Foreign R&D centers in China: development, drivers, spillovers

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Foreign R&D in China: A home country perspective

- Between 1995-2005, R&D expenditure by Swedish firms in developing countries increased by 25 % p.a. compared with less than 11 % in developed countries.
- China accounts for a large part of this trend
- So far no evidence of growing R&D activities in China (or other developing countries) directly leading to reduced R&D activities and employment in Sweden
R&D intensity (R&D man-years / tot. empl.) in large Swedish companies

Source: Swedish Institute for Growth Policy Studies (ITPS), 2007
Foreign corporate R&D in China

- **The pioneers:**
  - Motorola (1993)
  - Ericsson (1997)
  - Microsoft (1998)
  - Nokia (1998), etc.

- **The new movers:**
  - GM – to design its New Buick LaCrosse in Shanghai
  - Coca Cola – developed a new beverage for the Asian Market in China
  - GlaxoSmithKline (GSK) – to build large neurological research facility
  - Vodafone(?), etc. – to establish R&D despite currently no significant sales or productions in China
R&D centers of foreign multinationals (Xue et.al.)

- US has largest number of R&D organisations in China (ca. 50%), followed by Japan and Europe
- Korea & Japan have highest R&D intensity (in terms of proportion R&D centers to production centers in China)
- More than half of autonomous R&D centers in software, telecommunications, semiconductors
- Vast majority of autonomous R&D centers located in either Beijing or Shanghai; Human capital and research key factor in Beijing, whereas Chinese market and development key factor in Shanghai
From product ‘localization’ to ’global’ or ’innovative’ R&D

- product ‘localization’ (i.e. adaptation to the local market) still dominates R&D activities by foreign firms in China but significant number are also locating ’global’ or ’innovative’ R&D in China

- between 30 and 40 companies have set up around 60-70 global R&D centers in China in 2006

- primarily IT, telecom, appliances, but lately also chemicals, pharmaceuticals, software, global design centers

- strong concentration in Beijing and Shanghai
Global R&D centers in China

Schwaag Serger (2007) forthcoming
Foreign corporate R&D in China: Motivations and barriers

<table>
<thead>
<tr>
<th>Motivations</th>
<th>Barriers/challenges</th>
</tr>
</thead>
<tbody>
<tr>
<td>Requirements and incentives from the Chinese government (‘technology-for-market’)</td>
<td>Personnel turnover</td>
</tr>
<tr>
<td>Market</td>
<td>Shortage of people with appropriate skills</td>
</tr>
<tr>
<td>Proximity to production</td>
<td>Large up-front investments</td>
</tr>
<tr>
<td>Rapidly increasing knowledge resources and attractive human capital</td>
<td>Changing policy environment?</td>
</tr>
</tbody>
</table>
Foreign R&D in China’s innovation system

- Significant share of China’s R&D: 20-25 % of total R&D?
- Pro-competitive effects
- Attracts overseas Chinese to China?

Knowledge spillovers may be limited because of
  - limited mobility (foreign firms ‘crowding out’ domestic firms on market for highly skilled labor?)
  - limited receptive capacity among domestic firms, institutes, universities, customers (lack of human capital)
  - IPR, social capital, trust
Summary

• Foreign R&D recent but rapidly increasing phenomenon
• Foreign firms are carrying out strategic and innovative research in China
• Multinationals important drivers of globalization of R&D and innovation in China
• Foreign R&D important component in China’s innovation system but benefits not yet fully utilized
• Linkages and spillovers occur but
  – It might take time for the effects to materialize
  – They could be stronger
Positive effects from foreign R&D will increase…

• …over time (strategic R&D very recent)
• …as China’s innovation system matures

BUT:

 Positive effects are not automatic: Some policy responses necessary to ensure favorable environment for spillovers
  • Increase domestic firms’ absorptive capacity
  • Improve education system
  • Strengthen IPR, social capital, trust
  • Remove employment bias against private domestic firms?
• Future foreign R&D investments rely on continued favorable environment
Thank you!

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