Competitiveness and the University

Christopher T. Hill

Professor Emeritus, George Mason University

The Council on Government Relations

February 23, 2012
Disclaimers and Distribution

• My personal views

• Not the views of George Mason University, SRI International, Technology Policy International, the OECD, or any other organization with which I am affiliated or that I serve as a consultant

© Christopher T. Hill 2012

This Powerpoint document may be reproduced and disseminated for non-commercial uses.
My Argument in Brief

• Increasingly, society expects universities and their faculties to make substantial and identifiable contributions to the competitiveness of industry and to the development of the economy at all levels.

• Universities and faculty members are rewarded largely for fulfilling their roles in education and research and not for their roles in competitiveness and economic development.

• Society has not come to grips with the growing gap between expectations and rewards.

• This gap is a significant contributor to the stresses, financial and otherwise, under which modern American universities operate.

• It is important to work toward filling this gap with new forms of reward for both institutions and faculty.
Overview

• The Competitiveness Problem(s)
• The Roles of the University Yesterday and Today
• Rewards to the University and the Faculty
• Rewarding University Contributions to Competitiveness – the Example of Technology Transfer
• From the Periphery to the Core – Reforms in Supporting Universities
The Competitiveness Problem(s)

- Slow growth
- Stagnant or declining real family incomes
- Loss of many leading industries
- Adverse balance of trade, even in high-tech
- Declining shares of patents, papers, citations
- Little or no net job creation
- Declines in new firm formation and V.C.
Why the Competitiveness Problem?

• Macroeconomic and financial weaknesses in the near term
  • Too much/not enough public spending
  • Too much debt/not enough investment
  • Not enough consumer demand

• Declining long-run competitiveness owing to
  • Weakness in Federal support of basic research
  • Weak educational system
  • Insufficient infrastructural investment

• Government’s role in the economy
  • Too weak
  • Too strong

• “China cheats”
Why no Consensus on Causes?

• Liberals and conservatives look at the problem differently for ideological and political reasons
• Weak theories of competitiveness undermine measurement and policy analysis
• Many key participants in policy debates have limited understanding of the topics of discussion
• Experts play necessary roles but democratic values and real-world experience limits their influence
Ideas Contribute to the Confusion

• Old Ideas

• New Ideas
Old Ideas Limit Thought and Action

• The linear model of innovation is useful
• Basic research is the proper federal domain
• Big companies innovate on their own
• Innovations are always based on technology
• Universities produce only talent and research
• Competitive strength abroad hurts the U.S.
• Public policy should treat all sectors the same
Some New Ideas Aren’t Much Help

- The important innovations are radical or transformative
- Small entrepreneurial firms produce most innovations
- Regional clusters are key to innovation
- Innovation prizes can substitute for R&D funding
- Universities should have to show how the results of each Federal grant will help the economy
- If we work at it, we’ll be able to predict the outcomes of R&D investments
- Dropping out of university is a good strategy for getting rich
Federal R&D Policies and Funding
Don’t Help Competitiveness Much

- Federal R&D programs and funding are
  - Disproportionately focused on defense and health
  - Non-defense R&D is low relative to GDP
  - Extraordinarily weak in applied research
- Planned DOD cuts may hit RDT&E hard
- Manufacturing R&D support is small and ill-focused
  - No R&D agency focuses on manufacturing
  - Overly focused on glamour areas
  - Systems perspectives are missing
  - Linkages to human resources preparation are weak
  - “Extension” activity is quite limited
Society’s Turn to the Universities

• Universities are being viewed as essential to company, regional, and national performance
• They are seen as playing vital roles in competitiveness
• They are also seen as major contributors to economic development
• The “Open Innovation” strategy used by industry puts high demands on universities
• (Of course, improving the economy is not the only new expectation of universities!)
University Engagement in Helping Competitiveness is Challenging

- Pits new roles against old
- Upsets traditional systems of reward
- Requires more and different administrators and non-faculty staff
- Adds complexity to already complex institutions
- Costs money
- Alters the political environment
The University in Society: Old Roles

- A place for teaching and learning
- A codifier of, and repository for, old knowledge and understanding
- A generator of new knowledge and understanding
- A community for personal growth
- A transmitter of values and builder of citizens
- A neutral space for debate
- A home for criticism of society
- An organizer of entertainments
The University in Society: New Roles

- A generator of new technologies
- A prime source of new ideas
- A founder of new companies
- A solver of problems
- A partner in economic development
- A bridge to the world
- A venue for political presentation
- A critical contributor to economic growth
- A source of specialist leadership
Rewards for the Faculty

• The faculty are the principal actors in fulfilling the many roles of the university, old and new

• But the faculty are rewarded almost exclusively for two
  • Teaching
  • Generating new knowledge (research)

• And often only for research

• Rewards take the form of:
  • Compensation
  • Appointment, promotion and tenure
  • Recognition and opportunity
Rewards to faculty are based on their performance of, and on, a remarkably small proportion of the activities and contributions that society expects from the university.
Rewards for the University

- Rewards for the university include:
  - State appropriated funds
  - Freedom of action/autonomy
  - Contributions from alumni and friends
  - Recognition and accolades
  - Political support

- The basis for rewards to the university is nearly as narrow as that for faculty:
  - Student enrollment, graduation rates, and job success
  - High profile research accomplishments
  - Athletic victories
Another Paradox

Rewards to universities are based on their performance of, and on, a remarkably small proportion of the activities and contributions that society expects from them.
The Core and the Periphery

- The CORE is understood to be teaching and research*
- The PERIPHERY is everything else
- For want of another conceptualization, we call everything else “service,” and we applaud but don’t reward it
- It’s time to move some of the periphery into the core

*Some would argue that athletics are in the core
The Bases for Rewards to Both Faculty and Universities are in Need of Reform

- Rewarding faculty and institutions for activities and accomplishments in teaching and research is radically out of step with what society expects them to do.
- Society’s expectations have grown dramatically, especially on the periphery.
- Society’s willingness to reward even the core has declined sharply.
  - The financial crisis in higher education is recognized,
  - But, the mismatch of rewards and expectations is not.
- The relationship between higher education and society is in need of serious reexamination.
We Need an “Academic New Deal”

- The Academic New Deal would be a new implicit understanding among the universities, their faculties, and society about what is expected and about how meeting those expectations will be rewarded.
- The Academic New Deal would recognize as core some activities what are now seen as being on the periphery.
- The Academic New Deal would reverse the current perverse situation in which resources for academia are being cut even as expectations are expanding.
- The Academic New Deal would require substantial changes in how the professoriate manages its responsibilities for controlling admission to its guilds.
Example: Moving Technology Transfer from Periphery to Core

• While some universities had long sought opportunities to put new technologies from research into practical use, until the passage of the Bayh-Dole Act in 1980 this kind of activity was very much on the periphery of the university (except in agriculture)

• Bayh-Dole both enhanced the authority of universities to transfer their technologies to practical applications AND strengthened society’s expectation that they would do so
“Policy and Objective” of the BD Act

It is the policy and objective of the Congress to use the patent system to promote the utilization of inventions arising from federally supported research or development; to encourage maximum participation of small business firms in federally supported research and development efforts; to promote collaboration between commercial concerns and nonprofit organizations, including universities; to ensure that inventions made by nonprofit organizations and small business firms are used in a manner to promote free competition and enterprise without unduly encumbering future research and discovery; to promote the commercialization and public availability of inventions made in the United States by United States industry and labor; to ensure that the Government obtains sufficient rights in federally supported inventions to meet the needs of the Government and protect the public against nonuse or unreasonable use of inventions; and to minimize the costs of administering policies in this area.

35 USC 200
Bayh-Dole Was Not Intended to Help Universities Make Money

- Under BD, universities are permitted to earn royalties and fees from licensing federally-funded inventions.
- They must share such income with the inventors.
- They may use the income to pay “expenses incidental to the administration of such inventions.”
- The remaining income must be used in support of scientific research or education.
Bayh-Dole Contains No Provision to Help Universities Not Lose Money

- Bayh-Dole set new expectations for university engagement in technology transfer
  - Legal expectations
  - Political expectations
  - Industry expectations
  - Faculty expectations

- Bayh-Dole only recognizes that technology transfer requires resources when it allows IP income to be used to cover “incidental expenses”

- Bayh-Dole has no mechanism for covering universities’ costs of technology transfer if licensing income and fees fail to cover “incidental expenses”
Financial Realities of Tech Transfer

• For most universities, technology transfer is a cost center, not a source of net income

• Only a few institutions “make money” on technology transfer, and this is usually the result of a single “home run” or a small cluster of related home runs

• This is in unfortunate contrast to the expectations of many policymakers and academic administrators

• It is, however, completely consistent with the core—neither teaching nor research “make money” and, for most places, they are cost centers
How Society Pays for the Core

- Public appropriations for institutions
- Private gifts
- Student tuitions
- Concessional loans to students
- Sponsored research grants and contracts
- Income from “auxiliary enterprises”
How Society Pays for the Periphery

- By diverting resources intended for the core
- Through infrequent gifts and grants to support activities on the periphery
- Occasional industrial contracts
- Evidence for the growth of the periphery and its costs
  - Growth of non-faculty staff
  - Declining share of base budget spent on instruction
- This is, of course, not satisfactory
  - It’s a drag on the core
  - It undervalues the periphery
  - It fails to recognize that some activities once on the periphery have moved to the core
Moving technology Transfer to the Core

• As a key element of the Academic New Deal, it’s time to move technology transfer to the core.

• This would recognize and validate that technology transfer is no longer a marginal activity that is “nice to do,” but has become a core function of the university.

• It would mean:
  • Paying for technology transfer from the base budget.
  • New state and Federal programs to support innovation in technology transfer.
  • Incorporating accomplishment in invention and technology transfer, along with other modes of creativity and development, into the pantheon of faculty evaluation criteria.
  • Rewarding administrators, in part, on their support for technology transfer.
Some Implications

- Public institutions need to tell their legislators that, if they want technology transfer and economic development, they have to help pay for it.
- Private institutions need to raise private funds to support technology transfer and economic development.
- Deans and promotion and tenure committees need to give full recognition to technology transfer in faculty actions.
- The Federal government, which started the whole thing, needs to support technology transfer and economic development as it does research.
The System is Moving This Way

• The Carnegie Foundation for the Advancement of teaching recognizes the “Scholarship of Service” as one of the forms of modern scholarship

• Some institutions have incorporated technology transfer and economic development contributions into P&T criteria

• A few high profile private and corporate gifts have been made to support technology transfer and/or commercialization

• The U.S. Department of Commerce is focused on reforming the technology transfer system to enhance its performance and value

• A few states are providing universities with competitive grant funds to commercialize inventions and/or support technology transfer
What Remains to be Done

• Full recognition by leading institutions that technology transfer and economic development are core functions of the university
  • Top-ranked universities
  • University associations
  • Faculty associations
  • Associations of university academic and financial officials
  • Academic societies
  • Opinion leaders

• Formalization of the place of technology transfer and economic development in university budgets and plans

• A significant new Federal investment in university-based technology transfer and economic development
The Politics will be Tough

• There will be opposition to an Academic New Deal
  • those who view adding new activities to the core as a threat to the integrity of the old core
  • Those who worry about the university “selling out” to business
  • Fiscal conservatives
• Meeting this opposition responsibly is an important role for professionals engaged in technology transfer and economic development at universities
• Forming coalitions with others on the periphery may be useful in achieving an “Academic New Deal”
Change Will Come Slowly, but it Will Come

Thank you!

Christopher T. Hill
Professor of Public Policy and Technology, Emeritus
School of Public Policy
George Mason University
chill2@gmu.edu
Tel 865 951 0767 (Knoxville, TN)