Pivoting Manufacturing Policy Differently

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Manufacturing Future

• Indian manufacturing traverses the whole continuum of capabilities - wholly modern to wholly backward

• Where manufacturing is going:
  – Aesprionics  - SKL Medtech  - Chapparel Steel
  – Bolt  - LMMS of World Vision  - PBW

• Some recent markers of Indian manufacturing
  – Low on “Short Cycle Technologies” (Lee, 2013)
  – Nokia & Foxconn Debacle
  – New Manufacturing Initiatives: defence (investments & offsets), talent, tech capabilities
• Distance from global supply chains & production standards is high
• Weak ties between firms
• Gains in Productivity largely driven by equipment rather than innovation in products, processes or practices
• Enabling Institutions missing: where are the following?
  – Office of Tech Diffusion (??)
  – Office of Commercialization of Technology (DSIR/DBT?)
  – Office of Manufacturing Data & Productivity (NSC?)
  – Office of Advanced Engineering & Research (CSIR?)
• Where is manufacturing education?
• Incomplete Manufacturing Ecosystem
Research on Replacement of Hardware by Software

- Toolings
- Transshipment logistics
- Distribution channels
- Process tech
- Assembly of process tech
- Component production
- Component prototyping
- Component design
- Process R&D
- Product R&D
- Assembly
Can policy nudge Indian manufacturing to develop deep tech capabilities?
Three Strategy Debates in Indian Manufacturing: why do we do what we do and how we do it?

• Mass production (large volume) vis-à-vis high variety production
  – Roles of small, medium & large

• Labour driven vis-a-vis capital intensive manufacturing
  – Debate is actually on low versus high valued add

• Low-tech versus vis-a-vis hi-tech manufacturing
  – Product replacement & new offerings will ensure that either we decide to become a producer of new/advanced technology or remain just a consumer of products (perhaps new to India)
Table 2: Comparative Picture of Global Manufacturing Peers, 2011 (in per cent)

<table>
<thead>
<tr>
<th>Country</th>
<th>Share of Manufacturing in GDP</th>
<th>Share of MHT in Total Manufacturing</th>
<th>MHT exports as total exports</th>
<th>Share of total exports in world exports</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>34.1</td>
<td>40.7</td>
<td>59.9</td>
<td>14.6</td>
</tr>
<tr>
<td>S. Korea</td>
<td>27.7</td>
<td>53.4</td>
<td>71.8</td>
<td>4.3</td>
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<tr>
<td>Thailand</td>
<td>36.6</td>
<td>46.1</td>
<td>58.0</td>
<td>1.5</td>
</tr>
<tr>
<td>Japan</td>
<td>20.5</td>
<td>53.7</td>
<td>79.0</td>
<td>6.0</td>
</tr>
<tr>
<td>Germany</td>
<td>19.2</td>
<td>56.7</td>
<td>72.0</td>
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<tr>
<td>India</td>
<td>14.9</td>
<td>32.2</td>
<td>27.0</td>
<td>2.0</td>
</tr>
</tbody>
</table>

Source: Economic Survey, 2013-14; page 172
Fulcrum of new Indian manufacturing policy

1. Science & Technology Driven Entrepreneurship

   – Three ideas need to fuse:
     • mashups
       (manufacturing is about Science, Skills & Safety),

     • new kinds of incubators & translators for manufacturing, and

     • new types of clusters: competitive network of collaborative firms
       (come with their ecosystem)
2. Innovation Across the Supply Chain: unbundle & focus

- Manufacturing supply chain assets consist of
  - the Product (comprising Product Design, R&D and Patents)
  - Technology (comprising Process Engineering and Patents),
  - People (comprising Skills including Problem Solving abilities, conflict resolution, and industrial relations),
  - Factory (comprising Layout, Process flow, materials coordination, conversion & productivity)
  - Supply (raw material, intermediates, technology, equipment & practices) and
  - Distribution & Marketing

- Re-look at the product mix, build process flexibility (can become the “Manufacturing Laboratory to the World”), structure roles of small & large: product producing firms vs. processing firms
3. Cross-Over Productivity
   • IT and building dynamic capabilities
   • Coordination is better in Clusters
   • Incentives linked to productivity gains
   • Advanced manufacturing skills

4. New Generation Enabling Institutions
Thank You