carried out to control for inward FDI (ifdi) from partner countries, services exports and PTA. This results, which are in consonance with the baseline,

confirm a positive impact of outward FDI on India's exports of parts and components to FDI-host countries (Table 4).

The inward FDI turned out to be significant as well in the maximum likelihood estimation. Further, PTAs are found to have exerted positive impact on production network related exports from India. However, services exports did not yield significant coefficients. The variable (ser_exp) suffers from non-availability of data for a number of countries, which reduces the country coverage in the analysis. It may also be noted that trade cost ceases to be significant, although by a whisker, which could be attributed to the reduction in country coverage in the sample due to inclusion of additional control variables. However, the sign of trade costs remains negative. Overall, the findings are qualitatively similar to the baseline.

Table 4: Robustness check: Control for additional explanatory variables

	A. Within-transformed fixed effects			**B. Fixed effects Poisson (Quasi ML)**		
	lpc	lpc	lpc	pc	pc	pc
tc	-0.008	-0.008	-0.008	-0.002	-0.002	-0.005
	(0.005)	(0.005)	(0.005)	(0.006)	(0.006)	(0.005)
eq	0.0002			0.0004***		
	(0.0002)			(0.00004)		
eq_loan		0.0002			0.0004***	
		(0.0002)			(0.00003)	
total			0.0002*			0.0003***
			(0.0001)			(0.00002)
ifdi	-2.43e-06	1.18e-06	-2.20e-06	0.00002**	0.00002***	0.00003**
	(0.00002)	(0.00002)	(0.00002)	(0.00001)	(8.34e-06)	(0.00001)
ser_exp	-1.26e-11	-1.81e-11	-2.33e-11	-8.55e-12	-1.80e-11	-2.11e-11
	(2.28e-11)	(2.38e-11)	(2.36e-11)	(1.69e-11)	(1.72e-11)	(1.66e-11)
pta_b	0.495***	0.477***	0.465***	0.670***	0.673***	0.639***
	(0.093)	(0.095)	(0.084)	(0.068)	(0.064)	(0.060)
Constant	18.99***	19.03***	19.05***	-	-	-
	(0.650)	(0.645)	(0.636)			
Time Dummy	Yes	Yes	Yes	Yes	Yes	Yes
Observations	81	81	81	73	73	73
No of Countries	26	26	26	18	18	18
F test	-	-	-			
Wald test				9.2e+15***	4.3e+16***	1.8e+15***
R square	0.401	0.413	0.423			
Log likelihood				-1.974e+08	-2.005e+08	-1971e+08

Robust standard error in the parentheses. Coefficients of dummies are not reported. log values of the dependent variable in the within-transformed model are generated after adding one to parts and components exports i.e. to overcome zero trade values. Results are similar with zero trade values. ***<0.01, **<0.05, *<0.10.

Country Coverage: Australia, Austria, Belgium, Canada, Chile, Cyprus, Czech Republic, Denmark, Finland, France, Hong Kong, Hungary, Ireland, Italy, Japan, Lebanon, Netherlands, New Zealand, Poland, Portugal, Romania, Russian Federation, Singapore, Slovak Republic, Spain, UK, USA.

Although positive impact of outward FDI on India's exports is documented elsewhere (Pradhan 2007, Das 2015), there has been dearth of evidence as regards the impact of outward FDI on production network related exports of parts and components. The results of this analysis therefore provide fresh evidence as regards the impact of India's outward FDI on production network related exports.

Conclusion

The expansion of outward FDI is an interesting development despite India being a net importer of capital. Although there are grounds for apprehension on many counts due to outward FDI, the phenomenon is expected to enhance India's participation in the international production network and global value chains. The complementarity impact of outward FDI on exports of parts and components is evident from the empirical analysis. The results suggest that outward FDI in the manufacturing sector is crucial for expanding the outreach of Indian manufacturing in the global economy. Since international production network requires lesser border costs, trade facilitation to reduce trade costs in terms of time and money may also aid in deriving the complementary benefits from manufacturing outward FDI. Policy initiative towards this end is expected to produce encouraging outcome both in the context of outward FDI and inward FDI.

It may be worth noting that the 'Make in India' initiative offers several avenues, especially for foreign firms, to invest in Indian manufacturing sector. However, without enhanced integration of Indian manufacturing facilities with the global value chain the initiative may not be appealing for multinationals besides the domestic firms. Therefore, additional focus needs to be given towards integrating manufacturing facilities in India with production hubs in the international production network. Policy coordination with respect to outward FDI, inward FDI, and trade facilitation shall be crucial in enhancing the integration.

Indian firms have an important role to play in enhancing integration of Indian manufacturing with global value chains. Firms will need to capitalize on both 'Make in India' and the liberal outward FDI regime. The former can help in improving domestic manufacturing activities, whereas the latter can establish the linkages, through outward FDI, with production hubs in the global value chain.

Appendix

List of Parts and Components (SITC – Rev 3)

58291, 59850, 61210, 62142, 62143, 62144, 62145, 62921, 62929, 62999, 65621, 65720, 65751, 65771, 65773, 65791, 65792, 66382, 66471, 66472, 66481, 66591, 66599, 69551, 69552, 69553, 69554, 69555, 69559, 69561, 69562, 69563, 69564, 69680, 69915, 69933, 69941, 71191, 71192, 71280, 71311, 71319, 71321, 71322, 71323, 71332, 71333, 71381, 71391, 71392, 71441, 71449, 71481, 71489, 71491, 71499, 71610, 71620, 71631, 71651, 71690, 71819, 71878, 71899, 72119, 72129, 72139, 72198, 72199, 72391, 72392, 72393, 72399, 72439, 72449, 72461, 72467, 72468, 72488, 72491, 72492, 72591, 72599, 72635, 72689, 72691, 72699, 72719, 72729, 72819, 72839, 72851, 72852, 72853, 72855, 73511, 73513, 73515, 73591, 73595, 73719, 73729, 73739, 73749, 74128, 74135, 74139, 74149, 74155, 74159, 74172, 74190, 74220, 74291, 74295, 74363, 74364, 74380, 74391, 74395, 74419, 74443, 74491, 74492, 74493, 74494, 74519, 74529, 74539, 74568, 74593, 74597, 74610, 74620, 74630, 74640, 74650, 75680, 74691, 74699, 74710, 74720, 74730, 74740, 74780, 74790, 74810, 74821, 74822, 74839, 74840, 74850, 74860, 74890, 74920, 74991, 74999, 75230, 75260, 75270, 75290, 75910, 75990, 75991, 75993, 75995, 75997, 76211, 76212, 76281, 76282, 76289, 76432, 76481, 76491, 76492, 76493, 76499, 77111, 77119, 77125, 77129, 77220, 77231, 77232, 77233, 77235, 77238, 77241, 77242, 77243, 77244, 77245, 77249, 77251, 77252, 77253, 77254, 77255, 77257, 77258, 77259, 77261, 77262, 77281, 77282, 77311, 77312, 77313, 77314, 77315, 77317, 77318, 77322, 77323, 77324, 77326, 77328, 77329, 77423, 77429, 77549, 77579, 77589, 77611, 77612, 77621, 77623, 77625, 77627, 77629, 77631, 77632, 77633, 77635, 77637, 77639, 77641, 77643, 77645, 77649, 77681, 77688, 77689, 77812, 77817, 77819, 77821, 77822, 77823, 77824, 77829, 77831, 77833, 77834, 77835, 77848, 77861, 77862, 77863, 77864, 77865, 77866, 77867, 77868, 77869, 77871, 77879, 77881, 77882, 77883, 77885, 77886, 77889, 78410, 78421, 78425, 78431, 78432, 78433, 78434, 78435, 78436, 78439, 78535, 78536, 78537, 78689, 79199, 79291, 79293, 79295, 79297, 81211, 81215, 81219, 81380, 81391, 81392, 81399, 82111, 82112, 82119, 82180, 84552, 84841, 84842, 84848, 87119, 87139, 87149, 87199, 87319, 87325, 87329, 87412, 87414, 87424, 87426, 87439, 87454, 87456, 87461, 87463, 87469, 87479, 87490, 88112, 88113, 88114, 88115, 88123, 88124, 88134, 88136, 88422, 88431, 88432, 88433, 88439, 88571, 88591, 88597, 88598, 88599, 89121, 89195, 89281, 89395, 89423, 89860, 89865, 89867, 89879, 89890, 89935, 89949, 89983, 89985, 89986, 89992

Note: The classification is sourced from Athukorala (2010), which was developed after converting HS 6-digit level to SITC 5-digit classification using the UN HS-SITC concordance.

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