Scientists have never been so mobile

The latest trends analysed by the *UNESCO Science Report* (2015)
Global trends: A steep rise in research input and output

Research spending progressed faster (+30.5%) than the economy (+20.1%) and global population (+7.3%) between 2007 and 2013

- research expenditure (+30.5%)
- the number of researchers (+21%, FTE)
- scientific publications (+23%)
Why the steep rise in research spending?

In many high-income countries struggling with austerity measures:

the drop in public commitment to research was compensated by business research expenditure. Businesses sought to conjugate the crisis by maintaining or increasing investment in R&D.

In many lower income countries (e.g. Argentina, Ethiopia, Kenya, Mali, Mexico), growth fuelled by the commodities boom enabled:

a rise in public commitment to research – but business spending on research remains low or not measured. (China’s stimulus package fostered investment in infrastructure, urbanization, maintained strong demand for commodities.)

Consequently, a greater convergence in public commitment to research for some developed and developing countries.
Ex: research = 0.44% of GDP in Argentina, China and United Kingdom
Science has become more mobile

- More firms are relocating R&D abroad, their physical infrastructure is more mobile than that of university campuses
- A growing global labour market for researchers and university students
- Greater virtual mobility: Internet has facilitated online university courses (MOOCs) and international scientific collaboration: 80-100% of articles in most LDCs have foreign partners (G20 average = 25%, OECD average = 29%)

Figure 1.4: Long-term growth of tertiary-level international students worldwide, 1975–2013

Source: UNESCO Institute for Statistics, June 2015
More international students from Central Asia, fewer from sub-Saharan Africa

Figure 2.10: Outbound mobility ratio among doctoral students, 2000 and 2013
By region of origin (%)

Note: The outbound mobility ratio is the number of students from a given country (or region) enrolled in tertiary programmes abroad, expressed as a percentage of total tertiary enrolment in that country (or region).

Source: UNESCO Institute for Statistics, June 2015
Most doctoral students abroad are studying science and engineering.

Figure 2.11: Distribution of international students, 2012
By type of programme and field of education (%)

Source: UNESCO Science Report 2015, data from UNESCO Institute for Statistics
A PhD market still dominated by the USA

Ten countries host 89% of international PhD students in science and engineering fields.

Malaysia plans to attract 200,000 students by 2020 (56,000+ in 2012), double that in 2007.
Switzerland leading innovation, its recipe for success:

- High levels of investment in R&D: 3% of GDP in 2012.
- 30% of R&D expenditure for basic research.
- 61% of R&D funded by industry, business-friendly environment
- More than half of labour force qualified for demanding jobs in S&T, thanks to excellent vocational training and ability to attract international talent to private industry and academia.
Many proponents of scientific mobility to develop and attract talent

Examples

EU’s scientific visa (since 2016) facilitates mobility of non-EU applicants for research jobs.

Brazil’s Science without Borders (2011-2015): 100,000 scholarships for study abroad at best universities plus grants to bring researchers from abroad.

Iranian President Rouhani advocated English-language university (2014) to attract foreigners: ‘We have to have a relationship with the world, not only in foreign policy but also with regard to the economy, science and technology’?
A high level of mobility fosters innovation

‘Studies conducted across Europe have shown that a high level of mobility by qualified personnel between sectors (such as universities and industries) and across countries contributes to the overall professionalism of the labour force and innovative performance of the economy.’

UNESCO Science Report, based on 2014 European Research Area Progress Report