

Transnational Corporations and the Globalization of R&D

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UNCTAD

Going Global: the Challenges for Knowledge-Based Economies
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1

R&D activities reaching more countries

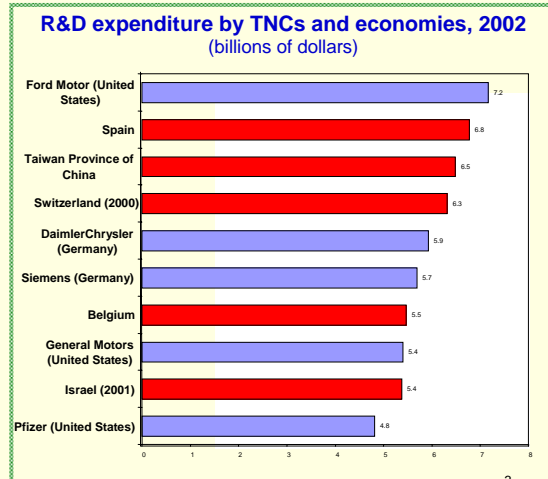
- ◆ Even the most strategic of corporate functions, (R&D), is now a target of companies' globalization efforts
- ◆ TNCs increasingly recognize that some developing countries offer attractive conditions for R&D
- ◆ The process is driven by the need to innovate more, keep costs down and to access new pools of talent
- ◆ Globalization of R&D offers new development opportunities

Source: World Investment Report 2005

2

TNCs are key players in global R&D

- ◆ TNCs account for at least:
 - ◆ 46% of total R&D expenditures in the world
 - ◆ 69% of business R&D expenditures in the world
- ◆ The R&D expenditure of some TNCs is higher than that of many countries



Source: World Investment Report 2005

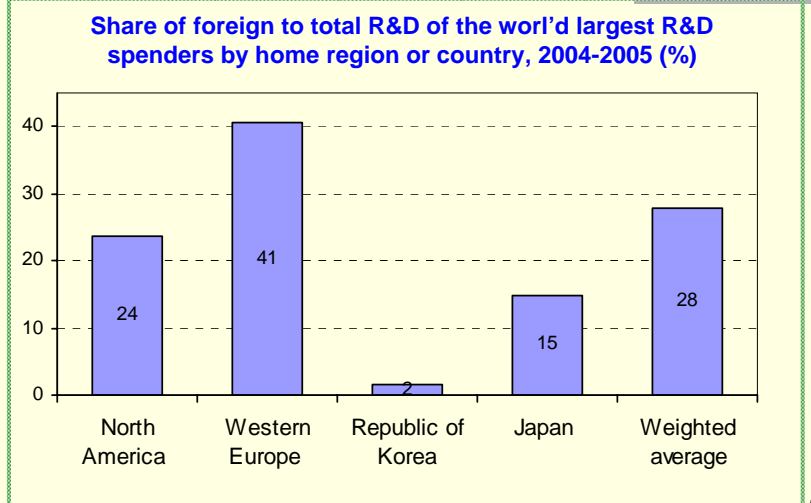
Scarce data show that TNCs do more R&D abroad

- ◆ R&D internationalization accelerated in the 1990s:
 - ◆ R&D by majority-owned foreign affiliates in total R&D by *United States TNCs*, rose from 11% to 13% between 1994 and 2002
 - ◆ For *Swedish TNCs*, the share of R&D conducted abroad rose from 22% to 43% between 1995 and 2003
 - ◆ *German* firms established more overseas R&D centres in the 1990s than in the preceding 50 years combined (Ambos 2005)
 - ◆ Cross-country survey: foreign to total R&D rose from 15% in 1999 to 22% in 2001 (Roberts 2001)
 - ◆ Other studies confirm trend (Edler et al 2002; von Zedtwitz and Gassmann 2002)

Source: World Investment Report 2005

4

European TNCs' R&D most internationalized



Source: World Investment Report 2005

Foreign affiliates more important in global business R&D

- ◆ Global R&D expenditure of foreign affiliates in host countries rose from \$29 bn (1993) to \$67 bn (2002)
- ◆ Their share in global business R&D jumped from 10% to 16%.
- ◆ In *developing countries*, their share increased from 2% to 18%.

*Greater role of developing economies
main new development*

Source: World Investment Report 2005

6

Developing countries assume growing role in the R&D networks of TNCs

- ◆ Among the developing world, *Asia* is the preferred destination:
 - ◆ The share of developing Asia in United States TNCs' overseas R&D rose from 3% in 1994 to 10% in 2002.
 - ◆ More than half of the world's top R&D spenders have R&D activities in China, India or Singapore.
 - ◆ More than 700 foreign-owned R&D centres in China.
 - ◆ More than 100 TNCs conduct R&D in India and in Singapore.
 - ◆ Developing Asia now accounts for 30% of global semiconductor design.

Source: World Investment Report 2005

7

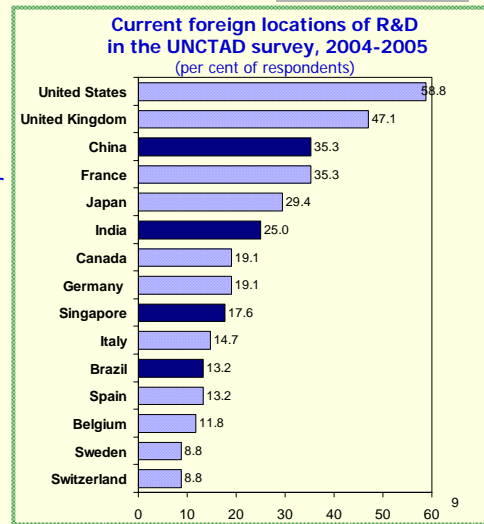
Not only adaptive R&D – some examples

- ◎ Intel India Design Centre in Bangalore – 800 people
- ◎ Motorola's 15 R&D centres in China – 1,300 R&D engineers
- ◎ GE's John F Welch Technology Centre in India houses more than 2,000 technical staff
- ◎ Eli-Lilly, Sanofi-Aventis, Novartis etc do clinical trials in India
- ◎ More than 100 TNCs have R&D centres in Singapore
- ◎ Increasingly complex chip-design is undertaken in developing Asia

8

Top 15 locations for R&D by the world's largest R&D spenders

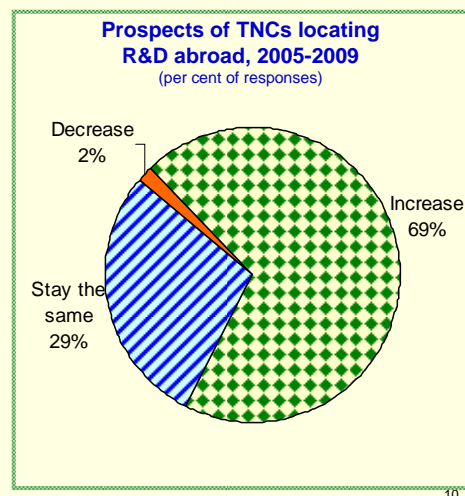
- ◆ Most R&D is performed in industrialized countries, but a number of developing ones now also host TNC R&D.



Source: World Investment Report 2005

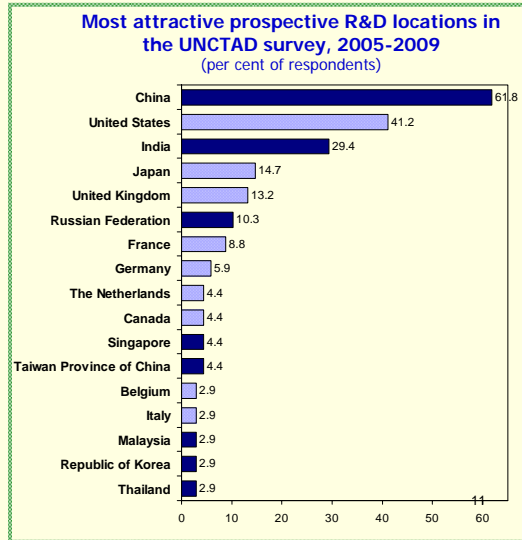
Further R&D internationalization expected

- ◆ Two-thirds of respondents in UNCTAD's survey say their foreign share of R&D will increase.
- ◆ 90% of Japanese firms plan R&D internationalization
- ◆ Findings confirmed in other studies (EIU, DIHK, METI)



Top target destinations for R&D expansion

- ◆ Further shift towards some developing countries, mainly in Asia, and in Russia is expected.
- ◆ Few respondents plan to expand R&D in Latin America or Africa.



Source: World Investment Report 2005

Why are TNCs expanding their R&D in some developing countries?

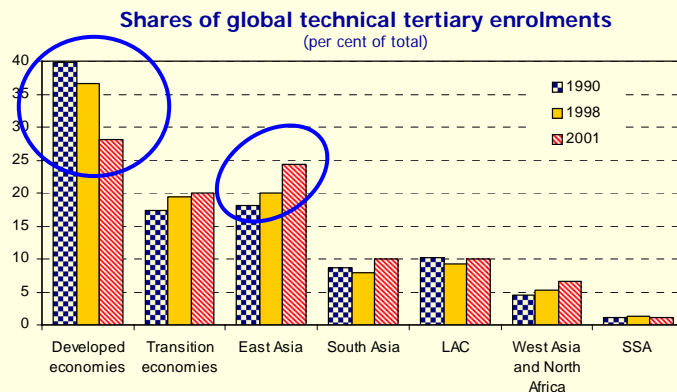
- ◆ *Push factors*
 - ◆ Competition forces companies to innovate more
 - ◆ Skill shortages and high costs in home country
- ◆ *Pull factors*
 - ◆ Growing markets and production bases
 - ◆ Widening pools of talent in emerging economies
 - ◆ **Lower costs** (e.g. annual cost of chip designer: \$300,000 in the United States; \$24-65,000 in developing Asia; cost of R&D related to drug discovery in India only 12.5% of the cost in a developed country)
- ◆ *Policy factors*
 - ◆ improved innovation systems in host countries
 - ◆ targeted incentives and stronger IP protection

Source: World Investment Report 2005

12

New sources of talent emerging

- ◆ In 2000/01, developing countries accounted for 62% of global tertiary enrolments overall, and for 52% in technical subjects.
- ◆ Fast growth in East Asia. Stable share in LAC.



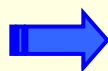
Source: World Investment Report 2005

13

Active and coherent policies needed to benefit from R&D internationalization

Several policy and institutional areas to be addressed:

- ◆ Creation of institutional framework to foster innovation
 - ◆ Human resources (education, skills immigration)
 - ◆ Public research (link to private sector R&D)
 - ◆ IPR protection
- ◆ Investment policies
 - ◆ IPAs, incentives, science parks
- ◆ Policies to boost domestic innovative capabilities
 - ◆ Industry-specific, SME and cluster policies



...as a coherent part of a development strategy!

14

Thank You !

The World Investment Report 2005
Transnational Corporations and the Internationalization of R&D

can be downloaded for free at

www.unctad.org/wir

15