
Outward FDI by Indian Manufacturing MNEs: Impact and Implications for Participation in Production Network

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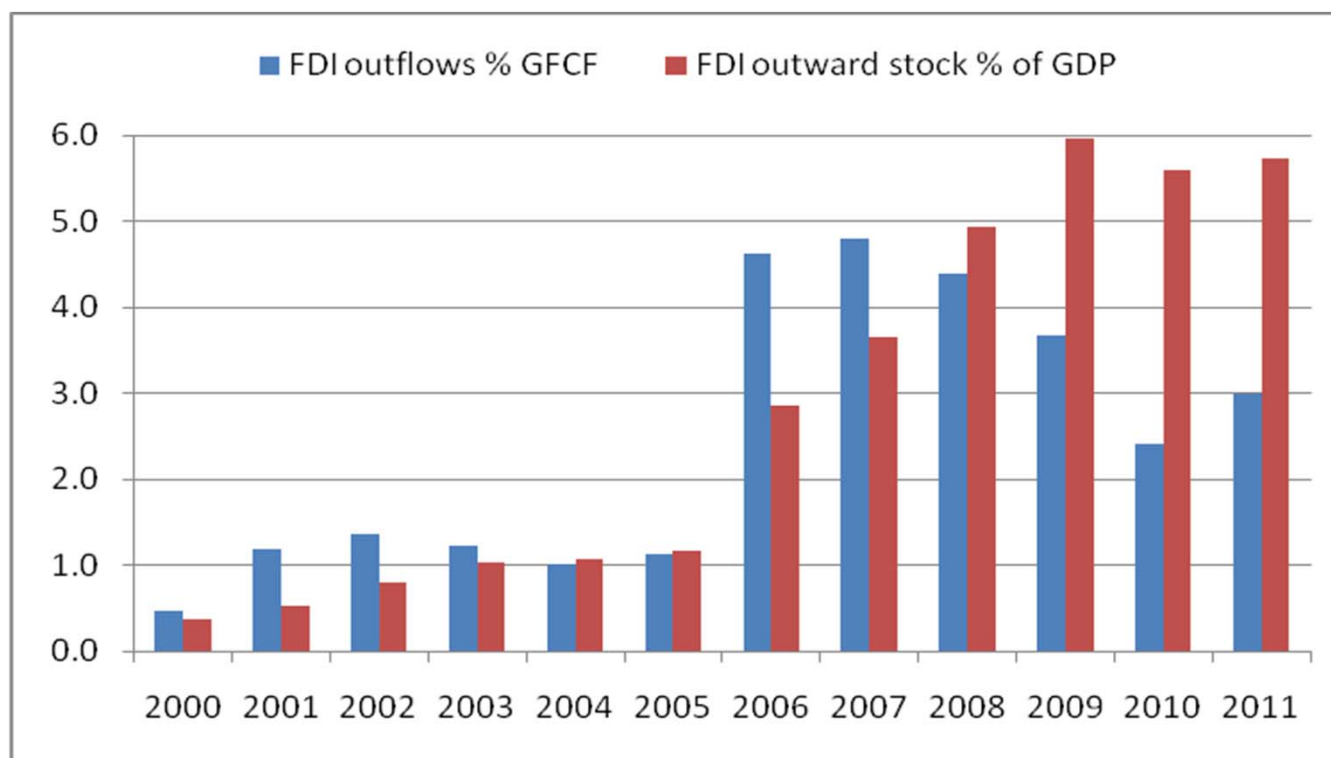
Outline

- Introduction
- OFDI and domestic activity
- Methodology and data
- Results and discussion
- Summary and conclusion

Introduction

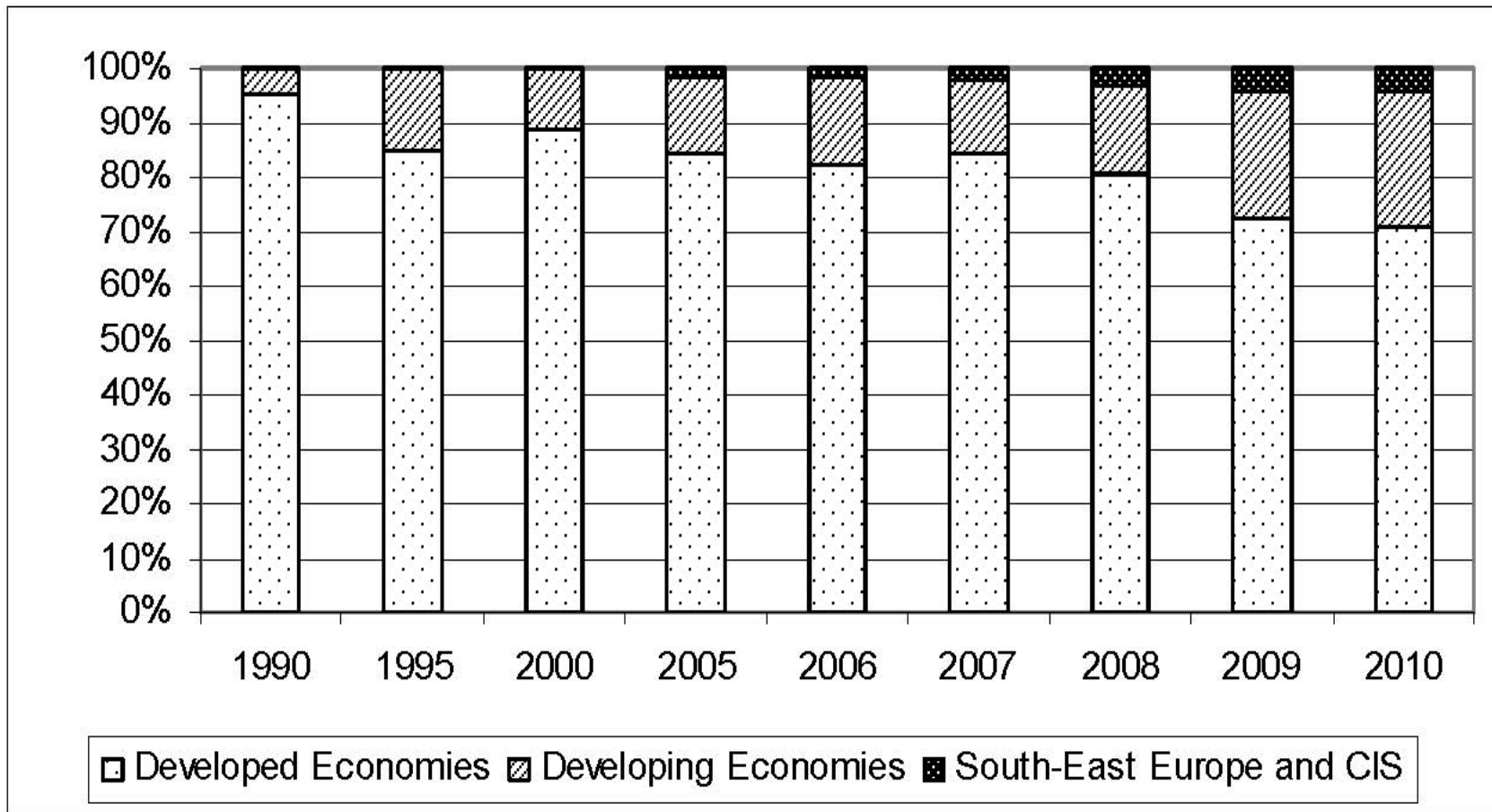
- Outward FDI from developing countries is an emerging phenomenon (Al-Sadig, 2013; Das, 2013; UNCTAD, 2011).
- India's share in world outward FDI flows increased from **0.04** % in 2000 to **1.11** % in 2010.
- Indian firms have invested in more than 100 countries.
- India is also projected to be the largest source of emerging market multinational enterprises, overtaking China by 2018 (PriceWaterHouseCoopers, 2010, one of the 'Big Four' audit firms headquartered in London).
- However, given the scarcity of capital, little is known about the effect of such FDI on domestic activities.

Figure 1: India's Outward FDI as a percentage of GFCF and GDP



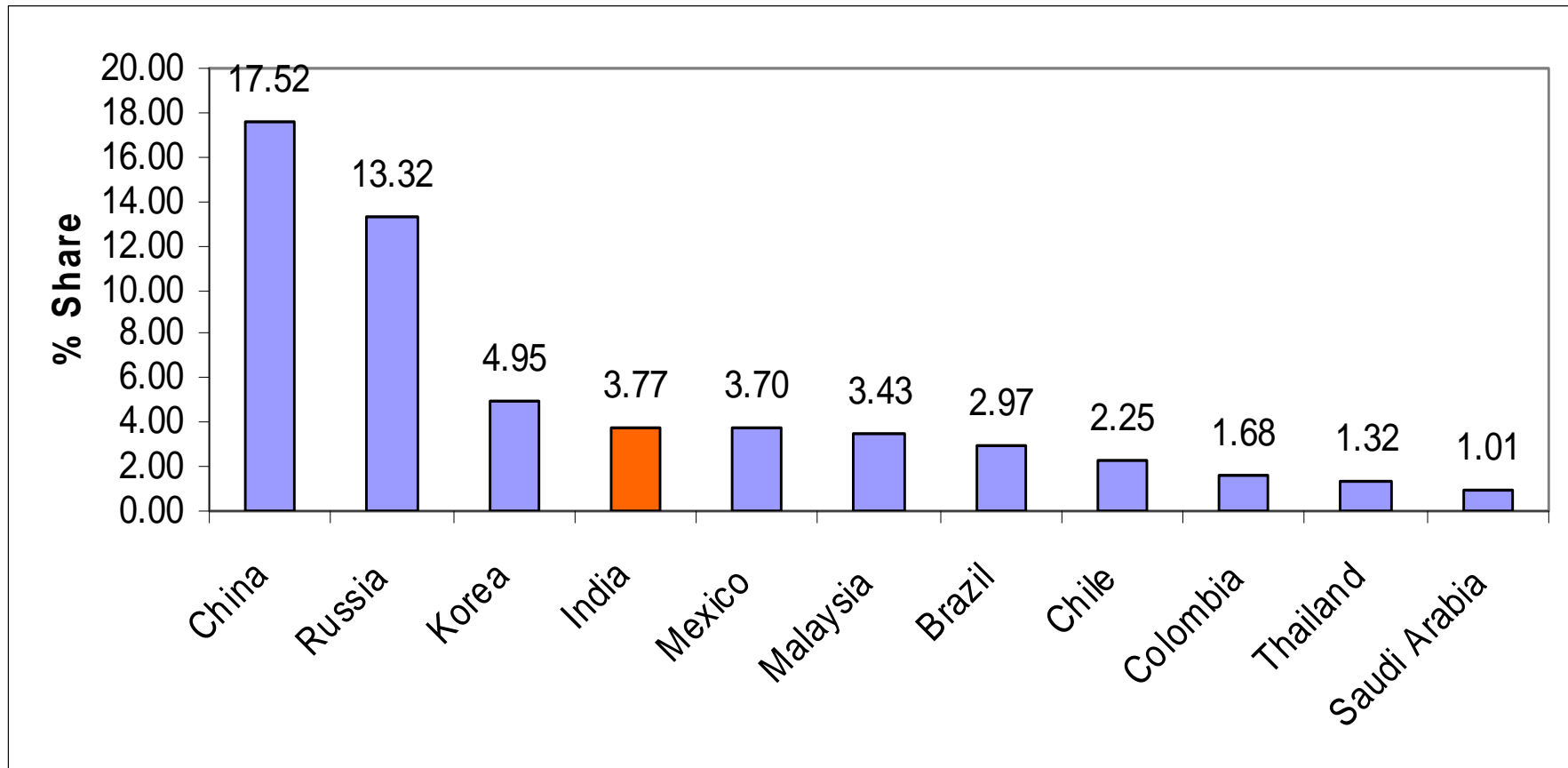
Source: Author's Compilation from WIR 2012 (Annex Tables)

Share in World FDI outflows



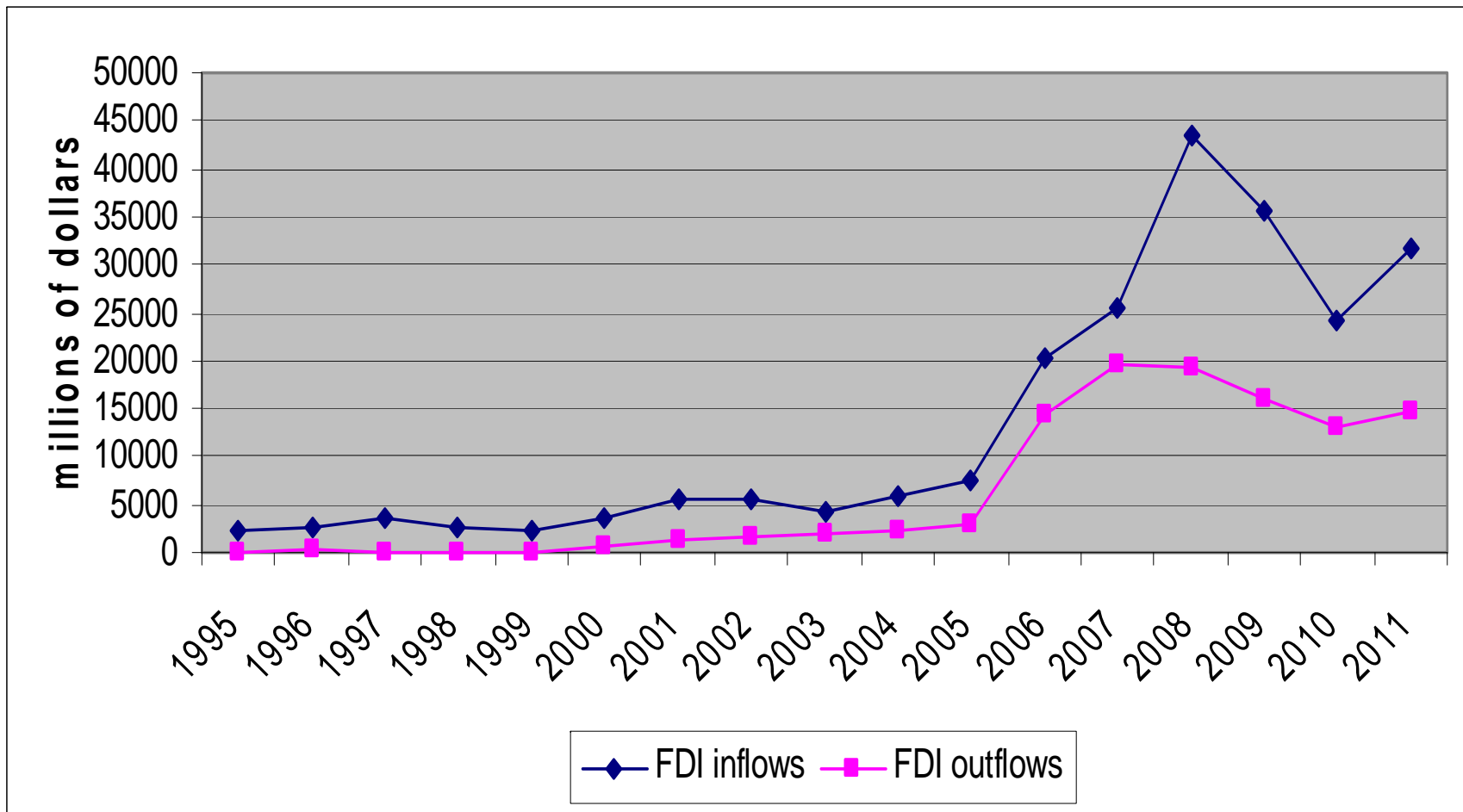
Source: Author's compilation from UNCTAD

Leading developing countries in terms of Outward FDI (2010)



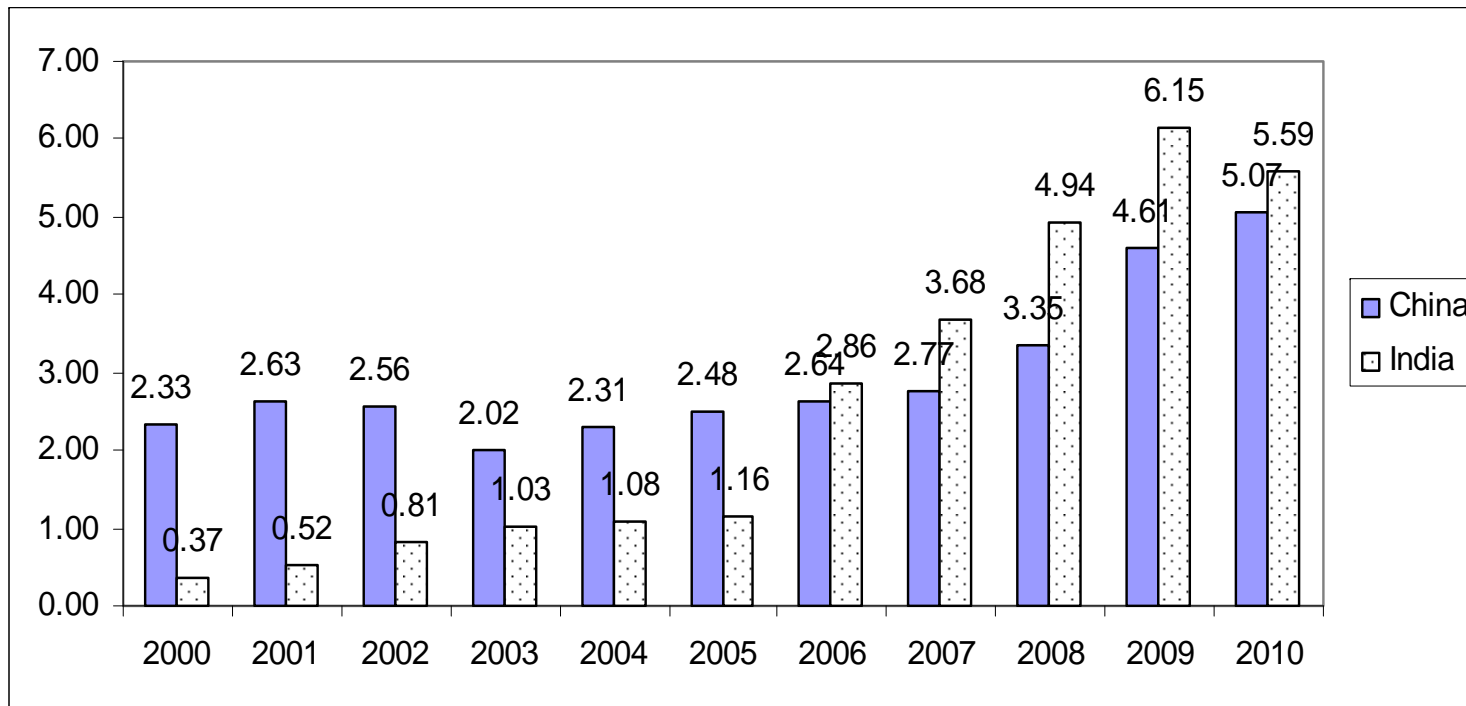
Source: Author's compilation from UNCTAD

India's FDI Inflows and Outflows



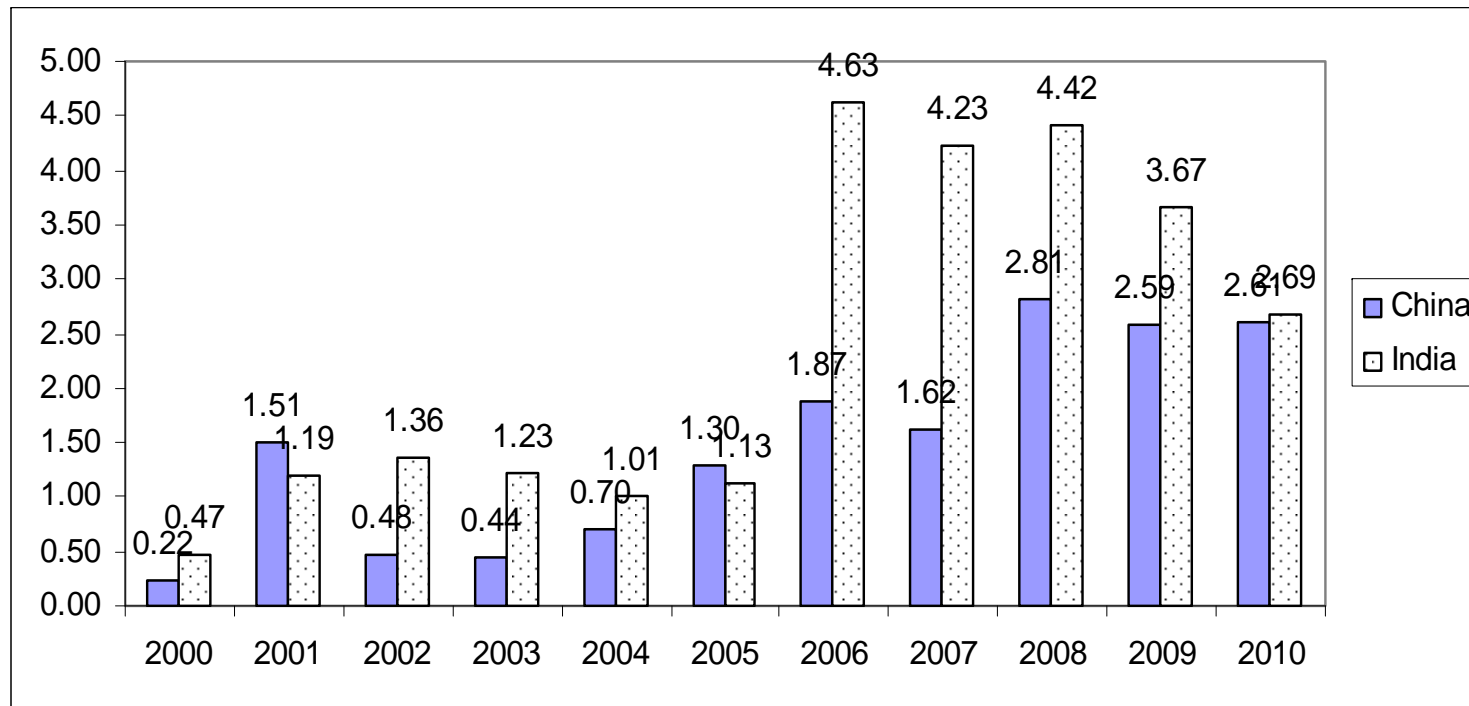
Source: Author's compilation from UNCTAD

Outward FDI Stock (% of GDP)



Source: Author's compilation World Investment Report (2011), UNCTAD

Outward FDI Flows (% GFCF)



Source: Author's compilation World Investment Report (2011), UNCTAD

Outward FDI Policy

- 1992-1995: Total value was restricted to US\$ **2** million
- 1995-2000: Upto US\$ **4** million, proposals exceeding the amount were subject to approval route
- Liberalization framework under FEMA (2000 till date):
 - 2001/2002: upto US\$ **50** million in a financial year
 - 2001/2002: automatic approval was raised to US\$ **100** million
 - 2003/2004: upto **100** % of net worth
 - 2005/2006: upto **200** % of net worth
 - 2007/2008: upto **300** % of net worth
 - 2007/2008: upto **400** % of net worth

 - 2013/2014: automatic approval limit brought down to 100% of net worth (for fresh investments) in the context of current macro-economic situation [RBI/2013-14/180, AP (DIR Series) Circular No. 23, August 14 & RBI/2013-14/220, AP (DIR Series) Circular No. 30, September 4]

Literature on India's OFDI

- Number of Studies on OFDI Determinants: Hattari and Rajan (2010), Pradhan (2011), Nunnenkamp et al. (2012), Buckley et al. (2012), Pradhan (2010), Kumar (2007), Pradhan (2004).
- Limited number of studies on impact of OFDI in developing countries including India: Pradhan and Singh (2009) for Indian auto industry's R&D intensity.
- Impact of OFDI on various domestic activities in India is not clear from the existing literature on Indian firms.
- Horizontal – Vertical – Complex FDI strategies. Conditions and context specificities.

	Motivation / Example
Resource seeking	<ul style="list-style-type: none"> ■ ONGC Videsh Ltd. (Sakhalin Oil Field Project in Russia) ■ Reliance Industries Ltd. (Reliance Oil & Gas Mauritius ltd.) ■ Indian Oil Corporation (Suntera Nigeria 205 Ltd.) ■ Confidence Petroleum India Ltd. (Surya GIO Gas Indonesia) ■ Shiv-Vani Oil and Gas Exploration (Shiv-Vani Rowell Oil & Gas Co. LLC., Oman) ■ GVK Power & Infrastructure Ltd. (Hancock Coal Pty Ltd, Australia)
Market seeking	<ul style="list-style-type: none"> ■ Bharti Airtel Ltd. (Zain Africa BV, Nigeria) ■ Tata Motors Ltd. (Tata Motors Thailand Ltd., P.T. Tata Motors Indonesia) ■ Wipro Ltd. (Wipro Chengdu Ltd., China; EN Think Inc.,US) ■ Infosys BPO Ltd. (Mccmish Systems LLC, US) ■ HCL Technologies Ltd. (HCL Technologies (Shanghai) Ltd.) ■ Mahindra & Mahindra Financial Services Ltd. (Mahindra Finance USA LLC) ■ Kerala Ayurveda Ltd. (Ayurvedic Academy Inc., US) ■ Gitanjali Gems Ltd. (Gitanjali USA Inc.)

Motivation	Example
Efficiency seeking/ Strategic Asset seeking / Technology seeking	<ul style="list-style-type: none"> ■ Bajaj Auto Ltd. (PT Bajaj Auto Indonesia) ■ Elgi Equipments Ltd. (PT Elgi Equipments Indonesia) ■ Tata Consultancy Services in e.g. Morocco, Uruguay ■ TVS Motor Company Ltd (PT. TVS Motor Company, Indonesia) ■ Alkem Laboratories Ltd. (S&B Pharma Inc. in US), ■ Aurobindo Pharma Ltd. (Aurobindo Pharma USA Inc. NJ, USA) ■ Reliance Polyolefins Ltd. (MPM Bioventures IV, USA) ■ Godrej Industries Ltd. (Medquist Holdings Inc., USA) ■ Accentia Technologies Ltd. (Trans Services Corp., USA) ■ Ashok Leyland Ltd. (ADES Holdings Inc., USA; Albonair GMBH, Germany) ■ Larsen & Toubro Infotech Ltd. (GDA Tech. Inc., USA) ■ Adani Enterprises Ltd. (Linc Energy Ltd./mining, Abbot Point Coal Terminal / marine cargo handling, Australia)
Note: the above classification is just for illustration. There can be multiple motives of investment	
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Methodology and data

- Firm Heterogeneity and self-selection
- Propensity score matching (one-to-one)
- Treatment and control/counterfactual group of firms (with similar probability of investing abroad *ex ante*)
- Compare the difference between the two groups (also known as causal impact)

- $E(\text{MNE}_i | \mathbf{X}_{i \ t-k}) = P(\text{MNE}_i = 1 | \mathbf{X}_{i \ t-k}) \dots\dots (1)$
- $Y_i = \alpha + \beta \times \text{Treat}_i + \varepsilon_i \dots\dots (2)$

- Data sourced from RBI & CMIE-Prowess

Sample of firms used for analysis

Year	Number of destinations	Number of firms	Matched in Prowess	Matched %
2008-09	102	1336	569	42.59
2009-10	99	1175	492	41.87
2010-11	105	1624	635	39.10
2011-12	109	1725	637	36.93
2008-12	100+	2,537	892 [439 + 453]	35.16

Source: Author's compilation from RBI and CMIE-Prowess

Direction, amount (USD million) & % of total

Country	2008-09	%	2009-10	%	2010-11	%	2011-12	%
Mauritius	2651.20	15.46	2351.82	13.07	13106.86	29.84	7421.07	24.05
Singapore	4137.20	24.13	6787.42	37.73	11856.27	26.99	5945.78	19.27
Australia	147.22	0.86	36.76	0.20	234.25	0.53	2415.29	7.83
Netherlands	676.97	3.95	2099.04	11.67	8260.97	18.81	2258.08	7.32
Panama	29.45	0.17	41.90	0.23	220.56	0.50	1889.89	6.12
UK	793.46	4.63	407.24	2.26	705.05	1.60	1832.54	5.94
USA	1432.90	8.36	1375.04	7.64	2168.55	4.94	1644.21	5.33
British Virgin Island	512.67	2.99	502.50	2.79	855.84	1.95	1582.73	5.13
UAE	908.90	5.30	1366.43	7.60	1922.91	4.38	1134.92	3.68
Switzerland	410.84	2.40	107.02	0.94	400.27	0.91	969.08	3.14
Cyprus	2278.21	13.29	589.60	3.27	513.37	1.17	638.63	2.07
Others	3168.42	18.48	2259.48	12.56	3684.28	8.39	3130.68	10.14
Total	17,147.42	100	17,987.25	100	43,929.18	100	30,862.91	100

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Distribution of India's Outward FDI (% of total)

Major Activity	2008-09	2009-10	2010-11	2011-12
Primary	3.45	4.83	5.90	8.97
Manufacturing	52.77	40.31	33.54	31.50
Financial / Business	22.79	16.09	16.09	19.71
Non Financial Services	15.81	28.37	40.47	27.38
Construction	2.39	5.27	1.93	10.89
Utility	0.73	4.53	0.39	1.03
Miscellaneous	2.06	0.62	1.67	0.52

Source: Author's Compilation from RBI

Table 1: Probit model for predicting the probability of becoming MNE (2004-05, k=4)

Explanatory variables	Dependent variable MNE Dummy
Log of Number of Employees $t-k$	0.284*** (0.090)
TFP $t-k$	-0.049 (0.196)
Export/Sales $t-k$	0.014** (0.006)
R&D / Sales $t-k$	0.177* (0.106)
PAT / Total Income $t-k$	0.054*** (0.017)
Age of the Firm $t-k$	-0.009 (0.006)
Constant	-8.868*** (1.065)
Industry Dummies	Yes
No of Observations	243
Pseudo R-Squared	0.23

***significant at 1%, **significant at 5%, *significant at 10%

Standard errors in parentheses

Table 2: Test of equality of means for treatment and control (2004-05, k=4)

Variable	Treated group	Control group	Difference (treated – control)	Test of Equality of Means (t-stat)	Number of observations
Export / Sales (%)	23.43	17.39	6.04	1.56	67 + 67 =134
TFP	0.12	0.24	-0.12	-1.32	67 + 67 =134
R&D % of Sales	1.20	0.73	0.47	1.68	67 + 67 =134
No of employees	5063	6543	-1480	-0.62	67 + 67 =134
Sales (Rs. Million)	51213.56	28568.14	39890.85	0.81	67 + 67 =134
Import of raw (Rs. Million)	15088.28	3780.59	9717.13	1.12	63 + 57 =120
Import of capital good (Rs. Million)	455.72	170.96	323.16	1.65	62 + 54 =116
GFA (change over previous year)	1642.12	721.12	1185.08	1.31	67 + 66 =133

Difference between treatment and control group not significant at 5%

Table 3: Impact on export intensity

	2008-09	2009-10	2010-11	2011-12
ATT	11.893*** (2.89)	10.069** (2.44)	9.390** (2.19)	10.067** (2.22)
Constant	16.248*** (5.50)	16.228*** (5.52)	17.887*** (5.82)	18.509*** (5.66)
No of observations	130	130	125	123

t-stat in parenthesis.

***significant at 1%, **significant at 5%, *significant at 10%

Table 4: Impact on R&D intensity

	2008-09	2009-10	2010-11	2011-12
ATT	0.485* (1.71)	0.361 (1.57)	0.378* (1.69)	0.308*** (3.07)
Constant	0.323 (1.58)	0.210 (1.25)	0.214 (1.26)	0.148* 1.96
No of observations	94	92	92	93

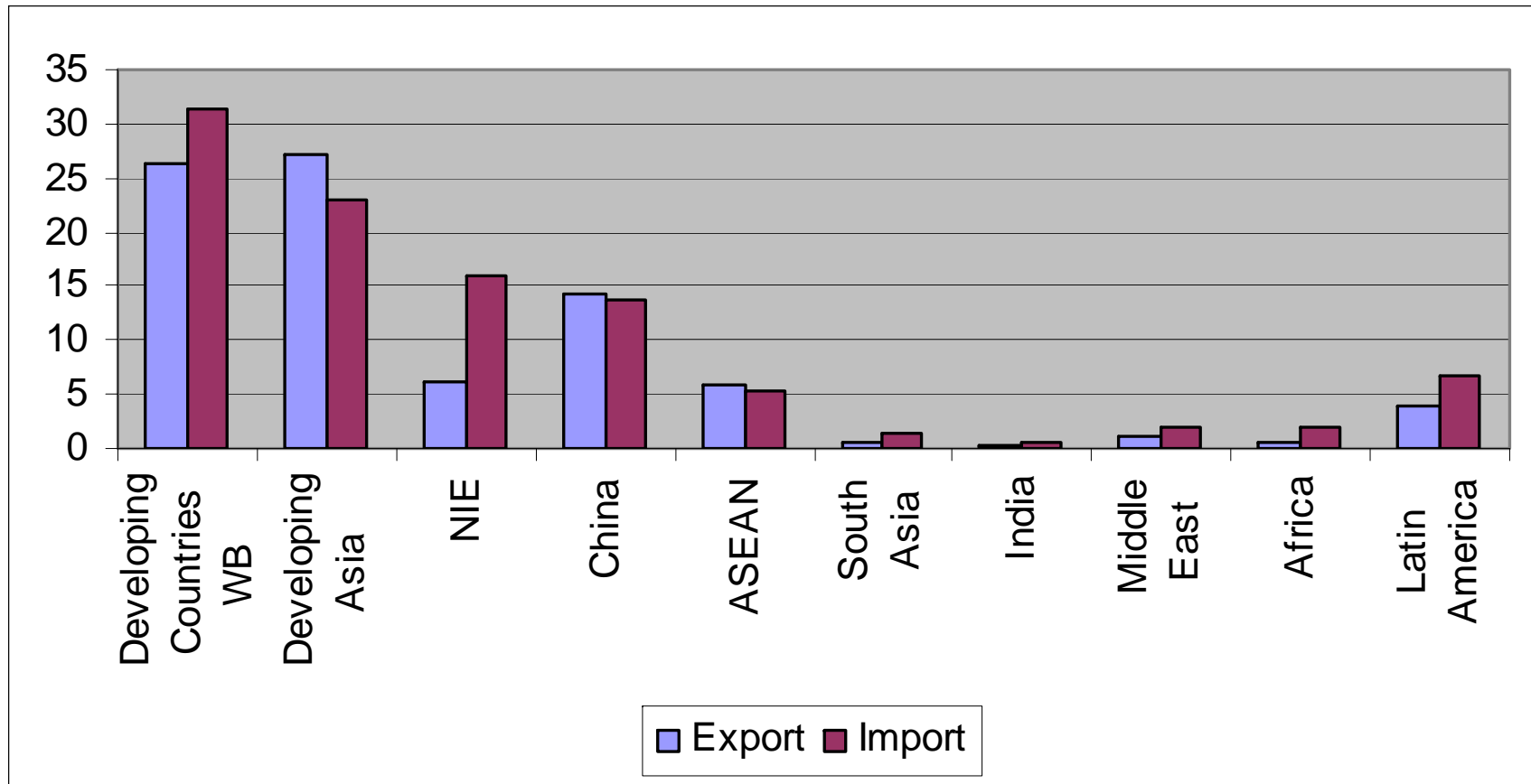
t-stat in parenthesis.

***significant at 1%, **significant at 5%, *significant at 10%

Impact on Domestic Activities

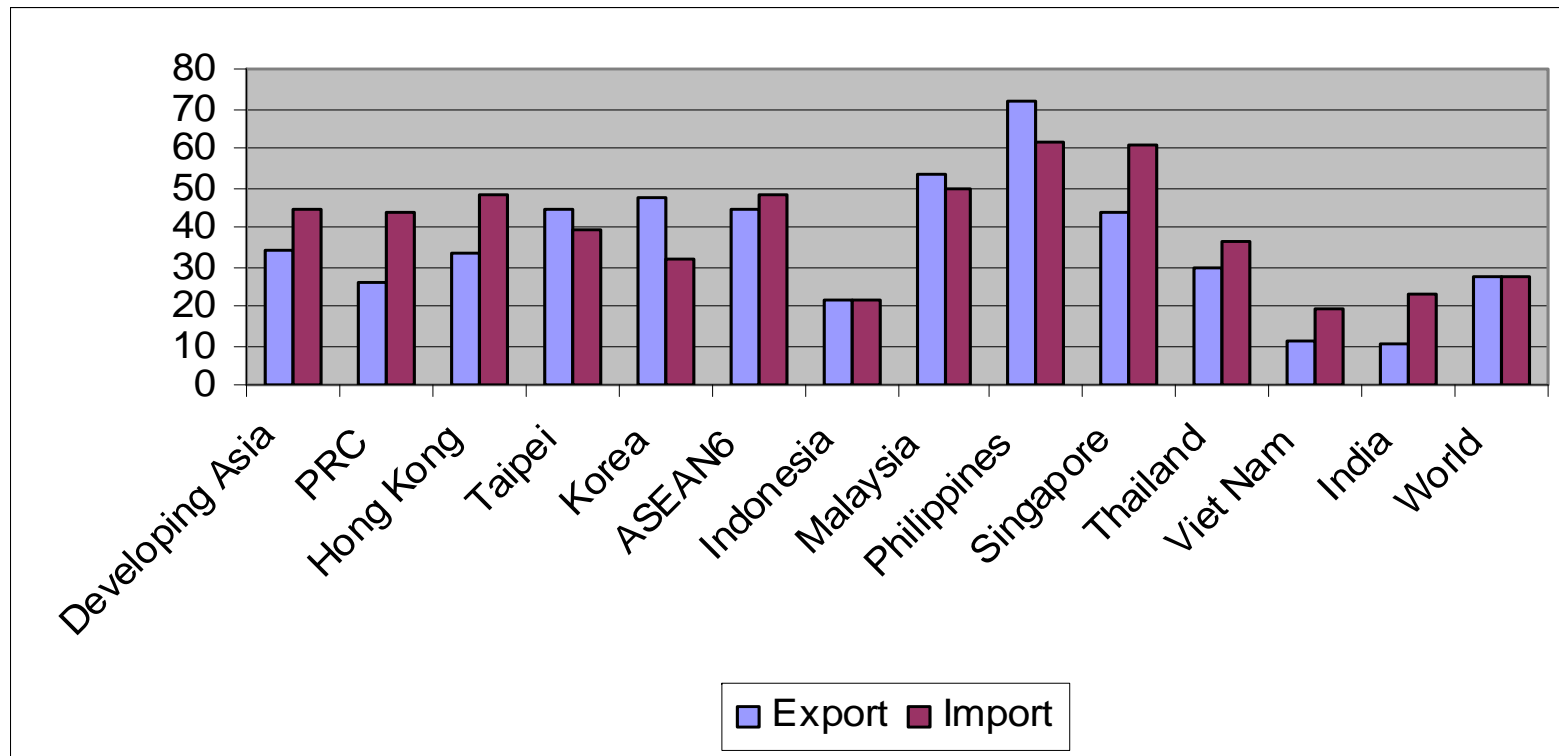
	2008-09	2009-10	2010-11	2011-12
Export intensity	+ve***	+ve**	+ve**	+ve**
R&D intensity	+ve*	+ve	+ve*	+ve***
Investment (domestic)	<i>insig</i>	<i>insig</i>	<i>insig</i>	<i>insig</i>
Employment	<i>insig</i>	<i>insig</i>	<i>insig</i>	<i>insig</i>
Output	<i>insig</i>	<i>insig</i>	<i>insig</i>	<i>insig</i>
Import of raw material	<i>insig</i>	<i>insig</i>	<i>insig</i>	<i>insig</i>
Import of capital goods	<i>insig</i>	<i>insig</i>	<i>insig</i>	<i>insig</i>

Developing Countries in World P and C Trade (% Share in 2009-2010)



Source: Compiled from Athukorala and Nasir (2012, Table I, p. 178)

Share of Parts and Components in Manufacturing Trade in 2006-07 (percentage)



Source: Compiled from Athukorala (2011, Table 9, p. 17)

Direction of India's Outward FDI, 2008-09 to 2011-12 (US\$ million)

ASEAN + China	2008-09	% of total	2009-10	% of total	2010-11	% of total	2011-12	% of total
Singapore	4137.20	24.13	6787.42	37.73	11856.27	26.99	5945.78	19.27
Malaysia	8.83	0.05	7.12	0.04	75.05	0.17	400.64	1.30
Indonesia	62.47	0.36	266.01	1.48	29.49	0.07	113.28	0.37
Thailand	121.53	0.71	59.59	0.33	9.63	0.02	33.32	0.11
Philippines	12.51	0.07	31.52	0.18	34.45	0.08	56.06	0.18
Vietnam	50.05	0.29	2.70	0.02	76.11	0.17	3.14	0.01
Laos	2.03	0.01	2	0.01	2	0.00	2.06	0.01
Myanmar	48.75	0.28	1.65	0.01	45.25	0.10	9.72	0.03
Brunei	-	-	-	-	-	-	0.90	0.00
Cambodia	-	-	-	-	-	-	0.44	0.00
China	52.50	0.31	30.58	0.17	40.42	0.09	52.46	0.17

Source: Author's compilation RBI

Manufacturing OFDI in ASEAN & China

- **Singapore:** Tata Motors Ltd., I F B Automotive Pvt. Ltd., T V S Motor Co. Ltd., Bajaj Hindustan Ltd., Patel Engineering Ltd., Tega Industries Ltd., Jindal Drilling & Inds. Ltd., Pidilite Industries Ltd.
- **Thailand:** Tata Motors Ltd., Adani Welspun Exploration Ltd., Glenmark Pharmaceuticals Ltd.
- **Indonesia:** Tata Motors Ltd., T V S Motor Co. Ltd., Elgi Equipments Ltd., VVF Ltd.
- **Malaysia:** Biocon Ltd., Metal Power Co. Ltd., Glenmark Pharmaceuticals Ltd., Godrej & Boyce Mfg. Co. Ltd.
- **Philippines:** Glenmark Pharmaceuticals Ltd., Alkem Laboratories Ltd., Sabero Organics Gujarat Ltd.
- **Vietnam:** O N G C Videsh Ltd., Unison Metals Ltd., Marico Ltd.
- **Cambodia:** Grasim Industries Ltd.
- **Myanmar:** O N G C Videsh Ltd., Century Plyboards (India) Ltd.

- **China:** Havells India Ltd., Elgi Equipments Ltd., Tractors and Farm Equipment Ltd., Wipro Ltd., Harsha Engineers Ltd., Thermax Ltd., Tube Investments of India Ltd., C & S Electric Ltd.

Summary and conclusion

- Positive impact on Export and R&D intensity.
- No significant impact on investment, output, employment, import of raw material and import of capital goods. No significant negative impact.
- Greater flexibility enjoyed by Indian firms to mobilize financial resources from global financial markets e.g. external commercial borrowing.
- Weaker involvement of Indian firms in the international production network and value chain.
- Indian firms could derive multiple benefits of internationalization by enhancing participation in international production network and global value chain.

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