Thesis

Social capital and graduate training of Science & Technology students at the U.S. universities.

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Study Summary

- Scientific & Technical Human Capital as a new form of evaluation of S&T policies (Bozeman, Dietz & Gaughan, 2001).
- Importance: Lack of literature on relationship of training of the young scientists and their STHC.

Assumptions:
- Training at I/UCRCs has an impact on students’ STHC.
- Training at I/UCRCs influences intention of international students to stay in the U.S.

Goal: Assess whether IUCRC training impacts social capital.

IV: graduate training (I/UCRC vs. non-I/UCRC)
DV: professional Social Capital (STHC)
Population: PhD students at the research-intensive universities.
Sample: 100 from I/UCRCs and 100 from corresponding Engineering & Science departments.
  - Targeting universities with multiple IUCRCs to minimize IRB transactions.

Hypothesis 1: Students trained at I/UCRC acquire more professional social capital.
IV - Graduate Training

- I/UCRCs tend to follow a more collaborative model of science than traditional departmental student training.
  - Their type of collaboration involves cross sector interactions
- “Significant involvement” with I/UCRC – at least one year.
- Controlling for involvement with other CRCs.
- Control condition: Students enrolled in the same department at the same university
DV - Social Capital

Summary of Literature

Theory
Numerous attempts to explain the complex concept of social capital, its outcomes and measures. The main focus on its types and multiple methods of measuring it.

• Main types
  o Bonding (trust, norms & values)
  o Bridging (networks of connections)

• Dimensions:
  o Structural (network ties & configuration)
  o Cognitive (shared vision & language)
  o Relational (trust, norms, obligations & identification)

Empirical Literature
Few are based on theory:

• Cite one or two scholars
• Provide one paragraph on social capital theory

• No comprehensive measures of social capital with an exception of the World Bank measure of countries’ SC which is not commonly accepted to be reliable.

• Depends on type of social capital (general or context-specific such as entrepreneurial activities).

• Common issues:
  o Define and measure social capital in terms of its outcomes and things that influence it.
  o Implement either bridging or bonding type of social capital. Both types are interrelated.

Scientific & Technical Human Capital (STHC)

• Need for evaluating S&T not just through classic forms of capital (economic and human), but also via social capital since “science does not happen in vacuum.”

• No measure of social capital of scientist other than crude measure based on publications and patents with others.

Specific focus on connections with Industry as a characteristic of an important cross-sector connection which is potentially beneficial for students’ professional growth.
Steps

- Universities: North Carolina State University (6), Ohio State (7), Arizona State (5), Univ. of Arizona (4), Virginia Tech (7), Univ. of Florida (5), Texas A&M (4)
- As a result, particular sites, not whole centers participate in this research.
- Average of total PhD at centers is 20. N of students per site is smaller depending on center’s size.

1. Acquire students’ contact information. More challenging for control group:
   a. Ask center director/department head for students’ contacts
   b. Research university/center web site
2. Ask NSF to send an official email to students.
3. Email students survey invitation and the link with a chance to win one of three 100 dollars Amazon gift cards.
4. Follow-up by email & phone.
Timeline

• January - Finalize measure of STHC
• Early February - Complete and defend proposal
• Early February - Obtain IRB approval
• Middle February – obtain students’ contacts & distribute questionnaire
• Late February - Collect data
• March & April - Analyze data
• May - Defend thesis
Your feedback is greatly appreciated!

Thank you.