

The Global Geography of Innovation

Symposium on Innovation and Inclusive Growth
OECD, World Bank and Growth Dialogue, Paris

Jeremy Howells, Ronnie Ramlogan and Chiara Marzocchi
20-21 March 2014

1. Introduction

- High level picture; ongoing research (3 levels)
- The data problem..... at this aggregate is still around innovation inputs (research and development (R&D)) or intermediate measures (patents, copyright)
- Trying to get aggregate innovation severely limited; however R&D expenditure linked to innovation output.... though lagged

2. Key Trends

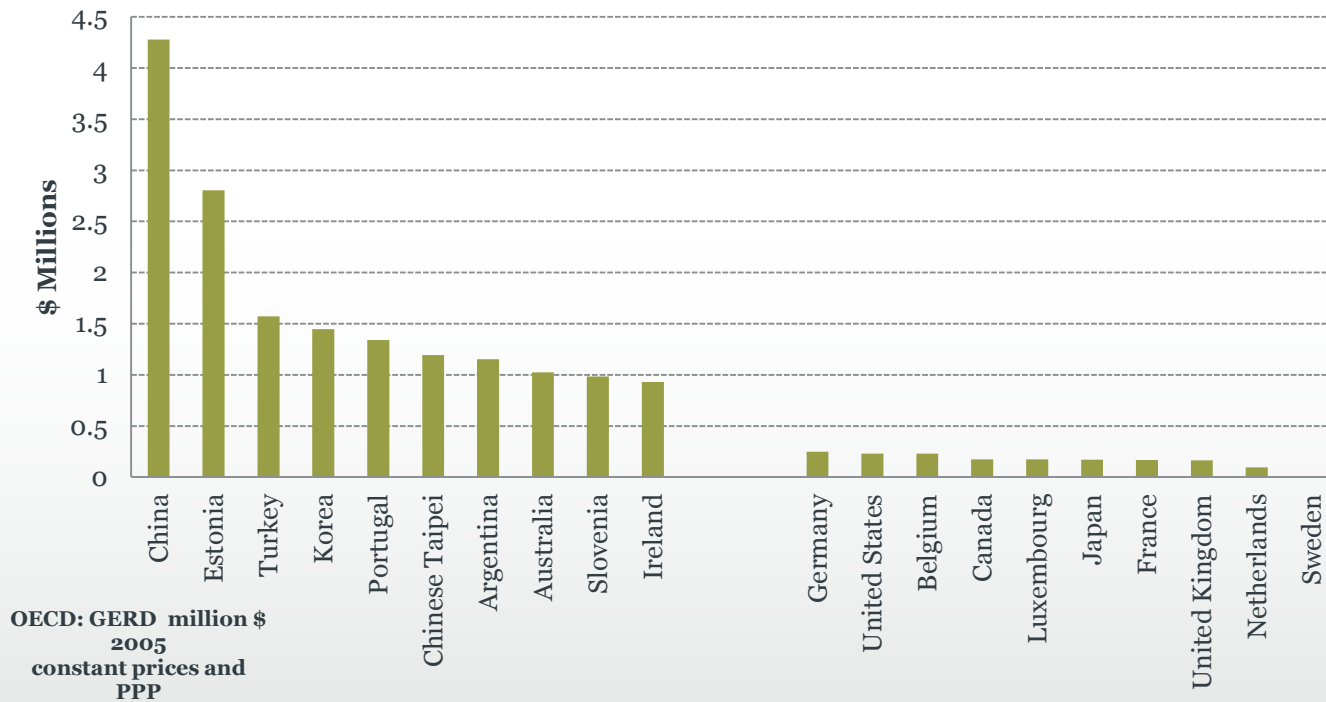
- Argue four paradigmatic shifts influencing the global geography of innovation:
 1. West > East Global Shift
 2. R&D and Innovation Growth Phases and Services
 3. Innovation Specialisation & the Particular
 4. Openness, Connectedness and Inclusiveness

2. Key Trends

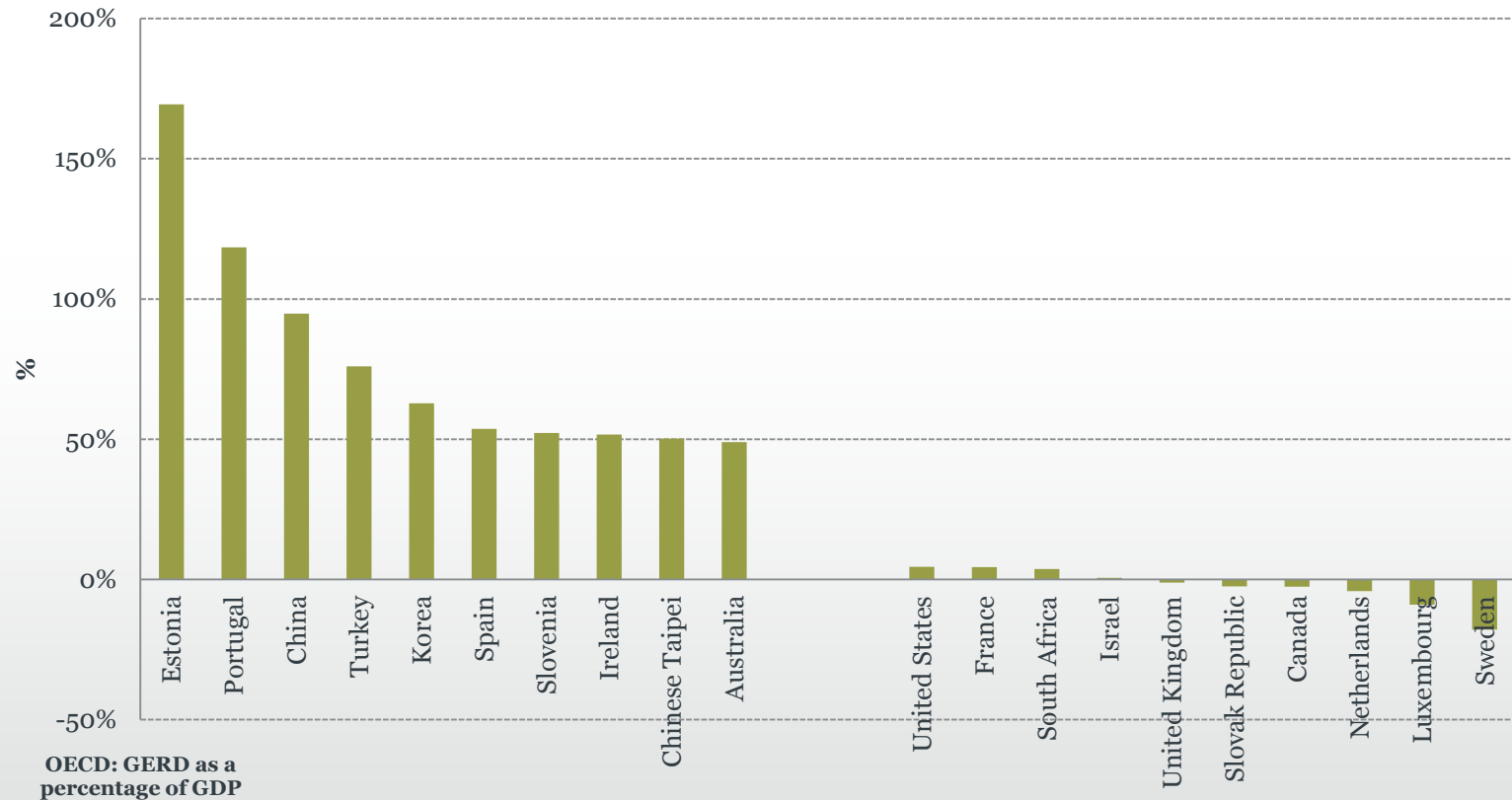
1. West > East Global Shift

- Using R&D data, clear shift to East, driven by China...
-China not only absolute, but relative, growth
- Relative declines in some advanced economies that now seem more long run in nature (others not though)

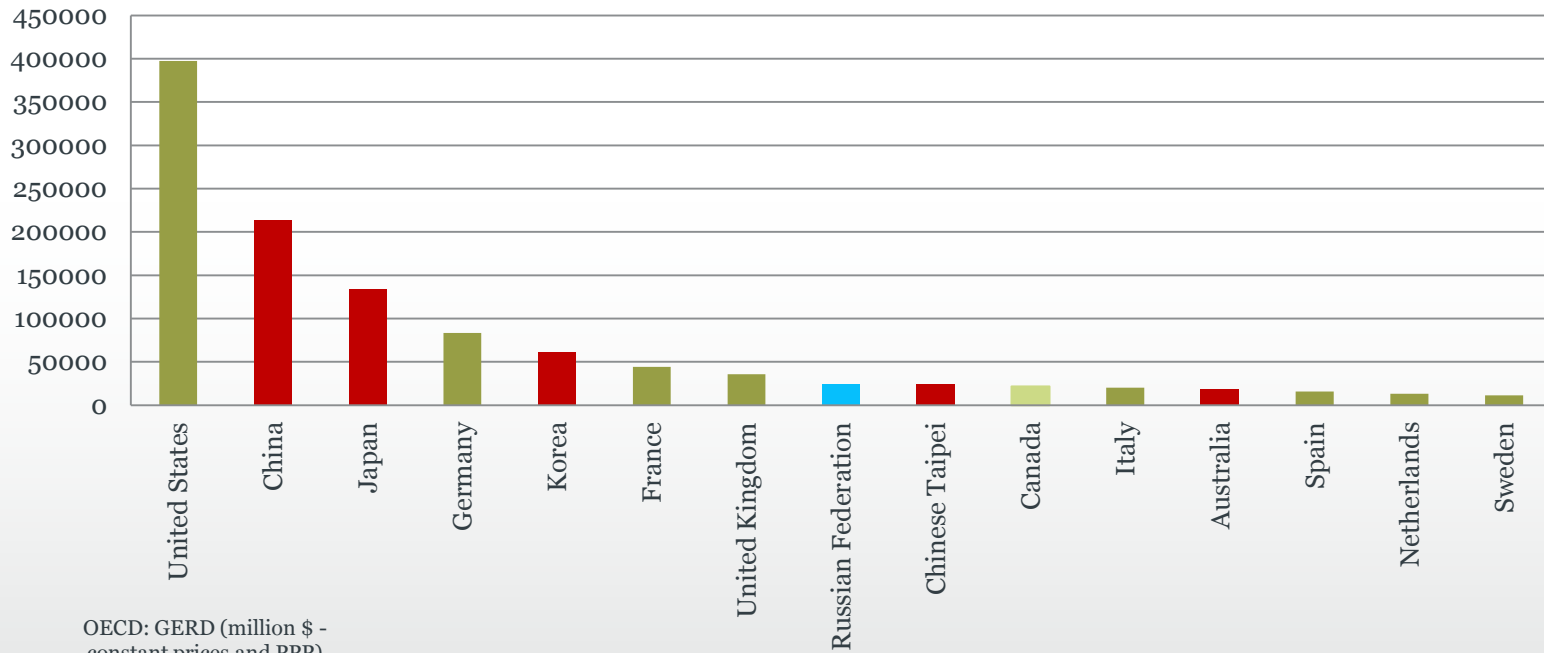
GERD Growth Rate - Absolute values (2000 - 2010)



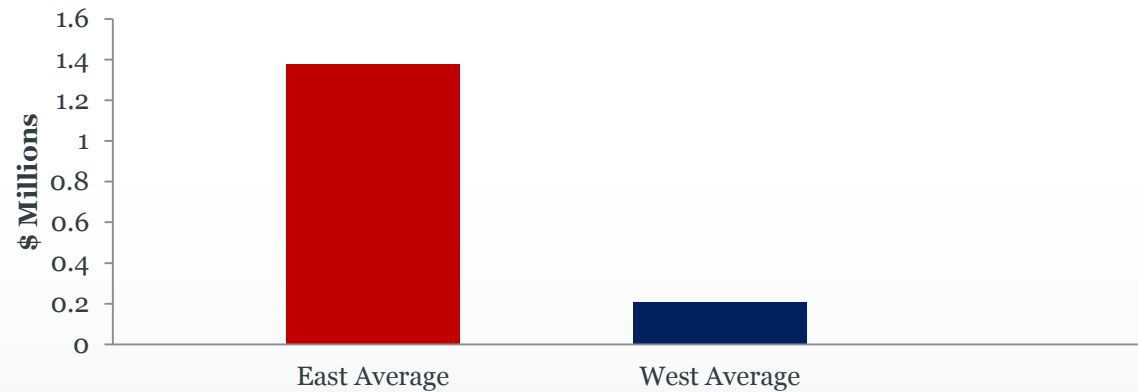
GERD as GDP % - Growth Rates (2000 - 2010)



GERD - Top 15 Spenders 2012



East* and West** Countries: Average GERD Growth (2000-2010) in \$ Million

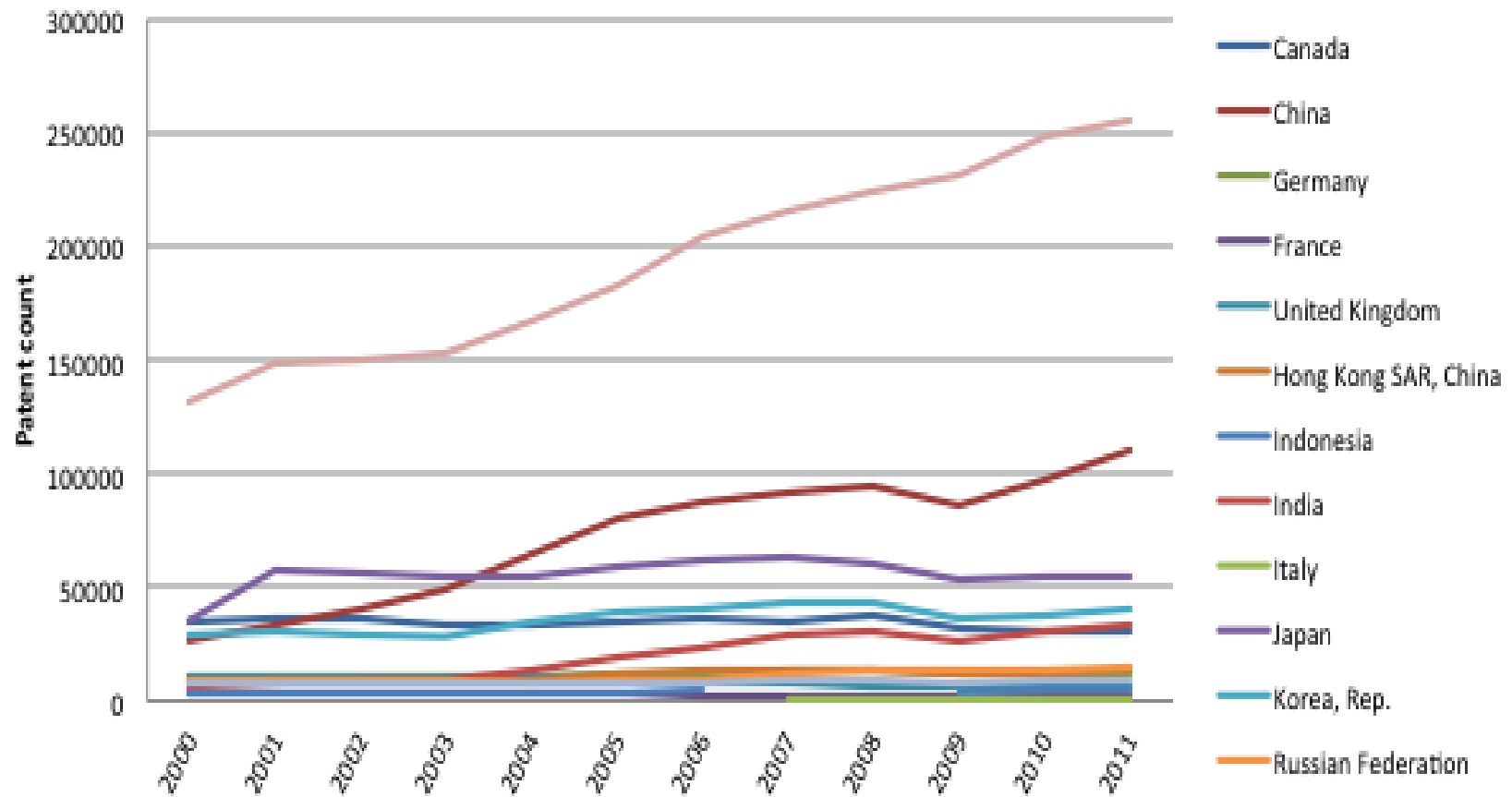


* Eastern Countries: Australia, China, Japan, Korea, New Zealand, Singapore

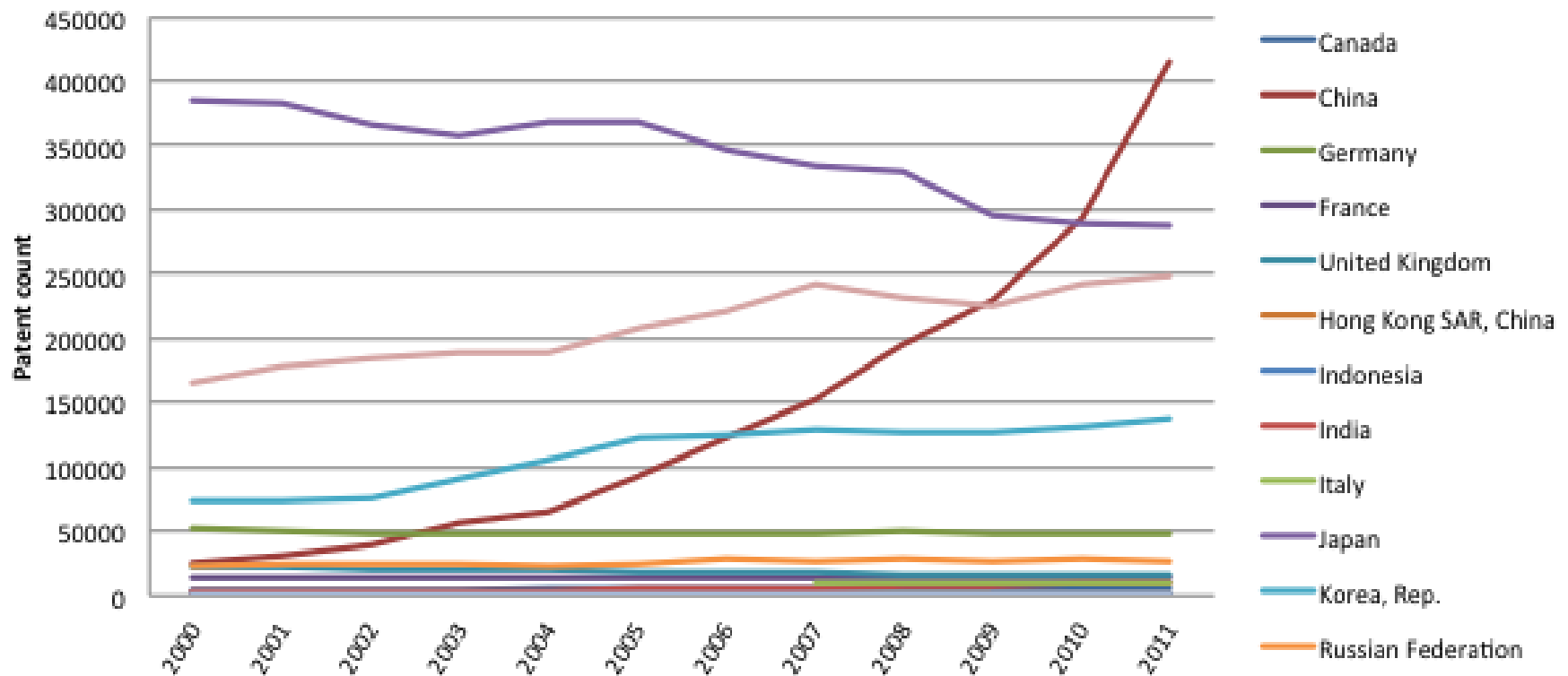
** Western Countries: Canada, France, Germany, Italy, United Kingdom;
United States

OECD: GERD million \$ 2005 constant prices and PPP

Non-resident patent applications 2000-2011



Resident patent applications 2000-2011

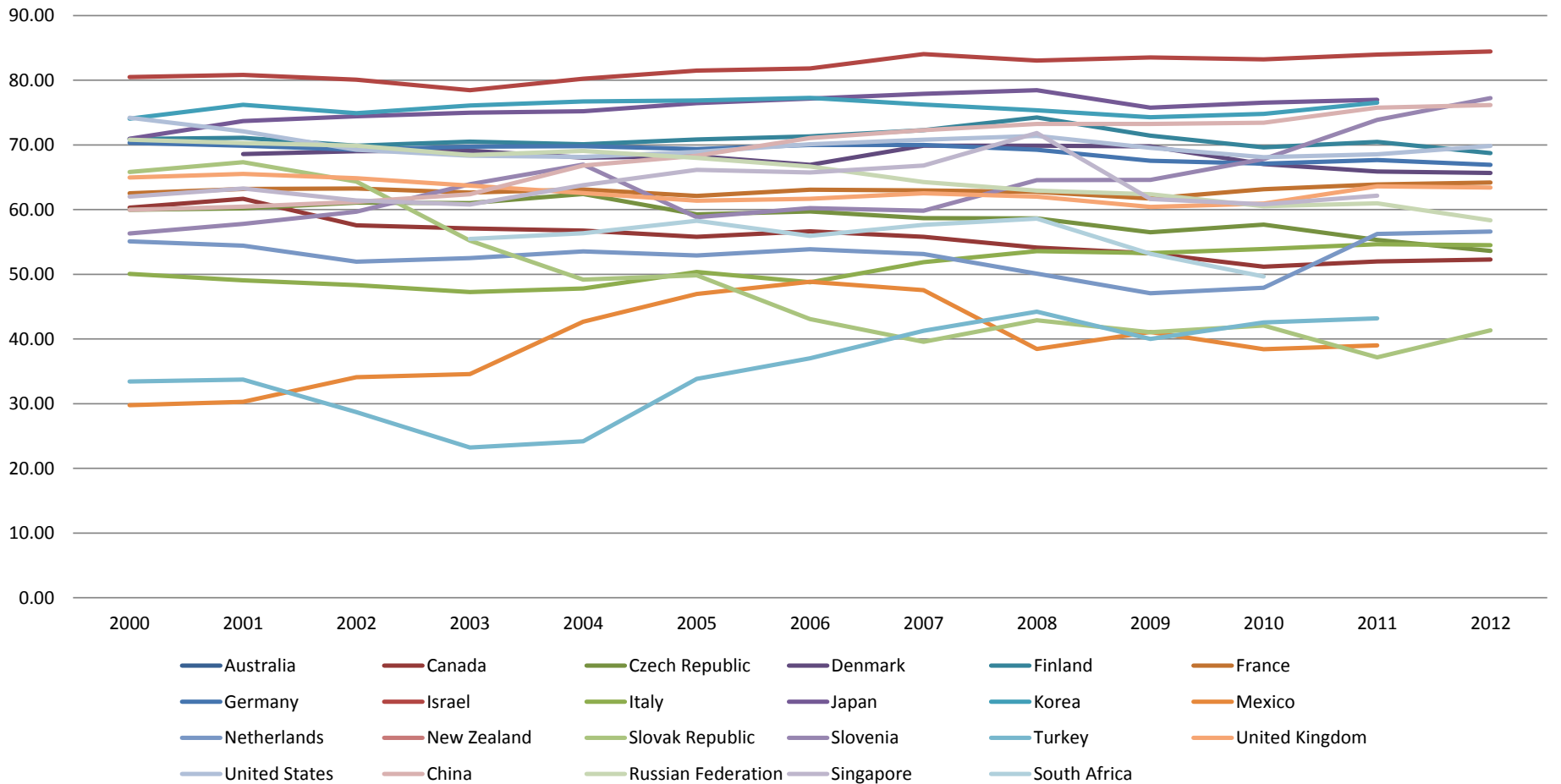


2. Key Trends

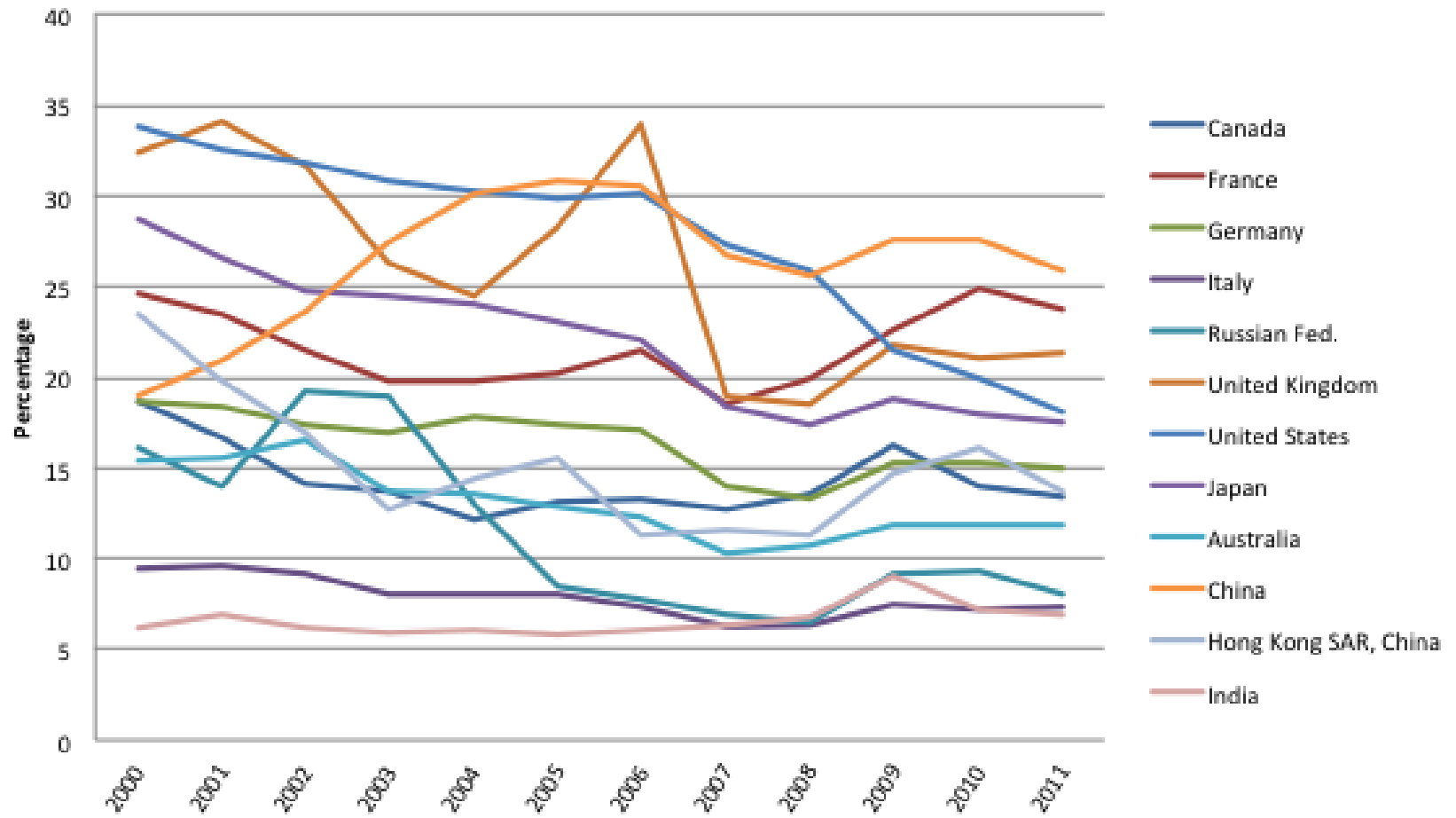
1. West > East Global Shift (continued)

- However, sub trends – Eastern Europe and government investment and policy – very clear impacts
- Importance of BERD in driving growth in many countries

Percentage of GERD performed by the Business Enterprise sector



Share of high-tech exports in manufacture exports 2000-11 (selected countries)



2. Key Trends

1. West > East Global Shift (continued)

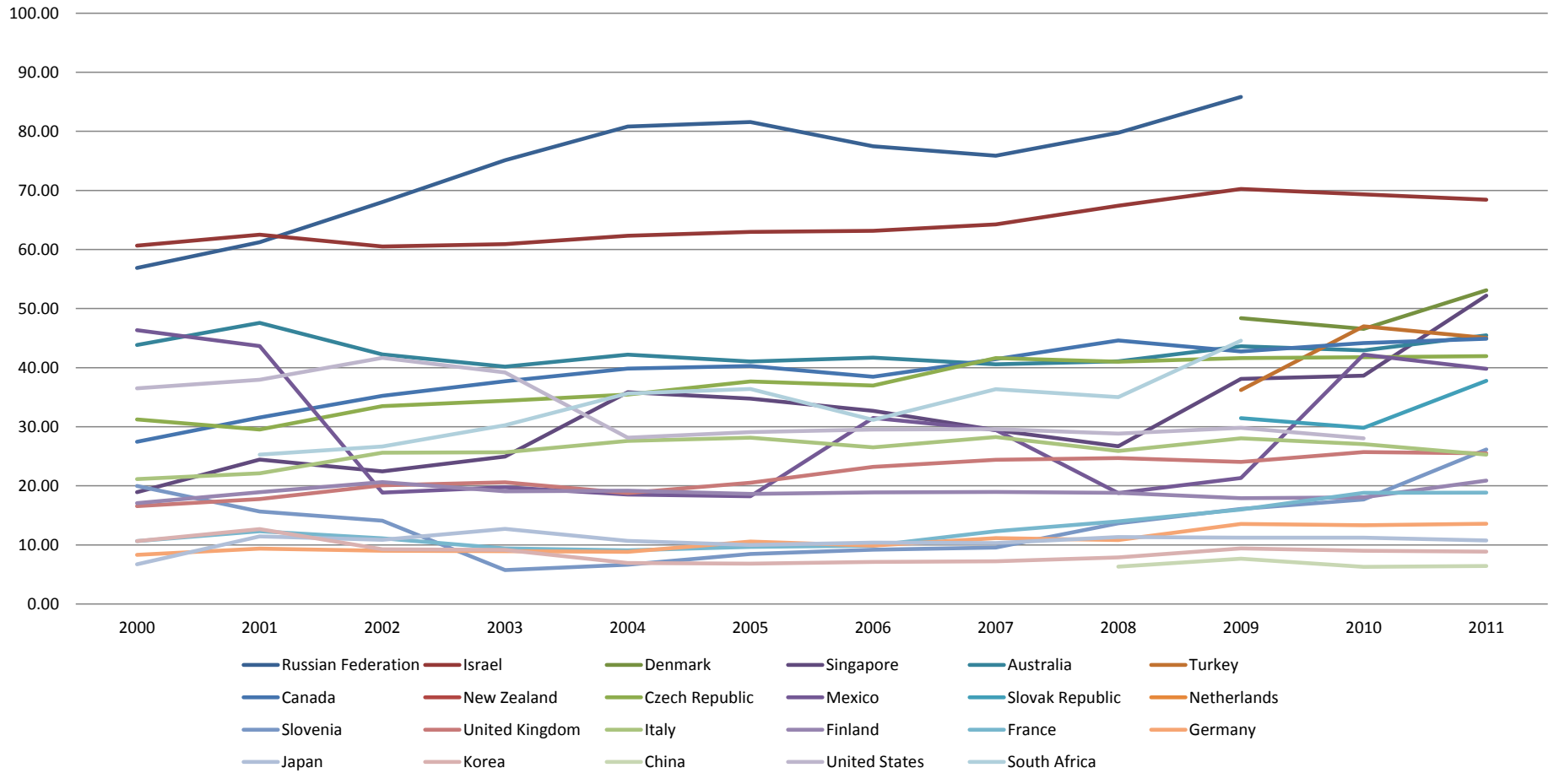
- So need to get over West-East shift; happened... shift in global focal point
- What next? Growth in West Asia and Africa, Latin America... but different
- Must be careful not to adopt 'western centric' innovation policies – need for inclusive innovation policies...

2. Key Trends

2. R&D/Innovation Phases and Services

- Resource R&D > Manufacturing R&D > Service R&D (Rostow)
- ‘The Dog that Did Not Bark in the Night’
- Keeping up (equalisation or differentiation?)
Service R&D typically been growing much faster than manufacturing R&D....

Percentage of BERD performed in service industries

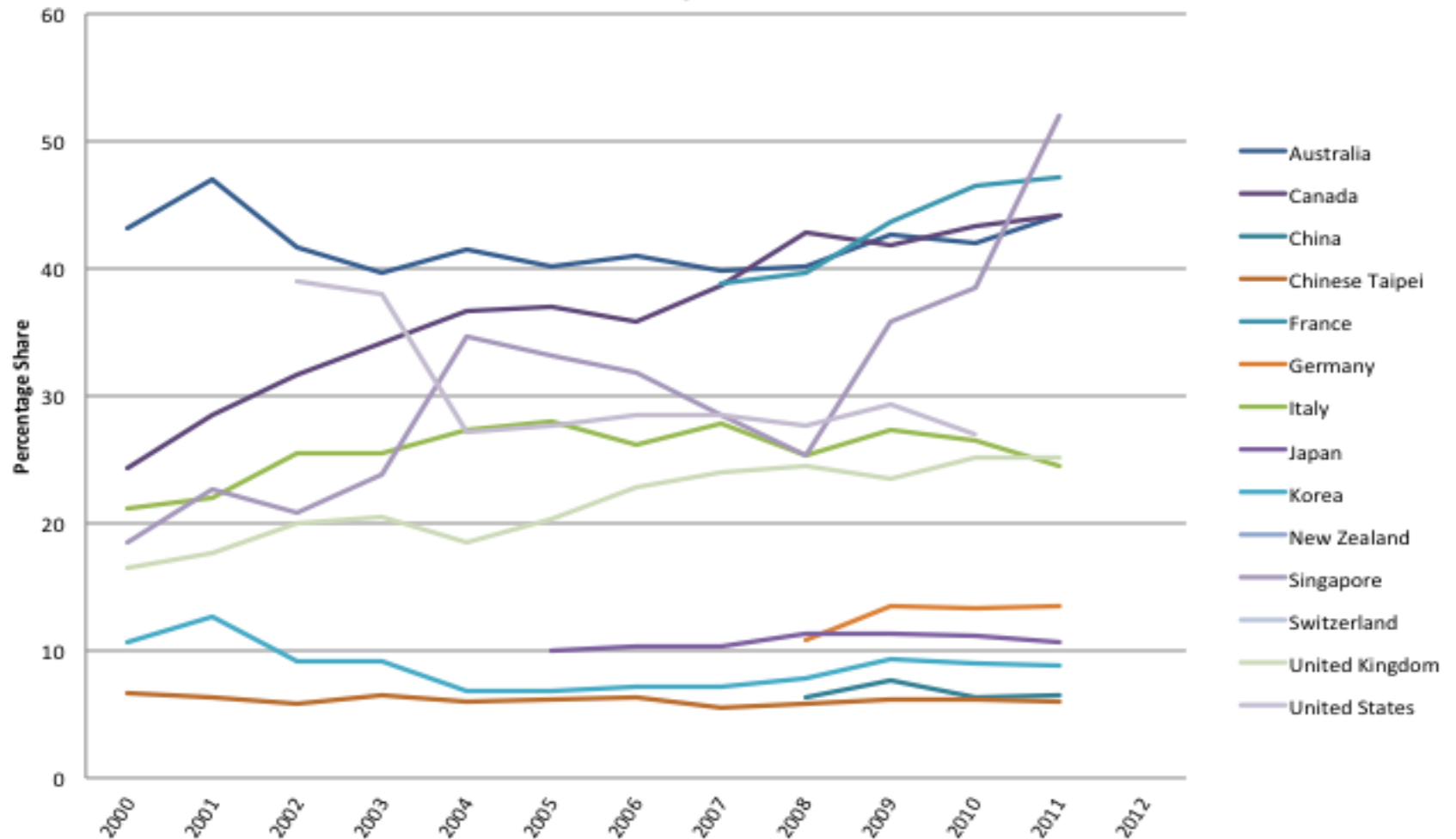


2. Key Trends

2. R&D/Innovation Phases and Services

- (albeit from a much lower base) expect some equalisation in 'service rich' mature industrialised economies...but no!
- Moreover developing economies often performed well in service R&D (disembodied, business models, lower entry..)
- Staged phases? Specialisation earlier on..... African and Asian countries may follow different route

Changes in of Services of the Business Economy in Total Buisness Enterprise R&D



2. Key Trends

3. World of Specialisation & the Particular

- Paradoxically with globalisation in an ever expanding research and innovation space..
- we need more detail in our analysis of innovation, rather than less
- Increased openness and trade permits and encourages greater specialisation and this is true in research and innovation and is linked to complexity and scale...

2. Key Trends

3. World of Specialisation & the Particular

- 1950s UK build its own commercial aircraft now leadership is no longer at that level but below that (in aero engines, wings, composites and landing gear)
- Korea and robotics specialisms
- Africa and mobile internet financial and banking services

2. Key Trends

3. World of Specialisation & the Particular

- In an ever expanding world (and for policy) what level we are looking at and for intervention becomes more important
- If true at industry level, also true at a spatial level. Again spatial analysis and intervention, at least at a policy level, too general

2. Key Trends

4. Openness, Connectedness & Inclusiveness

- The obverse of specialisation is the need for openness and connectedness
- Seen at an individual firm level ('open innovation' model)...
- ... but again observable at more aggregate global level in innovation and technology trade in goods and services

2. Key Trends

4. Openness, Connectedness & Inclusiveness

- Global Innovation Chains... ever more complex and spatially dispersed
- Turkish agriculture and complex networks
- Issue not only of coordination.....
- ... but also control and **who benefits** from invention and innovativeness?

3. Conclusions

- Deep policy implications from all these trends (frameworks imp.: structural innovations, innovation intermediaries...)
- Shifting global innovation locus, but also in our conceptualisation
- Service R&D and innovation and implications for both developed and developing economies (holistic innovation)
- Specialisation and interconnectedness – global innovation chains and who benefits.. little inclusiveness here