

Innovation and catching-up: Why some countries succeed and others do not

Jan Fagerberg,

Centre for technology, innovation and Culture
(TIK), University of Oslo,

(based on joint work with Manuel Godinho, ISEG,
Technical University of Lisbon)

Defining the issue

- Long-run growth: A divergence process
- But some countries defy the trend –Why?
- Culture (Landes?) Investment? Institutions? Policy? Technology?
- 200 years of controversy: is catch-up easy (laissez-faire) or very challenging? Adam Smith versus Alexander Hamilton

European(German) catch-up: Veblen versus Gerschenkron

- Veblen (1912): “machine technology” makes catch-up “no laborious or uncertain matter”: catch-up is easy!
- Gerschenkron (1952): Cumulative technology and inertia makes catch-up difficult! New “institutional instruments” and “targeting” required!
- Role of knowledge – contrarian views

Asian catch-up: The “developmental state”

- Western imperialism: How to achieve a “A rich society and a strong army”
- The Meiji revolution (1868): Birth of a “developmental state”(Johnson 1982) modelled on the Western experience
- A pro-active government: Infrastructure, education, R&D and structural change

The spread of the Japanese model ?

- The Japanese model: Before and after the 2nd World War
- Korea, Taiwan and Singapore in the post-war period; Japanese clones or what? Role of context, finance and exports
- The role of government
- Was Gershenkron (or Veblen) right?

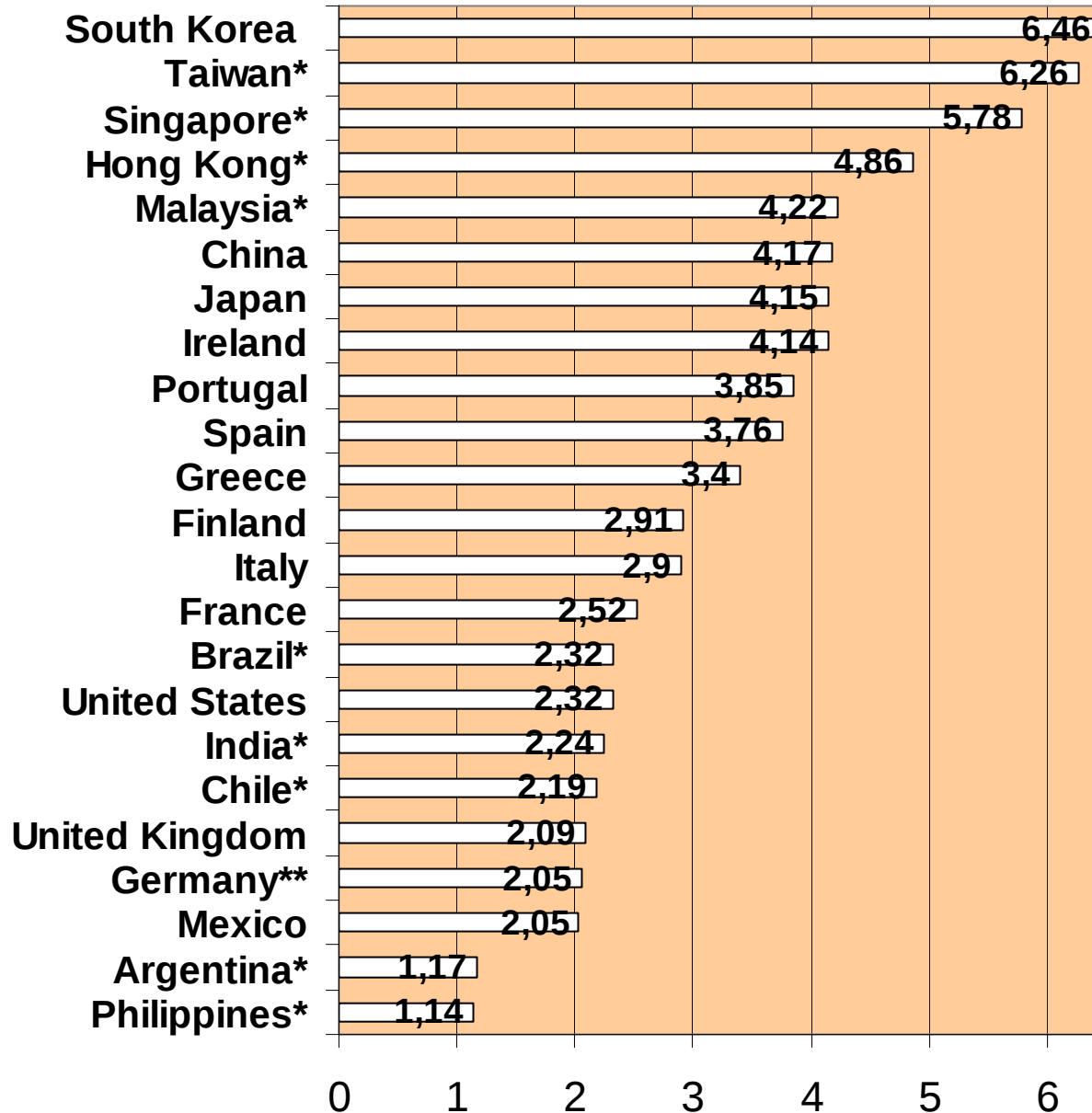
Technology gaps and economic growth

- The technology gap: A great "promise" for the "latecomers" - but how to exploit it?
- Absorptive capacity (Cohen and Levinthal): Cumulative R&D
- Social capability (Abramovitz): Technical, managerial and financial competence
- Social capital (Putnam): Trust, cooperative behaviour

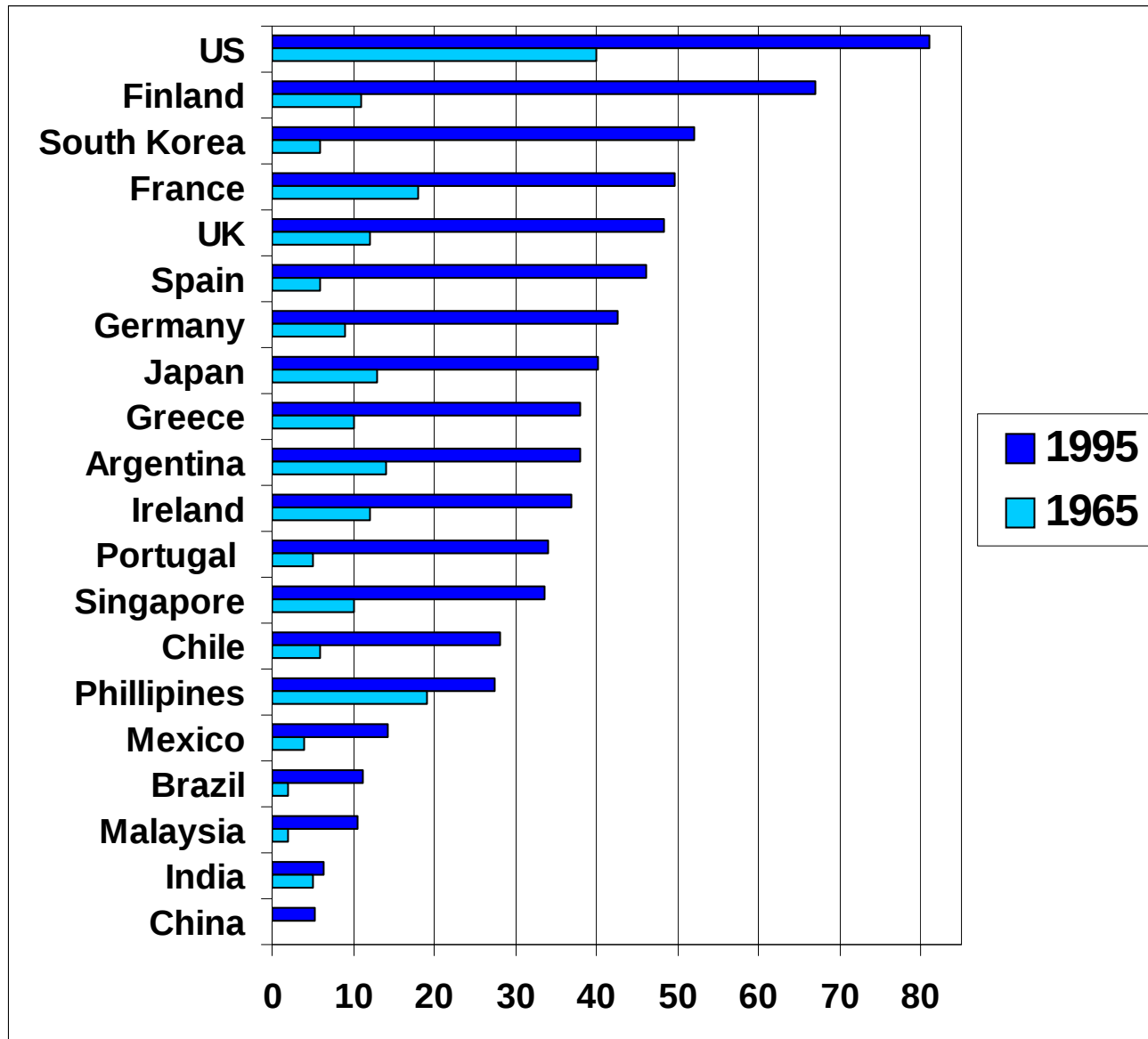
Empirical work: approaches and evidence

- “Barro-regressions” versus descriptive work & case-studies
- How to measure supporting (“conditional”) factors?
- Descriptive evidence: A restricted sample 1960-2000:
 - Established leaders,
 - Asian NICs, European NICs and Latin-American NICs
- Selected “supporting factors”: Skills (education) and R&D

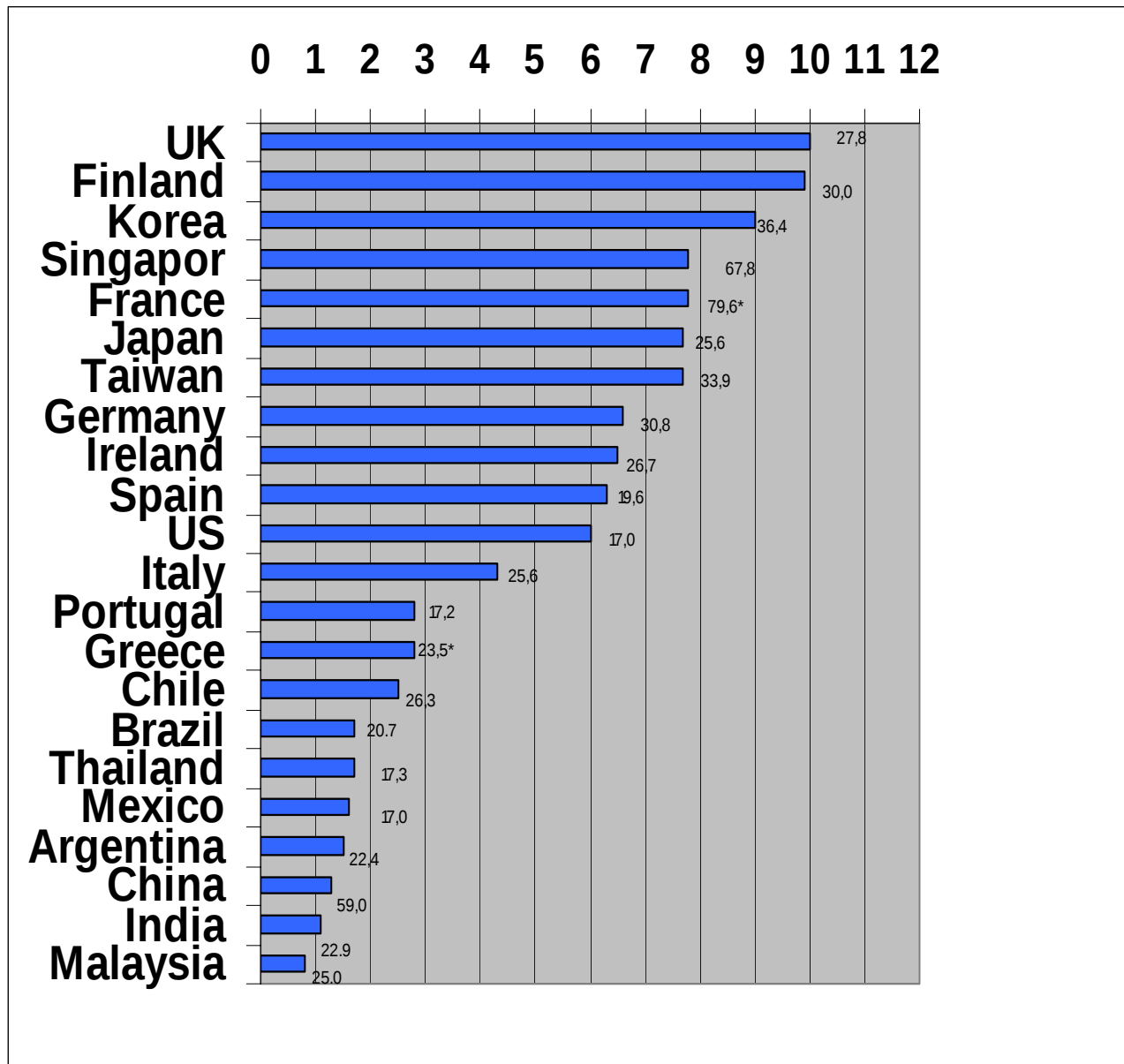
GDP per capita growth 1960-2001



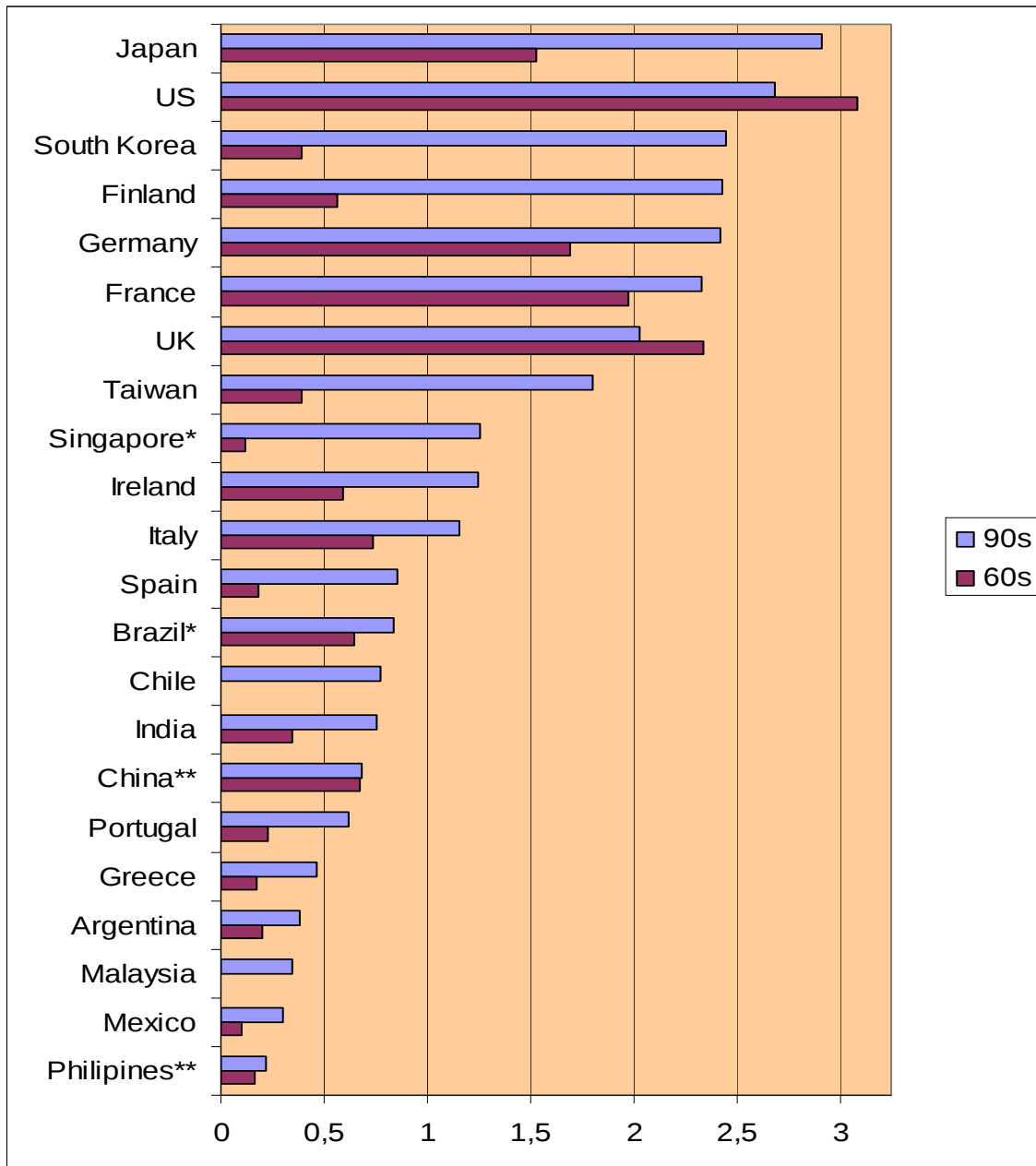
Third level enrolment in relation to age group, 20-24 years old



University Degrees in Natural Sciences and Engineering to 24 year-olds, 1999



R&D as percentage of GDP



-Summing up, challenges ahead

- Countries that have succeeded have mostly had
 - pro-active governments,
 - invested heavily in education, especially technical, and R&D infrastructure
- Countries that have not undertaken such investments have fallen further behind