Impact of Trade Liberalization on Foreign Direct Investment in Indian Industries

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The relationship between FDI and trade has become far more complex in the current WTO regime than theoretically envisaged.

Focus of policy makers-now shifted from whether FDI causes trade to whether trade can boost FDI inflows.

What kind of trade can boost FDI inflows?
Analytical reasons: Different kinds of trade have differential impact

- Trade can lead to international vertical integration in FDI which reduces costs of production and increases economies of scale.
- Intra-industry trade are of two type-vertical (quality differential) and horizontal (attributes differ).
- Vertical ITT may encourage FDI as it assures them of ownership advantages and a market.
- Horizontal IIT may discourage FDI as the product is not produced locally so trade substitutes FDI.
- Net effect is an empirical question.
Existing Literature

- FDI follows exports (Grosse and Trevino, 1996, Eaton and Tamura, 1994).
- Empirically-3 categories of studies:
  a. Determinants of FDI and trade are similar (Ekholm, 2002).
  b. FDI, exports and imports are determined simultaneously-endogenous variables (Hejazi and Safarian, 2003).
  c. Impact of regional trade agreements on FDI flows (Binh and Haughton, 2002; Worth, 2002; Banga 2004).
Contribution to Literature on FDI

- Empirical study for India on differential impact of different kinds of trade on FDI inflows.
  - Impact of vertical trade (cross-border trade) on FDI inflows.
  - Impact of intra-industry trade on FDI-Grubel-Lloyd index of IIT is constructed.
  - The analysis is undertaken at the industry-level, firm-level data and state level.
Some observations on FDI and Trade in India

- The Net rate of protection fell from 90.8 % for the aggregate manufacturing sector in the year 1980-81 to 35 % in the year 1997-98, while Effective rate of protection fell from 99.5 to 41% during the same period.

- Simple average of applied tariffs on all products declined from 78.7 % in 1990 to 28.1 % in 2003 to 14% in 2006

- the coverage of non-tariff barriers (NTB) has also been reduced in the post-reforms period
India's Applied Tariffs (Simple and Weighted Averages): 1990 - 2003
Figure 2: Trade and FDI as a Percentage of GDP in India
Hypotheses regarding the effect of trade reforms on FDI inflows

- **Hypothesis 1**: Increase in trade flows associated with cross border trade in the post-reform period led to higher inflow of FDI.

- **Hypothesis 2**: Vertical intra-industry trade will attract FDI whereas horizontal intra-industry trade may not attract FDI. The net effect will depend on the balance between the two opposing forces.
Econometric Analysis

- Industry-level analysis uses panel data for 78 industries at three-digit level for the post reforms period.
- Inter-firm cross-sectional analysis uses data for 2,500 firms for the latest year available (2005).
Data Sources

- **Industry-level**: data-matching of Prowess with ASI
- World Bank’s-”Trade and Production Database CD-Rom”. ISIC classification matched into ASI.
- **Firm-level data and state-level** – *Capitaline and Input-Output tables.*
- Trade at state-level-*Capitaline* - export and import of plants of companies aggregated to states.
Equations estimated

- **Foreign share in industry** = \( f(\text{Material import intensity, intra-industry index (Grubel Lloyd index), Technology import intensity, capital goods import intensity, industry output, K/L, wage share, export intensity, R&D intensity}) \)

- **Foreign share in firms** = \( f(\text{Material import intensity, intra-industry index, Export intensity, firm size, ratio of net block to gross block, K/L, advertisement intensity, technology import intensity}) \)

- **FDI in State** = \( f(\text{TRADE, Net SDP}) \)
Results-Industry-level

- A closer examination of the data reveals that the share of foreign companies in industry output is lopsided.
- The sample average is 14%, but there are cases where the variable takes value above 90%.
- So analysis is done for all 78 industries and also for the subset removing cases with very high level of foreign share (above 45%) i.e., for 71 industries.-Better results.
Results at Industry Level

- Industries with higher material import intensity, i.e., cross border trade attract higher FDI, which indicates vertically integrated FDI.

- Industries with higher intra-industry trade of horizontal nature did not attract much FDI.

- Other industry-specific characteristics that attract FDI are larger size of the industry and lower R&D intensity in the industry.
Relationship with Policy

- Have trade policy changes led to higher imports in industries where FDI is attracted?

- Regression: Material import intensity as dependent variable and trade policies like tariff rates, quantitative restrictions, capital goods imports and control variables was run.
Do Trade Policies affect Material Import Intensity

- Results show that removal of quantitative restrictions did not affect the level of material import intensity in industries.
- Lower tariff rates had a significant increase in import intensity.
- Policies with respect to import of technology did not have any significant impact on the material import intensity.
- Higher export intensity in the industries led to higher material import intensity which again indicates vertical integration.
Firm-Level Results

- The results show that firms with higher import-availability ratio i.e., higher import competition have higher share of foreign equity.
- Higher the material import intensity in the firm higher is the foreign equity.
- Foreign equity is attracted to firms with higher export-intensity.
- Other firm specific characteristics: large size and relatively new capital assets (net block/gross block). Intra-industry trade index is not found to be significant.
## State-Level Results (2001-02 to 2005-06)

<table>
<thead>
<tr>
<th>State</th>
<th>FDI inflows</th>
<th>FDI approvals</th>
<th>Exports</th>
<th>Imports</th>
<th>Trade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Andhra Pradesh</td>
<td>4.92</td>
<td>6.02</td>
<td>4.03</td>
<td>3.12</td>
<td>3.49</td>
</tr>
<tr>
<td>Assam, Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Tripura</td>
<td>0.07</td>
<td>0.01</td>
<td>0.36</td>
<td>3.37</td>
<td>2.13</td>
</tr>
<tr>
<td>Bihar &amp; Jharkhand</td>
<td>0.00</td>
<td>0.01</td>
<td>1.11</td>
<td>2.69</td>
<td>2.04</td>
</tr>
<tr>
<td>Gujarat</td>
<td>5.13</td>
<td>11.16</td>
<td>17.11</td>
<td>27.24</td>
<td>23.07</td>
</tr>
<tr>
<td>Karnataka</td>
<td>11.14</td>
<td>13.80</td>
<td>13.43</td>
<td>11.24</td>
<td>12.14</td>
</tr>
<tr>
<td>Kerala, Lakshadweep</td>
<td>0.48</td>
<td>1.28</td>
<td>1.14</td>
<td>3.41</td>
<td>2.47</td>
</tr>
<tr>
<td>Madhya Pradesh</td>
<td>0.30</td>
<td>0.34</td>
<td>2.18</td>
<td>1.60</td>
<td>1.84</td>
</tr>
<tr>
<td>Maharashtra</td>
<td>29.34</td>
<td>30.14</td>
<td>20.56</td>
<td>18.68</td>
<td>19.45</td>
</tr>
<tr>
<td>Orissa</td>
<td>0.57</td>
<td>0.03</td>
<td>1.84</td>
<td>1.16</td>
<td>1.44</td>
</tr>
<tr>
<td>Rajasthan</td>
<td>0.03</td>
<td>1.11</td>
<td>1.90</td>
<td>1.03</td>
<td>1.39</td>
</tr>
<tr>
<td>Tamil Nadu, Pondicherry</td>
<td>8.63</td>
<td>9.71</td>
<td>5.24</td>
<td>9.24</td>
<td>7.59</td>
</tr>
<tr>
<td>Uttar Pradesh, Uttarakhand</td>
<td>0.00</td>
<td>2.29</td>
<td>3.88</td>
<td>6.51</td>
<td>5.43</td>
</tr>
<tr>
<td>West Bengal, Sikkim, Andaman &amp; Nicobar Islands</td>
<td>2.20</td>
<td>3.23</td>
<td>7.66</td>
<td>1.57</td>
<td>4.08</td>
</tr>
<tr>
<td>Punjab, Haryana, Himachal Pradesh,</td>
<td>2.37</td>
<td>7.94</td>
<td>4.04</td>
<td>4.76</td>
<td>4.46</td>
</tr>
<tr>
<td><strong>Delhi, Part of Uttar Pradesh &amp; Hariana</strong>*</td>
<td><strong>34.01</strong></td>
<td><strong>11.74</strong></td>
<td><strong>14.53</strong></td>
<td><strong>3.35</strong></td>
<td><strong>7.95</strong></td>
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<tr>
<td>Goa</td>
<td>0.81</td>
<td>1.19</td>
<td>1.00</td>
<td>1.03</td>
<td>1.02</td>
</tr>
</tbody>
</table>
Correlation coefficient = 0.9

\[ \text{FDI}_a = \text{constant} + 0.051 \text{ TRADE}^{***} + 0.013 \text{ NSDP}^* \]

\( (3.85) \quad (1.64) \)

R2 = 0.72
Conclusions

- Trade liberalization has had a favourable effect on FDI inflows in Indian manufacturing industries. Lower tariffs and consequently higher cross border trade has attracted higher FDI into industries.

- Foreign equity is attracted into dynamic firms which have higher imports and exports and relatively new assets.

- Regions having greater involvement in international trade are able to attract greater amount of FDI.
Conclusions

- It was argued in the paper that the liberalization has led to a substantial increase in intra-industry trade, but much of the intra-industry being horizontal in nature, it did not have a significant effect on FDI.

- On the other hand, the trade associated with cross-border vertical integration had a favourable effect on FDI.
Thank you