

Observations on Universities and the Globalization of Research

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Background

- Comments from perspective of international trade economist.
- Interested in role of domestic and international S&E graduate students in innovation and growth.
- Interested also in broader implications of increasing trends toward internationalization of research and higher education.

Study on Foreign Graduate Students and Innovation

- Reference: U of Colorado, Department of Economics working paper, 2004.
- Graduate students are direct input into knowledge creation.
- They may remain in US and enter private sector or become faculty.
- Knowledge (patents) generated in universities may spill over to patentable R&D in other sectors.
- Growing university-industry collaboration and licensing.
- Surprisingly, this hypothesis has never been tested statistically.

Summary of Econometric Findings

- 10% rise in FORTGR (share of foreign in total grads) would increase applications by around 6,600 (4.7% of total).
- “Marginal impact” of another foreign graduate student is 0.63 applications.
- 10% rise in FORTGR would increase university grants by around 60 (5.3%) and other grants by around 6,000 (6.7%).
- Impacts would be higher using 1990s data rather than full sample mean.

Study Findings, continued

- Impacts of skilled immigrants (IMCUM) also positive but much smaller.
- Impacts of S&E in labor force (SK) and cumulated S&E doctorates (SEDOCCUM) positive and large.
- No impact of unemployment suggests results are not driven by cyclical factors.
- Results are intriguing but more microeconomic work is needed, using individual student data.

What is Globalization?

- Successive integration of markets for goods, services, factors, and information.
- Sources:
 - Technical change;
 - Integration policies.
- Channels:
 - Trade in goods and services;
 - Trade in factors (people, capital);
 - Investment in facilities (FDI);
 - Trade in information
- Effects: too numerous to mention

How Globalized are Research Universities?

- “Inputs” of S&E faculty, graduate students and post-docs seem highly international.
- “Outputs” of undergraduate and professional education services are not.
- “Outputs” of research findings are globally available but increasingly becoming assets.
- Inter-university research networks are expanding but far below production networks.
- FDI and alliances in universities are only beginning.

How Globalized are Research Universities?

- Much of the “input” globalization remains one-way trade into US.
- There is considerable scope for growing two-way trade as foreign universities improve research and training.
- Competition for skilled S&E inputs is growing rapidly.
- Policies in other forms of university integration remain relatively closed.
- “Globalization” has a long way to go.

Short-Run Need for Research

- Relative trends in US and foreign universities in developing knowledge.
- Role of universities in moving knowledge to innovation.
- Critical inputs in these processes and how they are organized.
- Implications of increasing competition (domestic sectors and international knowledge institutions) for S&E workers.
- Demographic changes in potential S&E workforce.
- Channels by which knowledge is transferred from universities to international uses.
- Competitive gains from international networks.
- DATA!

Long Run: Global Integration of Education and Research Policy

- Increased visas for students and researchers;
- Accelerated tracks to residency and citizenship;
- Greater rights of establishment (FDI);
- Global access to basic science (research commons)?
 - Research funding;
 - Accessibility of scientific results and data.
- Or increasing privatization (anti-commons)?

Long-Run Strategic Implications

- Increasing integration of education and research services should benefit major US universities.
- Comparative advantage (diminishing) in research.
- Opportunities for expansion, networks, alliances, technology sharing.
- Opportunities for linkages with global enterprises.
- Expect increasing specialization (research vs. teaching) within and across universities.
- Consider new pricing and delivery systems for both education and research outputs.

Final Observations

- Ongoing US relative decline in its “innovation monopoly” is unsurprising.
- But sustaining a leading role in research and innovation is critical for growth.
- Importance of performing research and creating knowledge within borders.
- Universities can be leaders in establishing beneficial forms of international cooperation.