

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

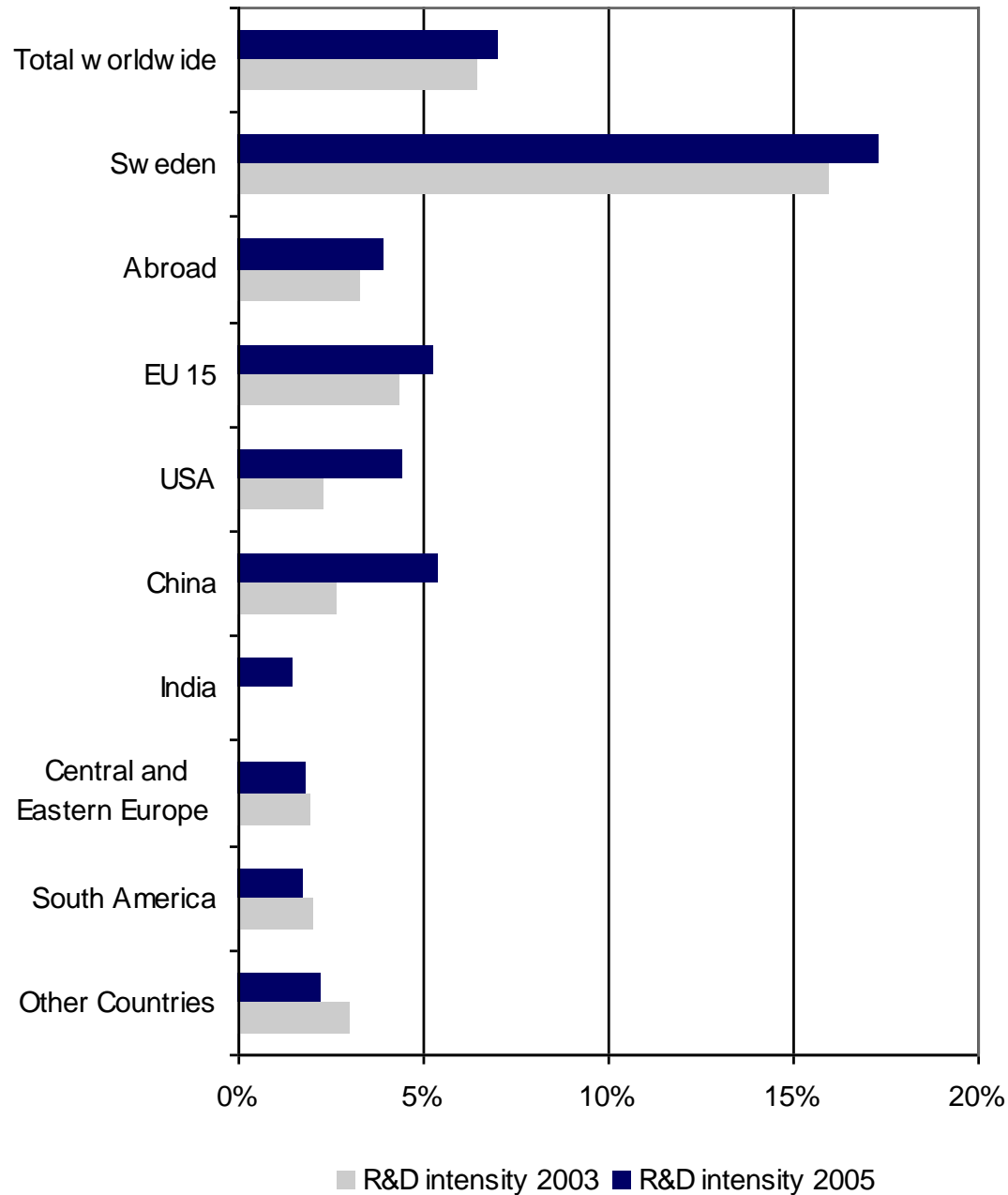
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Foreign R&D in China: *A home country perspective*

- 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.)

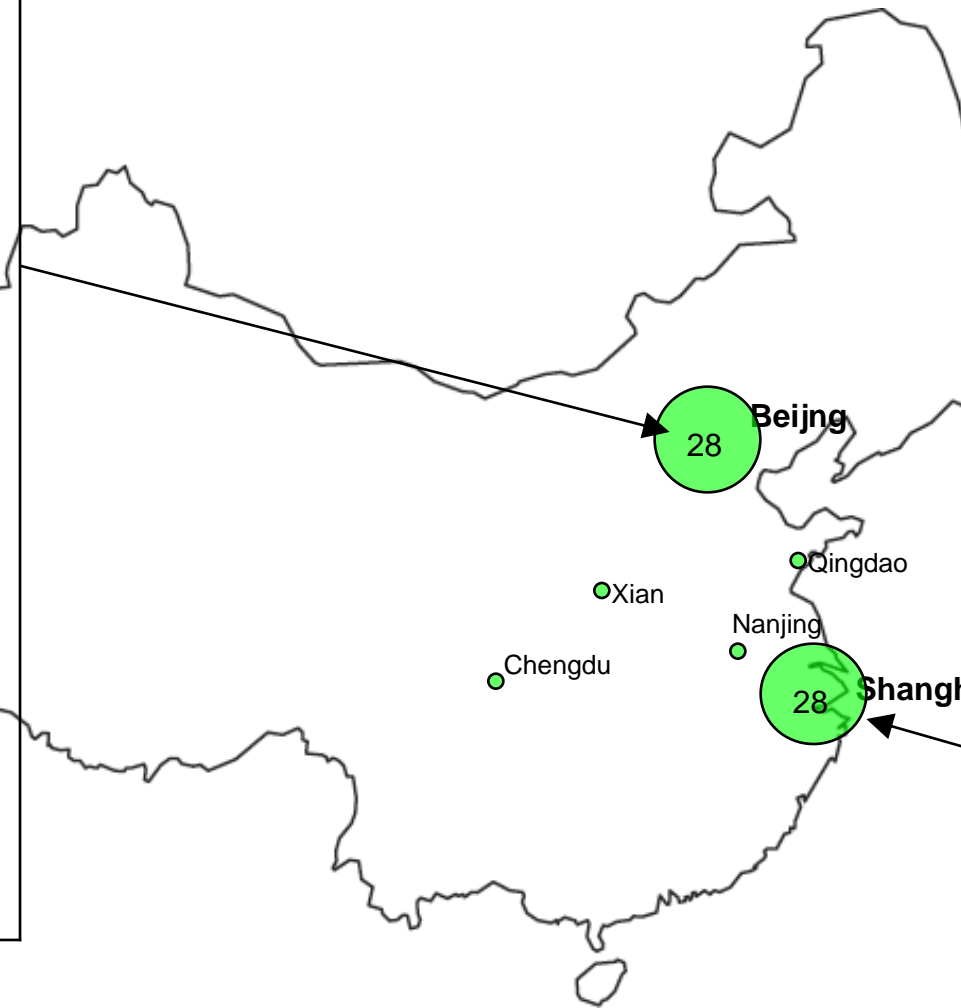
- 107 autonomous (or stand-alone) R&D centers by foreign firms (2004)
- US has largest number of R&D organisations in China (ca. 50%), followed by Japan and Europe
- Korea & Japan have highest R&D intensity (in terms of proportion R&D centers to production centers in China)
- More than half of autonomous 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

- ABB
- Agilent Technologies
- Alcatel Lucent
- DoCoMo
- Ericsson
- France Telecom
- Fujitsu
- Google
- Hewlett Packard
- IBM
- Infineon
- Intel
- Matsushita/Panasonic
- Microsoft
- Motorola
- NEC
- Nokia
- Nortel
- NovoNordisk
- Novozymes
- P&G
- Ricoh
- Samsung
- Siemens
- SonyEricsson



- Alcatel Lucent
- AMD
- Astra Zeneca
- Ciba Spec. Chemicals
- Cisco Systems
- Coca Cola
- Dell
- Dupont
- Electrolux
- Eli Lilly
- Ericsson
- General Electric
- General Motors
- GSK
- Hewlett Packard
- Honeywell
- Intel
- Microsoft
- Motorola
- Omron
- Philips
- Ricoh
- Roche
- Rohm and Haas
- Samsung
- Siemens
- Sony
- Toray
- Unilever

Foreign corporate R&D in China: Motivations and barriers

<i>Motivations</i>	<i>Barriers/challenges</i>
Requirements and incentives from the Chinese government ('technology-for-market')	Personnel turnover
Market	Shortage of people with appropriate skills
Proximity to production	Large up-front investments
Rapidly increasing knowledge resources and attractive human capital	Changing policy environment?

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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