

Do Colleges and Universities Have a Role in Local and Regional Economic Development?

by Rick Mattoon

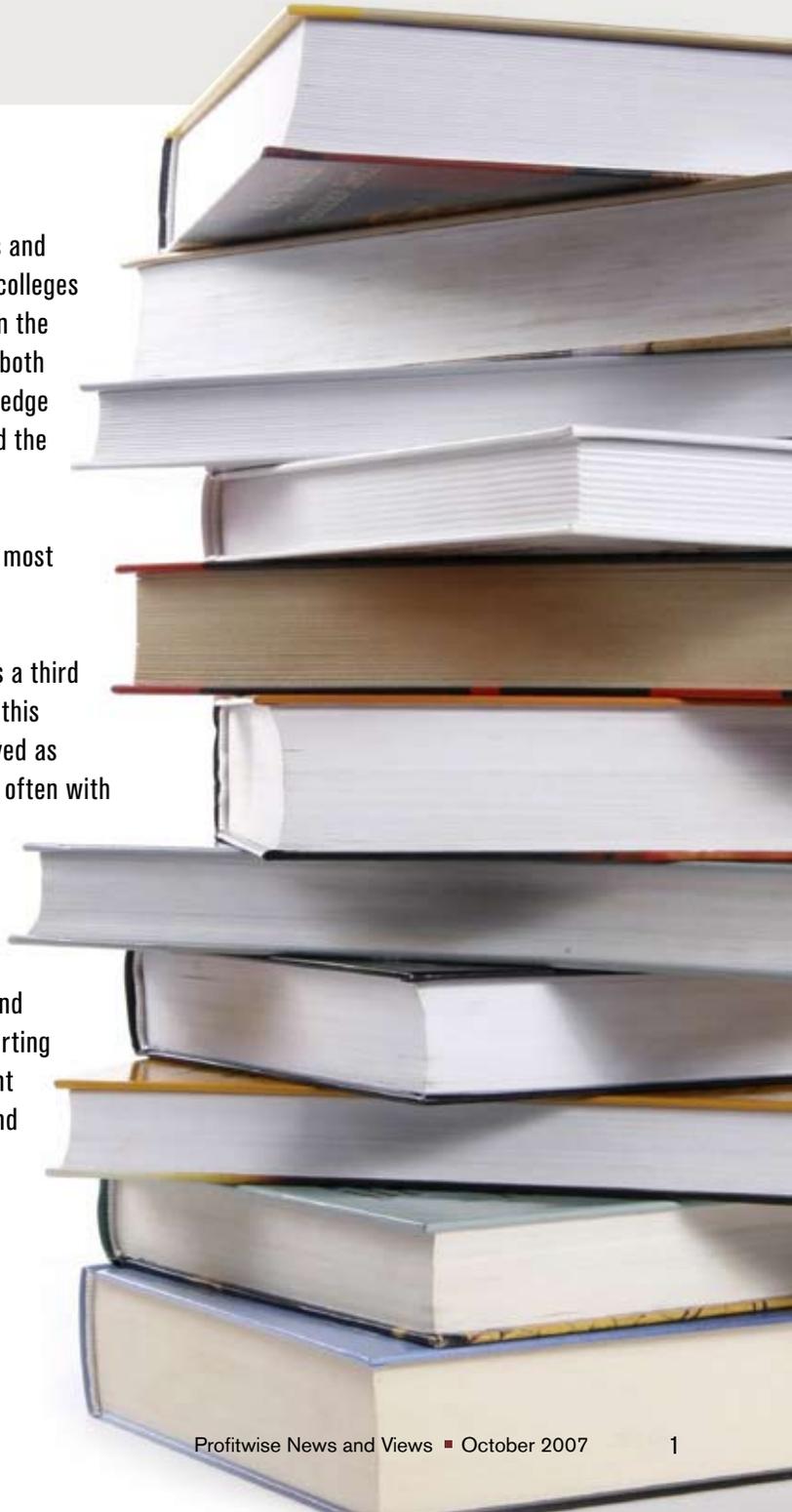
Introduction

It has become almost hackneyed to suggest that we now live in a knowledge-based economy. Firms prosper and die based on their ability to add intellectual value to their products and services. Even in mature industries, such as manufacturing, the application of knowledge to enhance production techniques and increase productivity has been fundamental to competitive success. With the pace of economic change accelerating, economic development strategies that emphasize having the best human capital available to adapt to change continue to gain favor. Noted economist Edward Glaeser has demonstrated that communities with the highest educational attainment continue to adapt and prosper across differing economic eras. Glaeser's study of the Boston economy found that it was largely due to the significant human capital in the city that Boston has been able to re-invent itself to succeed in differing economic conditions.¹

If knowledge and human capital are fundamental building blocks of successful communities and regions, one might ask a basic question about how communities build human capital. An obvious starting

point is local colleges and universities. Clearly, colleges and universities are in the knowledge business, both the creation of knowledge through research, and the dissemination of knowledge through teaching. In addition, most higher education institutions embrace community service as a third critical function, and this increasingly is observed as community outreach, often with a specific economic development focus.

This article will discuss differing models for colleges and universities for supporting economic development in their community and region.



A Structure for Thinking about Higher Education and Its Role in Economic Growth

An ongoing project at the Massachusetts Institute of Technology (MIT),² under the direction of Richard Lester, has developed a useful, four-part structure for describing the types of economic transformation a community might experience, and the role that higher education can play in aiding that transformation:

Indigenous creation – the case of a new industry emerging that has no antecedent in the region. This is often directly related to a spin-off of a technology from a university. While this sort of development can receive a great deal of attention, it is relatively rare. To many, this is a “big-bang” economic development strategy where a university helps create a Silicon Valley or research “corridor.”

Transplantation – an industry is new to a region, but it primarily develops through the transplanting of an existing industry. The development of the auto industry in southern states is a recent example. The region did not have auto production as part of its industrial heritage, and obviously the industry was not a new creation spun off from universities. Rather, the structure and knowledge of the industry was transplanted, particularly by foreign nameplate automakers.

Diversification into related industries – an existing industry goes into decline, but a related industry emerges that can take advantage of the mature industry's core technology. An example is the emergence of the polymer engineering and manufacturing industry in Akron, Ohio. As the tire industry flagged, a new industry emerged capitalizing on the value of polymers in synthetic rubber tire production.

Upgrading an existing industry – the application of new production technology that can also lead to the development of new products or services. The MIT study described the revitalization of the industrial machinery business in Tampere, Finland, as an example of integration of electronics, control, and communications technologies into a traditional product that benefited the forestry, paper, and transportation industry.

Each of these types of economic transformations involves different roles for higher education institutions. As Lester suggests, for an institution of higher education to be effective in economic development, it must be highly attuned to its local economy and understand the local economic development strategy. For example, in the first case of “indigenous creation,” a research university with an active commercialization office is essential. The new industry is likely to be the product of a scientific or technological

breakthrough at the university. A potential problem is that, since knowledge is easily transmitted, a local community can only benefit from the new technology if it can be commercialized locally. Universities that actively partner with business and encourage the commercialization of knowledge through tech transfer and licensing offices can often help local communities gain from basic research advances.

facilities often represent the primary opportunity for colleges and universities. When the auto industry began to have a significant presence in South Carolina, the state's higher education establishment supported the industry's growth through several programs. At the university level, Clemson added curriculum support in engineering fields related to automotive manufacture, and helped to create an advanced research facility for German automaker, BMW. The state's community colleges began providing essential training for auto workers.

Perhaps the most ambitious midwestern effort in university-supported economic development is at Purdue University in Indiana. According to Vice Provost for Engagement, Victor Lechtenberg, Purdue is responding to the economic development needs of Indiana by: 1) aligning itself institutionally to be more responsive in teaching, discovery, and engagement; 2) identifying Indiana-specific targets of development

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In the case of transplantation of an industry, providing worker training and developing specialized research

opportunity; and 3) emphasizing external outreach. This has led to the establishment of university goals in the areas of economic development, K-12 education, service learning (where Purdue students are expected to give back to the community), continuing education, and life-long learning.

To implement its economic development strategy, Purdue created a set of internal institutions with four components:

Technical Assistance Program (TAP) and Manufacturing Extension Partnership (MEP) – TAP provides production and management assistance to area business; MEP provides intensive training and transferable skills to managers, engineers, supervisors, and staff personnel.

Purdue Research Foundation – founded originally in 1930, assumed economic development roles beginning in the mid-1990s, and features a 200,000 square foot technology incubation facility that has launched over 40 high-tech companies.

Discovery Park/Entrepreneurship Center/Center for Regional Development – engages in applied research, policy analysis, and technical assistance that addresses high-priority regional needs and policy issues; fosters and brokers networks and partnerships; and provides regional strategic planning input.

Corporate Partnerships – interdisciplinary collaborations with private sector entities. Ultimately, this strategy allows Purdue to align with the economic needs of an Indiana economy that is still struggling with a reliance on mature manufacturing firms.

What is needed to make Higher-education-led Economic Development Work?

Randy Eberts from the Upjohn Institute of Employment Research suggests that intermediaries may be a key to successfully bringing higher education and the business sector together.³ Intermediaries can play useful roles in two dimensions: technology transfer and education. First, there is a clear difference in the motivations of university researchers and firms that need an intermediary to bridge the gap (to commercial marketability). In the university, the researcher is driven by a desire to discover new knowledge and is motivated by peer recognition. For the

firm, it is the commercialization of new technology and the financial gain through a proprietary technology that matters most.

Fortunately, several intermediaries have been established to bridge this gap. First, government enabling legislation dating back to the Morrill Act of 1862 (establishing the land-grant university system), and more recently the Bayh-Doyle Act of 1980 that established a uniform patent policy for federally based research, helped

Michigan Regional Skills Alliance that has focused on workforce issues facing firms operating in a specific sector in distinct geographic regions. In particular, these intermediaries have focused on curriculum needs for working in a specific industry.

Are There Pitfalls in a Higher-education-based Economic Development Strategy?

While universities and colleges are local (and largely fixed) assets in a given

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establish a framework for university business interaction. This has encouraged the creation of government intermediaries, including National Institute of Standards and Technology, the Advanced Technology Program, and the Manufacturing Extension Program. In addition, Industry-University Cooperative Research Centers (IUCRCs) have created partnerships between industry, academia, and government dedicated to technology transfer. Other examples of intermediaries include, Partnerships for Innovation, Independent Technology Intermediaries, and University Technology Transfer Offices (a prime example is the Wisconsin Alumni Research Foundation).

The other role for intermediaries is in education and workforce development. School-business partnerships, advisory committees, cooperative education programs, and customized training are all intermediary opportunities. As an example, Eberts noted the work of the

community, the question remains whether higher education can and should align itself with an economic development mission. Some question whether an interest in the direct application of knowledge reduces the traditional missions of basic research and scholarship. In fact, the history of higher education interactions with business has been uneven as basic institutional objectives have created suspicion between the two sectors. Surveys suggest that business rarely looks to universities as partners and that much of the industry knowledge they gain comes from suppliers, competitors, and consulting firms. It is therefore not surprising that success stories regarding universities and economic development in any given community tend to be more individual case studies than a systematic model for higher education engagement in the community.

Moreover, it is essential to focus on realistic economic development

strategies. The creation of whole new industries from breakthrough science is only likely to occur at the very best schools. Often, more basic strategies, such as using community colleges to help train workers for key local industries, can produce significant and realistic returns.

Ironically, the U.S. was at the forefront of creating a system of university and industrial engagement. The establishment of the land-grant university system in 1862 was specifically designed to create university-based extension programs in agriculture and manufacturing that were aimed at delivering the best university research to farms and factories. Today, many schools may be going back to their land-grant roots and revitalizing the role for higher education in local and regional economic development.

NOTES

- 1 Glaeser, Edward L. Reinventing Boston: 1630-2003. *Journal of Economic Geography*, Oxford University Press, vol. 5(2), pages 119-153, April 2005.
- 2 MIT project and summary of the findings from the first phase of research, available online at <http://web.mit.edu/lis/papers/LIS05-010.pdf>.
- 3 Ebert, Randy. *Can Higher Education Foster Economic Growth?*, presentation at the Federal Reserve Bank of Chicago, October 30, 2006, available online at www.chicagofed.org/news_and_conferences/conferences_and_events/files/2006_higher_education_eberts.pdf.