



ORGANISATION FOR ECONOMIC
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THE DEVELOPMENT OF GLOBAL INNOVATION NETWORKS AND THE DIFFUSION OF KNOWLEDGE

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Outline

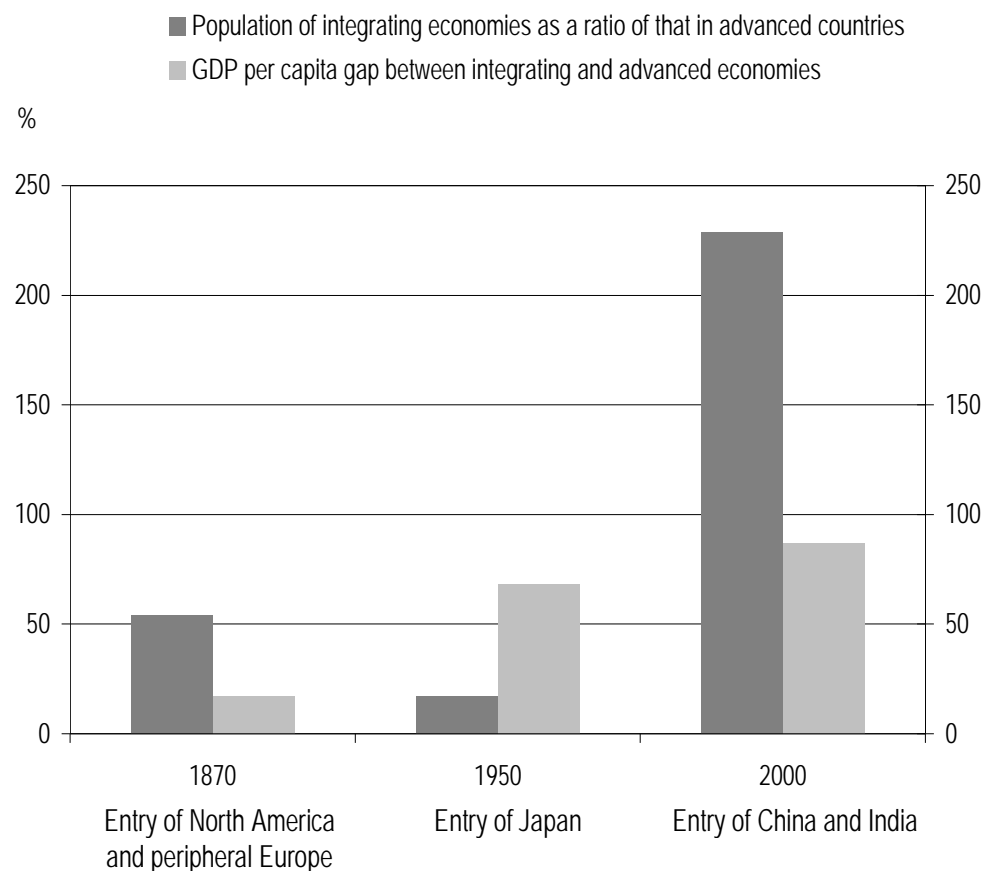
- Context
- Evidence and characteristics of the internationalisation of innovation, focusing on 2 key channels of knowledge transfer:
 - Foreign direct investment in R&D and the development of global innovation networks
 - The role of international mobility of the highly skilled
- Implications and policy issues.

Globalisation has new characteristics

1. The development of global value chains:

- Enabled by the spread of ICT and falling transport costs, production is increasingly fragmented across countries leading to more specialisation and complex production relationships.
- These global chains increasingly also involve R&D and innovation.

2. The integration of large emerging economies, notably China and India.



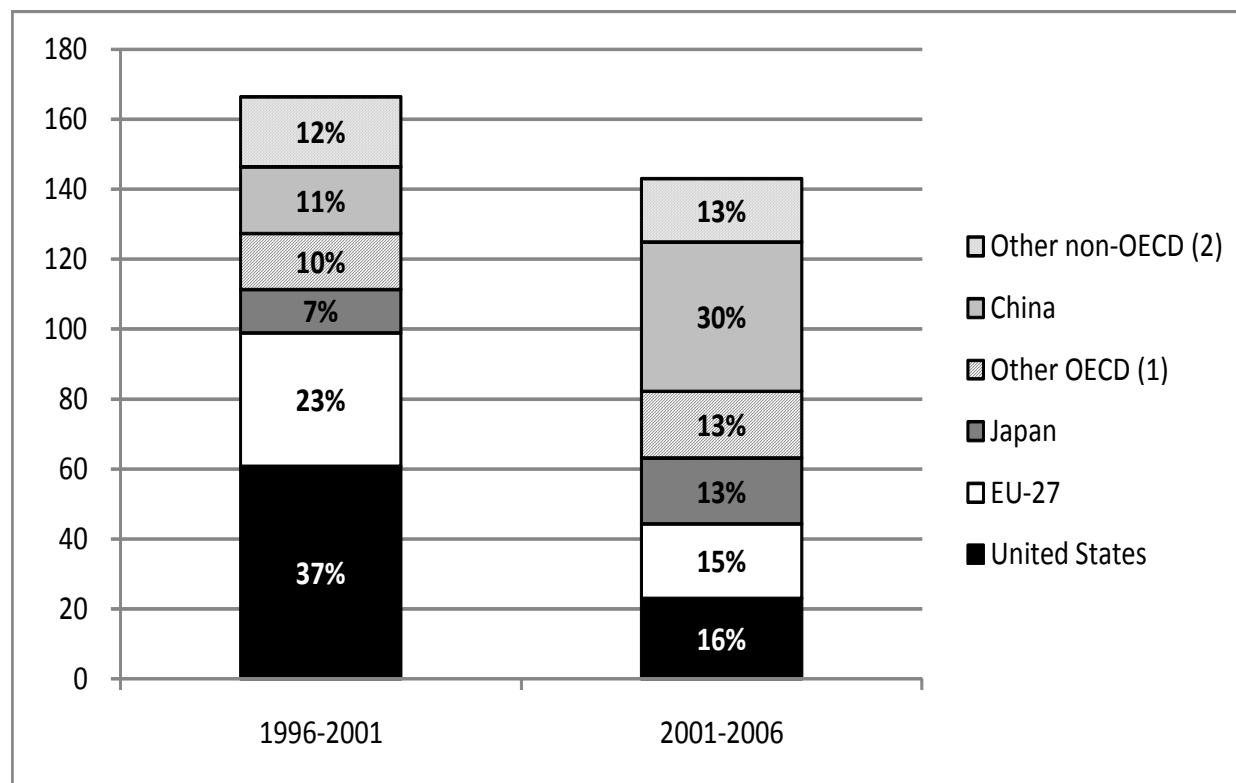


Non-OECD countries are of growing importance for global science and innovation

- China is now the third largest investor in R&D globally – with a target to reach an R&D intensity of 2.5% by 2020.
- Non-OECD economies accounted for over 40% in the growth of global R&D between 2001 and 2006, up from 23% between 1996 and 2001.
- Some firms have started to undertake R&D for the global market in China.
- Some other non-OECD regions are following.

Contributions to growth in global R&D, 1996-2001 and 2001-2006

(in billion constant USD PPP and %)



Note: (1) Australia, Canada, Iceland, Korea, Mexico, New Zealand, Norway and Turkey.

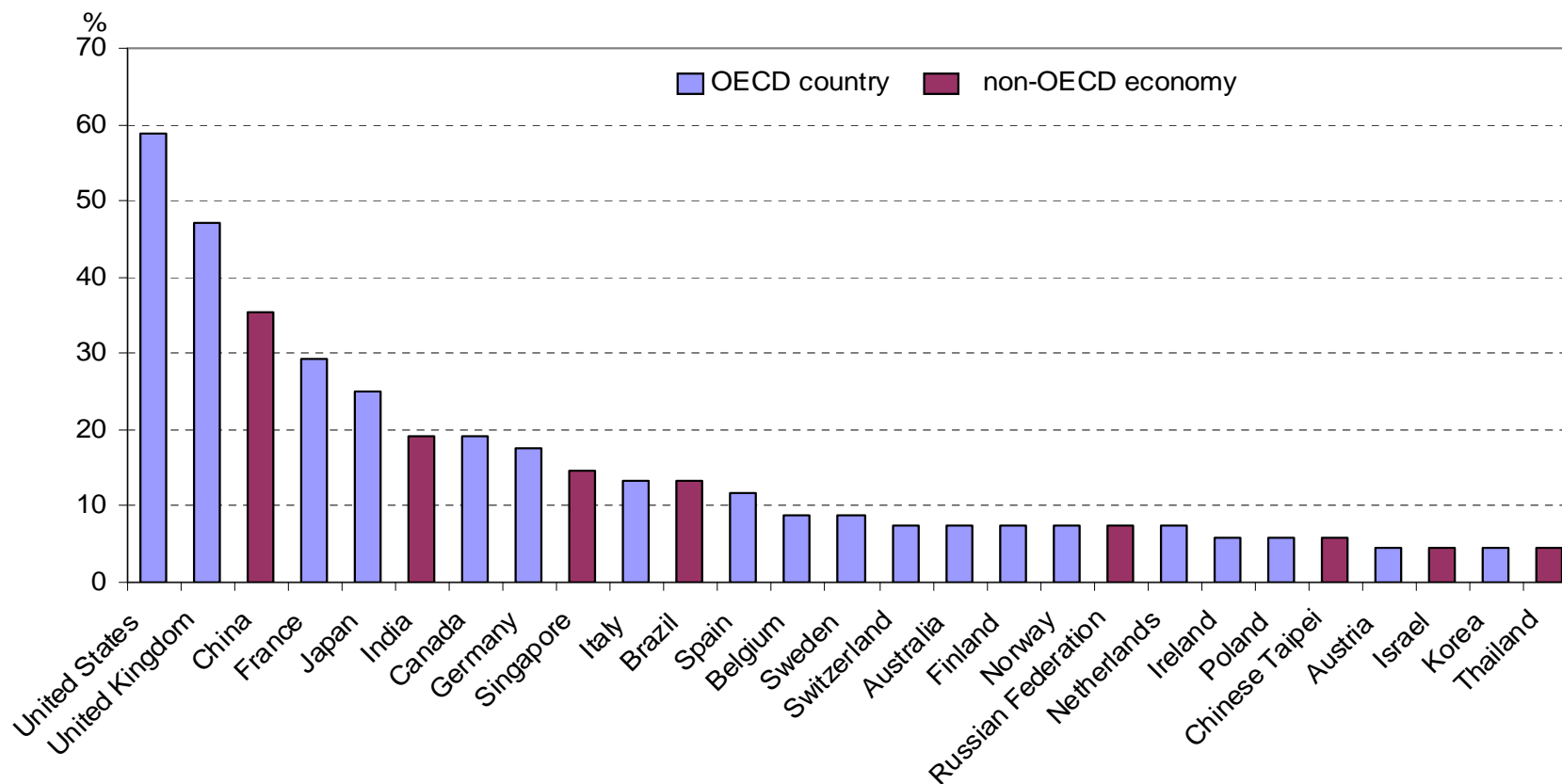
(2) Argentina, Brazil, India, Israel, Russian Federation, Singapore, South Africa, Chinese Taipei; latest years for India estimated.

Source: OECD, Main Science and Technology Indicators and national sources.



MNEs STILL PRIMARILY UNDERTAKE R&D INSIDE THE OECD AREA ..

(CURRENT R&D LOCATIONS, % OF RESPONSES)

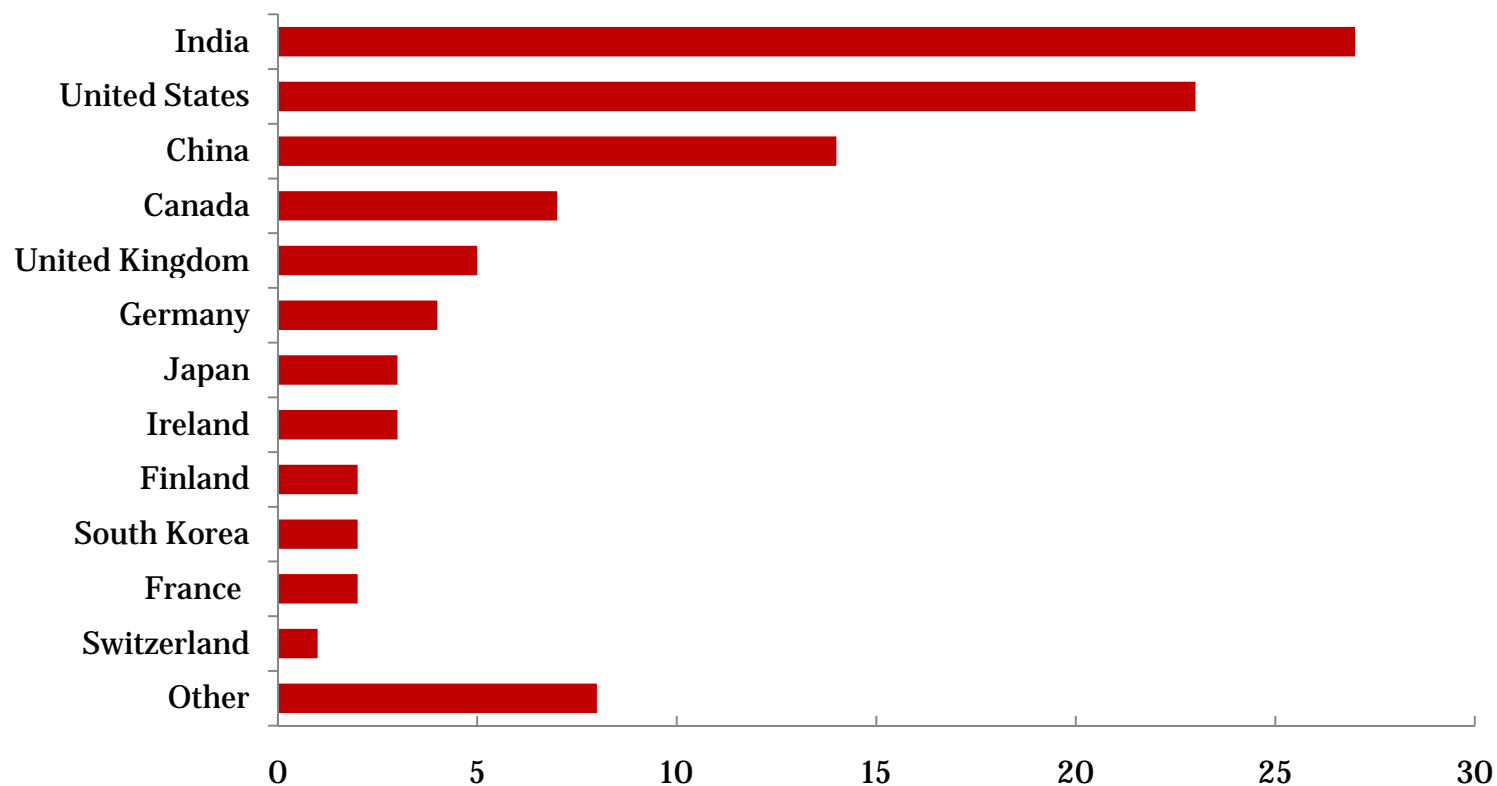


Source: UNCTAD



... BUT ARE EXTENDING TO NEW LOCATIONS OUTSIDE THE OECD ..

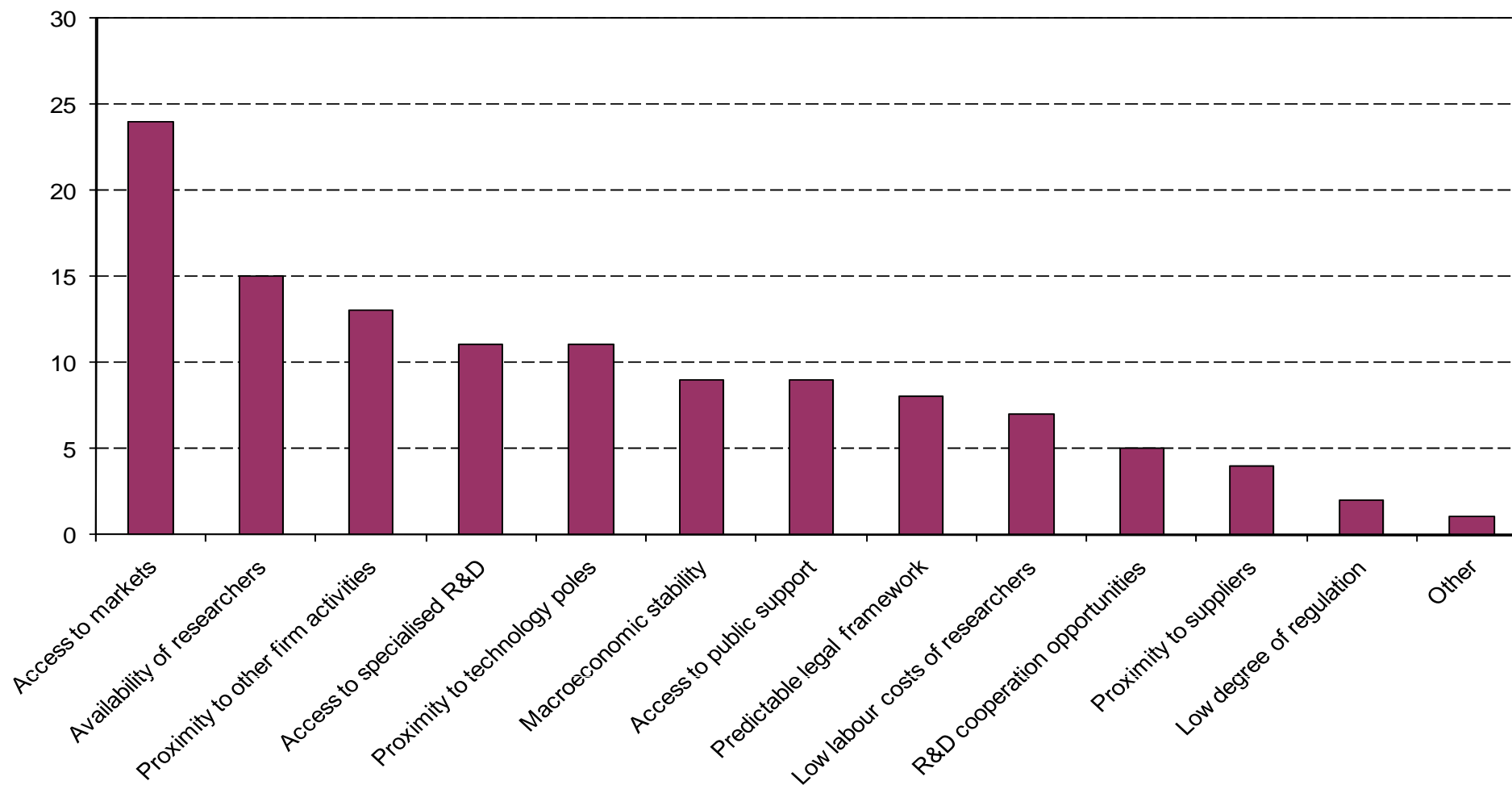
Which of the following countries would you choose as being the best overall overseas location for R&D (please do not select your own country)?
(% respondents)



Source: The Economist Intelligence Unit

.. to gain access to markets and talent

(number of firms citing a factor as critical)



Source: Case studies from OECD (2008), Open Innovation in Global Networks.



Some MNEs have also started to change their approach to innovation ...

Old model: Closed Innovation

- ❑ Approach: “We do it our way” & “not invented here”
- ❑ R&D:
 - Corporate culture and traditional operations influence targets
 - Performed in-house
 - Internal pool of innovators
- ❑ R&D Outputs:
Advances incorporated internally into firm’s products and services.
Product revenues finance next cycles of in-house R&D

New model: “Open” Innovation

- ❑ Approach: “Access the best” – “proudly found elsewhere”
- ❑ R&D:
 - Business strategy drives targets (*new incentives and funding models*)
 - Technology developed cooperatively or acquired
 - Work with many innovators (*including private and public sectors, and users*)
 - Leverage own IP
- ❑ R&D Outputs:
Internalized or externalized (*licensing, spin-offs, venturing*)



... IN RELYING MORE HEAVILY ON EXTERNAL SOURCES OF INNOVATION

- Major motivations:
 - Increasing the speed of innovation, especially by tapping into knowledge from research institutes, companies and adjacent markets
 - Increasing the number of ideas for new projects
 - Attracting and retaining talent
 - Increasing external funding of ideas and technology development



MNEs also engage in new practices

- Multinational firms are very active in creating ecosystems
 - High tech campuses & networks
 - Partnerships, aimed at spill-overs
 - Not always geographically based, but rather technology-based
- Engagement in partnerships
 - Complementary skills
 - Reputation and trust important
- New IT tools are being used:
 - Innovation portals
 - Technology intermediaries



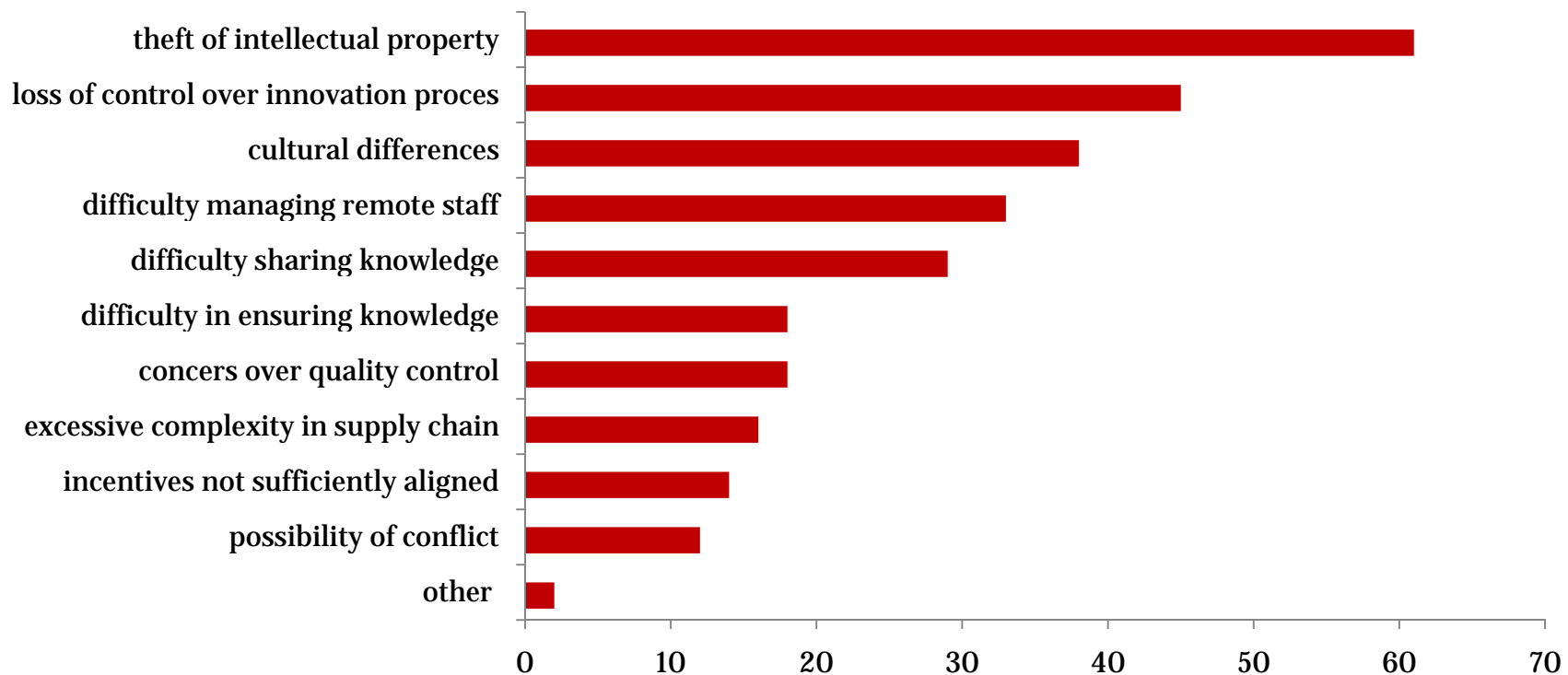
Intellectual property is important ...

- IPR have become important in almost all industries:
 - Non-disclosure agreements
 - Confidentiality and exclusivity agreements
 - Brands, design, models
 - Patents: though different by sector (pharma versus ICT)
- IPR for defensive reasons:
 - To protect the business
 - To prevent others from taking out a patent that is peripheral for the business
- However, companies also engage in open innovation practices:
 - Licensing activities
 - Strategic alliances
 - Sharing technologies



... AND CONSIDERED A RISK FOR ENGAGEMENT IN GLOBAL INNOVATION NETWORKS

What do you see as being the most significant risks to developing global innovation networks?
(% respondents)



Source: The Economist Intelligence Unit

Implications: attractiveness to R&D ..

- **Global firms look for attractive locations and partners that have complementary knowledge to offer:**
 - Attractiveness of an economy as a location for FDI is important – implying that sound macroeconomic and structural policies matter.
 - Being at the high end of the innovation chain requires strong capabilities: high-performing universities and public research institutions, a well developed research infrastructure and excellent human resources.
 - The quality of the system also depends on how well knowledge flows within the system and between system:
 - E.g. industry-science linkages, clusters.
 - Openness to FDI, trade and highly skilled workers from abroad.
- **Protection of IPR matters, but also new practices to leverage IPR.**
 - Combining proprietary and open innovation: maintaining incentives for investment in innovation and leveraging IPR to create value.

.. also for developing countries

- Some developing countries may benefit from the internationalisation of R&D, but experiences differ:
 - China attracted R&D FDI based on a large domestic market and strong human resources; Chile has not received significant R&D FDI;
 - Spill-overs from foreign R&D on domestic innovation are often limited.
 - Advanced economies are often more able to “embed” R&D FDI within their national innovation system (Switzerland versus China and Hungary).
 - Cooperation in innovation networks may offer greater opportunities.
- For most developing countries, other channels of knowledge diffusion will be more important for innovation, e.g.:
 - International trade
 - FDI in production
 - Licensing
 - International mobility of highly skilled



International mobility: growing international competition for talent

- **International mobility of researchers helps:**
 - address labour market shortages in receiving countries
 - diffuse tacit knowledge and establish networks
 - give access to new learning opportunities
- **And can have additional benefits for receiving countries:**
 - In enabling increased R&D activity
 - In fostering knowledge flows with sending countries
 - In increasing enrolment in graduate studies
 - In strengthening firm and job creation, etc.

Impacts on sending countries

- Typically focus on remittances and brain drain, with regard to developing countries
 - Remittances can boost income, improve child health/schooling, but could “paper over problems”
 - Some countries experience large absolute brain drain of researchers, others large relative drain. Potential negative impacts on economic activity & institutional development ... but ... what is the counterfactual?
- Additional impacts related to high skilled emigration and knowledge flows:
 - Brain circulation – from return migration to “commuting” mobility - Building of networks, linkages and channels for knowledge.
 - Diaspora - building familiarity with and confidence in the sending country, plus conduits for knowledge and information flows, e.g. India and Chinese Taipei.
 - Potential “beneficial brain drain” – mobility may provide an incentive to improve human capital.

Moving ahead on mobility policies

- **Mobility policies in OECD countries are currently mainly aimed at attracting talent and addressing shortages:**
 - With growing international demand for talent, developing and strengthening national efforts to foster talent will become more important to address demand.
 - Enabling talent to go abroad may be equally important as attracting talent.
 - Attracting talent requires a broad approach, recognising its many drivers
- **Current policies are often not coherent:**
 - Policy gaps: little attention for circular mobility, diaspora policies
 - Attracting talent requires a supportive environment for innovation
 - Need to ensure coherence with development/aid policy to foster a more positive-sum outcome: e.g. in using development policies to foster capacity in developing countries



Looking forward

- In May 2007, the OECD Ministerial Council Meeting mandated the OECD to develop an *Innovation Strategy* to provide governments with a stronger basis for strengthening and reforming their policies.
- This will include a strong focus on the global dimensions of innovation, e.g.:
 - How to adapt innovation policies to the effects of globalization
 - Examining regional, national, local strategies for participation in global markets
 - Examining the roles of innovation, globalization, and government strategies in addressing critical global challenges in health, climate change, etc, including through international cooperation and technology transfer.
 - Measurement: enhancing our understanding of globalisation and measuring its impacts.



References to some recent OECD work

- OECD (2007), *Staying Competitive in the Global Economy: Moving up the Value Chain*
- OECD (2007), *Trade and Innovation*
- OECD (2008), *The Internationalisation of Business R&D: Evidence, Impacts and Policy Implications*
- OECD (2008), *Open Innovation in Global Networks*
- OECD (2008), *The Global Competition for Talent: International Mobility of the Highly Skilled*
- OECD (2008), *OECD Reviews of Innovation Policy: China*