

## **AN OKLAHOMA PARTNERSHIP: HIGHER EDUCATION AND ECONOMIC DEVELOPMENT**

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**Universities play a valuable role** in economic development, but that role is neither well defined nor easily understood. States and communities seeking to improve their economic fortunes are turning to universities to participate more fully in economic development. For their part, universities are promoting their own economic development agendas while trying to increase state and community support. Understanding the economic impact of colleges and universities has long been of interest to higher education administrators, policy makers and public officials. Higher education institutions carefully walk the line between the pursuit of the traditional academic mission and the need for contemporary relevance. This is especially true in Oklahoma, where colleges and universities are increasingly seen as incubators of future economic development.

This article situates Oklahoma within broader development trends by reporting on a state-wide survey of administrators that sought to ascertain the degree and type of development activity undertaken by colleges and universities in Oklahoma. The results suggest that, while

such activities are substantial and increasing, they have not evolved in any organized or systematic fashion. In particular, the types of activity undertaken by Oklahoma institutions bear little consistent relationship to the type of institution involved.

#### EDUCATION AND ECONOMIC DEVELOPMENT: THE BROADER TRENDS

Higher education has historically played significant, if shifting, roles in the economy and society. According to Clark Kerr (1994), the main purposes of higher education have varied: "sometimes they have been service to the church, or to the ancient profession, or to an ideology, or to an aristocratic and/or affluent class, or to the efficiency and power of the nation-state" (p. 51). Today colleges and universities are expected to contribute to economic development and competitiveness initiatives at the local, state, and national levels. Industry and academic partnerships are encouraged, with advocates citing benefit of both "forward and backward linkages" (Hudson 1974; Stokes 1996; Knott 1988). Beyond those innovations that contribute to the profitability of specific companies, forward linkages also enhance the general level of human capital development and provide important region-relevant knowledge which stimulates regional development. Backward linkages take the form of business given to local suppliers who benefit from higher education expenditures. While such partnerships are not an unprecedented feature of American higher education, they do appear to be changing in character, extent of collaboration, and number. Still, universities are generally not seen as primary sources of new business. For example, they hold only about 2% of the active patents (Udell 1990). Increasingly, though, higher education resources loom large in state economic development strategies (John 1987; Osborne 1987).

The potential benefits of higher education for economic development are not undisputed. Some analysts dispute the links between the two, or argue that the evidence for such links is inconclusive (Miller and Clark 1983; Beachler 1985). Indeed, according to Stankiewicz (1986) "despite numerous studies which have been carried out during recent years, our knowledge of the actual performance of different university- industry interfaces continues to be patchy" (96). Others point

to the difficulties facing a non-profit institution like a university in conducting the cost-benefit analyses of such interfaces, analyses that would be routine in a corporate setting. Indeed, apart from anecdotal case studies of development successes, there exists as of yet no theoretically-grounded model of the university-industry innovation process. (Melchiori 1984; Tornatzky 1983; Slaughter 1990). In sum, "despite the rapid growth of industry-university research relationships and the high expectations for them, little evidence exists that these mechanisms are effective in producing new companies, new jobs, or new products. Given the size of investment in many of these arrangements, the lack of information about costs, benefits, and impact is striking" (Fairweather 1990: 78).

A second caveat questions not the actual contribution of industry-university arrangements to economic development, but whether or not these arrangements corrupt the academic integrity of higher education. Relatively little research has been conducted on the potential conflict of agendas and missions. Public higher education faces both cost pressures and the prospect of limited relief from skeptical legislatures. Yet, as Fairweather (1989) warns, "a university must ask itself whether and to what extent it should emphasize various missions. If undergraduate instruction is a major goal (even if not the primary one), a university should pursue liaisons with industry only if it is assured that instruction will in some way benefit (or at least not be harmed). The failure to resolve questions of purpose beforehand increases the likelihood that partnerships with corporations may move the university in undesirable directions "(403). Of particular concern here is the asymmetry between the perspectives and interests of the two parties. While corporate-campus collaborations are ostensibly reciprocal, a short-term, corporate focus upon profitable applications may overwhelm the less distinct, and more distant payoffs sought by universities. To the extent that the academy does adopt the corporate perspective, it risks undermining public-and especially taxpayer-support for its pedagogical mission (Slaughter 1990; Anders 1992).

These concerns notwithstanding, there is a general acceptance that the benefits of higher education involvement in economic development activities far outweigh any negative consequences. The proponents of the use of academe as a tool for economic development greatly outnumber the skeptics. Beyond the question of whether or not

industry-university partnerships can achieve economic gains is the fundamental question of whether institutions should embrace these activities. Such partnerships need not contradict academic instructional and research goals. However, much more research is needed to assess the impact of economic development activities both inside and outside colleges and universities. As a first step, the survey reported below seeks to identify the factors motivating institutional involvement in economic development enterprises, identify the nature of these activities, and resulting changes in internal academic policies and procedures.

### THE OKLAHOMA EXPERIENCE

Oklahoma public higher education economic/service/outreach policies and practices have been shaped by both citizen commissions and legislative and executive actions.

A recent report by a citizen commission offered this enthusiastic endorsement:

Higher Education provides talented employees, technical assistance, and basic and applied research - all of which improve the productivity of the private business sector. The business sector in turn is the state's engine for economic growth. Higher education institutions must receive the funding needed to provide customized, firm-specific work force development programs at no cost to Oklahoma businesses. By educating and producing a higher skilled, highly desirable work force, Oklahoma can attract businesses with those kinds of jobs to our state. By partnering with state economic development specialists, higher education can help attract those businesses considering a move to Oklahoma or assist those expanding current operations within the state." (Citizens' Commission on the Future of Oklahoma Higher Education Report, October 1997, p.1)

In response to the Commission's findings, the Oklahoma State Regents for Higher Education, at their May 1998 meeting, awarded approximately \$3.2 million in grants for economic development activities at 14 Oklahoma public colleges and universities. "This is the first time in state higher education history that incentive funding has been directly

targeted to economic development activities on Oklahoma college and university campuses", announced Chancellor Hans Brisch. "We believe that this grant program will help Oklahoma establish a stronger, more responsive economy because it closely links higher education resources with Oklahoma businesses, communities and state agencies" (State Regents 1998, p.1). By March, 2001, the Regents awarded 30 grants totaling \$8,820,750 which attracted over \$25,955,621 in matching funds (Oklahoma State Regents for Higher Education).

In addition to the Regents' actions, the Oklahoma Legislature passed House Bill 2863 which was signed into law Monday, May 18, 1998. The bill gives colleges and universities an incentive to participate in business ventures with private enterprise. Titled the "Oklahoma Technology Transfer Act of 1998," the bill allows institutions of higher education in Oklahoma to own equity in a business venture. Institutions would be permitted to use the facilities and other resources, including the value of faculty time and expertise, to acquire the equity interest.

Given this civic and legislative support, how active are Oklahoma colleges and universities in economic development activities, and how are they responding to these and other external stimuli? Identifying these activities and the extent of participation in them will be helpful to the State of Oklahoma as well as all colleges and universities that are seeking to expand their economic development activities in the future.

## THE SURVEY

This survey asked administrators what they were doing in the way of economic development, and why they were doing it. The research questions were:

1. To what extent did institutions participate in selected economic development activities from 1988-1998?
2. Which external factor(s) influenced decisions to engage in selected economic development activities from 1988-1998?
3. To what extent have institutions strategically planned for selected economic development activities for 1998 and beyond?
4. Which external factors influenced institutional decisions to develop strategic plans for selected economic development activities?

5. What economic development activities have higher education institutions in Oklahoma been engaged in the past, present and plan to be in the future? How are specific activities associated with the type of institution?

6. What types of businesses are being served by the economic development activities of institutions of higher education in Oklahoma?

7. What are reported to be the "motivating" factors responsible for encouraging (or discouraging) increased institutional involvement in economic development activity among public institutions?

8. What, if any, change has occurred among selected academic policies associated with increasing institutional involvement in economic development activity?

9. In the opinion of the respondents, what is the role of higher education, if any, in economic development? What factors encourage or discourage involvement in economic development activities? What are the respondents anticipated economic development activities for the future?

There are currently 44 institutions of higher education in Oklahoma. Twenty-nine are public institutions and 15 are private institutions. A survey (*The Economic Development and Policy Change Survey*) was mailed to the presidents of all 44 institutions, public and private, in July 1998. Twenty-five institutions responded, 21 of which were public institutions. Follow-up with all of the private institutions revealed either a lack of time or willingness to respond or, as with the theological institutions, a sense that economic development activities were not relevant to their educational purpose.

The survey consisted of closed-ended questions with a Likert-type scale to measure responses concerning the type of various economic development activities, strategic planning, perceptions of the influence of external factors, and level of participation in economic development activities. Using open-ended questions, the survey assessed the respondents' perceptions of the role of higher education institutions in economic development, encouraging or discouraging factors, and likely activities for the future. Institutions provided information on the extent of existing policies and changes in academic policies in a "yes/no" format. Finally, the survey requested the respondent to rate the degree of influence that each of 36 motivational factors had with regard to

increasing economic development activity. Twenty-five public and private institutions responded. The survey's categories of economic development are illustrated by the following examples:

**Applied Research**

- The Center for Economic and Management Research (OU)
- Food Product Development (OSU)
- The Applied and Environmental Microbiology Program (OU)
- Business Research Center, Cameron University

**Business Development**

- The Center for Entrepreneurship (OSU)

**Copyrights, Patents, Trademarks**

- The Patent and Trademark Depository (OSU)

**Data Collection and Dissemination**

- The Biological Survey and Mesonet (OU)
- The Center for Agriculture and Environment (OSU)

**Education, Training and Management, Workforce Development**

- The Business and Industrial Development Department, Oklahoma City Community College
- The American Institute of Banking Programs, Rose State College
- The Center for Entrepreneurship, Southeastern Oklahoma State University

**Funding Procurement**

- The Small Business Innovations Research (SBIR) Funding Programs administered by the Oklahoma Center for the Advancement of Science and Technology

**General Technical Assistance**

- The Institute for Telecommunications (OSU)
- The Center for Urban and Regional Studies (OU)

**International Trade**

- The Center for International Trade Development (OSU)
- The Office of Globalization (UCO)
- The International Language Center, Tulsa Community College

**Networking and Partnerships**

- The Center for Business and Economic Development (OU)
- The Northeastern Oklahoma Manufacturers' Council, OSU Technical Branch - Okmulgee

**Research and Development**

- The Engineering Institute and Research Lab (OU)
- The Medical Laser Lab (OSU)
- The Health Research Program administered by the Oklahoma Center for the Advancement of Science and Technology

**Rural Development**

- The Rural Enterprise Team (OSU)

**Technology Transfer**

- The Oklahoma Center for Integrated Design and Manufacturing (OSU)
- The Office of Research Administration, OU Health Sciences Center

**Research Parks/Incubators**

- Swearingen Research Park (OU)



## SURVEY FINDINGS

The present article reports the findings on just two of the survey's questions—what institutions did (question #1) and—why they did it (question #7).

### QUESTION ONE

The first research question sought to assess the extent to which institutions participated in selected economic development activities over a ten-year period. Education, Training and Management and Workforce Development were the economic development activities that institutions most participated in over the past decade followed by Networking and Partnerships, Business Development, General Technical Assistance and Data Collection and Dissemination. Activities least engaged in by institutions were: Technology Transfer, Rural Development, Applied Research, Research and Development, Funding Procurement, Copyrights, Patents and Trademarks, International Trade and Research Parks/Incubators.

#### I. Applied Research

Of all the respondents, 40% indicated that, between 1988 and 1998, their institution's effort towards participating in applied research was non-existent. Another 32% responded that a minimal effort was given to this economic development activity. Only 28% of all public and private institutions indicated a major effort was directed toward this activity. Of the public institutions, an equal 33.3% was applied to each level of activity. The types of public institutions which indicated the strongest effort in applied research activities include the comprehensive institutions and constituent agencies.

#### II. Business Development

A plurality, 48%, of all respondents, indicated minimal effort toward business development. A major effort was reported by 36% and only 16% reported no activity. A high percentage of public institutions reported

minimal effort, 47.6%, and a major effort was indicated by 42.9%. Few public institutions, 9.5%, reported no activity. The type of public institutions which indicated the strongest effort in business development activities include the comprehensive institutions and two year urban institutions.

### III. Copyrights, Patents and Trademarks

Only 12% of all institutions indicated a major effort for copyrights, patents and trademarks. The majority, 56%, showed no activity and 32% reported minimal effort. Public institutions reported 52.4% did not participate, 33.3% were involved at a minimal effort level and 14.3% gave a major effort to this activity. The type of public institutions that indicated the strongest effort in copyrights, patents and trademarks were the comprehensive universities and constituent agencies.

### IV. Data Collection and Dissemination

Data collection and dissemination efforts ranked a minimal effort by 48% of all the respondents. A major effort was reported by 32% and 20% responded no effort at all. The public institutions responded by 38.1% of engaging in a major effort, 47.6% in a minimal effort and only 14.5% in nothing at all. The type of public institutions which indicated the strongest effort in data collection and dissemination were the comprehensive universities, the regional II universities, and the technical branches.

### V. Education, Training and Management, Workforce Development

The strongest activity reported by all respondents was in the area of education, training and management, and workforce development. A healthy 64% reported a major effort and 36% reported a minimal effort. Of the public institutions, over 71% reported a major effort and 28.6% indicated a minimal effort. The type of public institutions which reported the strongest effort in education, training and management and workforce development were the comprehensive universities, regional I universities, two-year rural institutions, two-year urban institutions, and technical branches.

#### VI. Funding Procurement

A fairly even division of effort was reported for funding procurement. Of all respondents, 36% said no involvement, 28% reported a minimal effort and 32% reported a major effort. The public institutions were evenly split with 33.3% indicating no involvement and 33.3% with a major effort. Slightly over 28% responded with a minimal effort. The type of public institutions which reported the strongest efforts in funding procurement were the comprehensive universities.

#### VII. General Technical Assistance

By a large margin of all respondents, 44% reported a minimal effort and 40% a major effort in the area of general technical assistance. Only 16% showed no activity. The public institutions indicated 42.9% participated in a major effort, and 47.6% in a minimal effort. Only 9.5% did not participate. The type of public institutions which reported the strongest efforts in general technical assistance were the regional I universities, and the technical branches.

#### VIII. International Trade

Most institutions, 56%, did not participate in international trade. Only 32% reported a minimal effort, and even fewer, 12%, a major effort. The majority of public institutions, 52.5%, responded that they exercised no effort in the area of international trade, 33.3% a minimal effort and 14.3% a major effort. None of the private institutions reported any strength in this area.

#### IX. Networking and Partnerships

Total respondents, 60%, indicated that a major effort was given to networking and partnerships. Only 20% indicated a minimal effort and again only 20% indicated no effort. Of the public institutions, a strong 66.7% showed a major effort, and only 19% indicated a minimal effort while 14.3% reported exercising no effort. The type of public institutions which reported the strongest efforts in the networking and partnerships were the regional II universities, two-year urban institutions, and technical branches.

#### X. Research and Development

The majority of public and private institutions, 40%, reported no involvement in research and development. Thirty-six percent indicated a minimal effort, and 24% showed a major effort. Of public institutions, 38.1% said they were not involved, 33.3% reported minimal effort and 28.6% indicated a major effort. The type of public institutions that reported the strongest efforts in research and development were the comprehensive universities and constituent agencies.

#### XI. Rural Development

Most respondents, 48%, reported minimal effort regarding rural development. Many, 32%, indicated no effort and only 20% reported a major effort. Most public institutions, 57.1% indicated a minimal effort, while 23.8% showed a major effort. Only 19% did not participate. The type of public institutions which reported the strongest efforts in rural development were the regional II universities and the two-year rural institutions.

#### XII. Technology Transfer

A consistent response was indicated for all institutions regarding technology transfer. Thirty-two percent reported no involvement, 32% reported minimal effort and 36% reported major effort. Of the public institutions, 28.6% reported no effort, 38.1% reported minimal effort and 33.3% reported major effort. The type of public institutions that reported the strongest efforts regarding technology transfer were the technical branches and constitution agencies.

#### XIII. Research Parks/Incubators

Finally, most institutions, 56%, did not participate in research parks or incubator projects. Thirty-six percent reported a minimal effort, and only 8% expressed a major effort. Of the public institutions, 52.4% were not involved; 38.1% reported a minimal effort; and 9.5% indicated a major effort. Of the public institutions, only the constituent agencies reported a strong effort in this area of activity.

TABLE 1

**Economic Development Activity Effort, 1988-1998**  
**Public and Private Institutions (N = 25)**

Activity	Not at All		Minimal Effort		Major Effort		Total
	f	%	F	%	f	%	%
Applied Research	10	(40.0)	8	(32.0)	7	(28.0)	100
Business Development	4	(16.0)	12	(48.0)	9	(36.0)	100
Copyrights, Patents & Trademarks	14	(56.0)	8	(32.0)	3	(12.0)	100
Data Collection & Dissemination	5	(20.0)	12	(48.0)	8	(32.0)	100
Education, training & management, workforce development			9	(36.0)	16	(64.0)	100
Funding Procurement	9	(36.0)	7	(28.0)	8	(32.0)	100
General technical assistance	4	(16.0)	11	(44.0)	10	(40.0)	100
International Trade	14	(56.0)	8	(32.0)	3	(12.0)	100
Network & partnerships	5	(20.0)	5	(20.0)	15	(60.0)	100
Research & development	10	(40.0)	9	(36.0)	6	(24.0)	100
Rural development	8	(32.0)	12	(48.0)	5	(20.0)	100
Technology transfer	8	(32.0)	8	(32.0)	9	(36.0)	100
Research parks/incubators	14	(56.0)	9	(36.0)	2	(8.0)	100

SOURCE: Author's calculations from surveys.

### QUESTION SEVEN

Over 90% of public institutions (n=21) reported economic development activities to be increasing. Research question seven identified the "motivating" factors that influenced increased institutional involvement among public institutions. The survey requested the respondents to rate the degree of influence that each of 36 motivational factors had upon discussions and/or decisions with regard to increasing economic development activity at their institutions within the past ten years. A mean influence score was calculated as the mean of the 21 respondent ratings for each of the 36 motivational factors, with 1 signifying "no influence" and 5 signifying "great influence." As summarized in Table 2, institutions reported the extent to which factors influenced institutions' decisions regarding economic development involvement. Factors such as point of view of the president, of business leaders, of state/legislators/government, having economic development part of a strategic plan, wanting to improve public relations and image, transmitting knowledge through nontraditional teaching, increasing state appropriations, meeting public service obligations, generating new knowledge, and increasing corporate involvement appear to be the most influential. Factors related to recruitment of students, increasing faculty publishing, augmenting faculty salaries were seen to have little influence on decisions related to the level of the institution's involvement in economic development.

TABLE 2

**Motivational Factors Influencing Economic Development In  
Public Institutions (N=21)**

Motivational Factors	Mean Influence Score
Points of view of institutional presidents	4.62
Point of view of business leaders	4.00
Point of view of state leg./govt.	4.00
Strategic, long-term planning process	3.81
Improving public relations and image	3.76
Transmission of knowledge through nontraditional teaching (distance education, conference, etc.)	3.76
Increasing state appropriations to the institution	3.67
Meeting public service obligations	3.62
Generating new knowledge and aiding curriculum development	3.62
Increasing corporate involvement and/or gifts to the institution	3.57
Assisting start-up business and/or providing technical assistance to established companies	3.48
Founding purposes, charter of mission of the institution	3.38
Point of view of the board of trustees/regents	3.38
Point of view of the local elected officials/government	3.33
Enhancing faculty development	3.29
Better use of real property	3.19
Improving research and instructional equipment and other instructional support	3.14

TABLE 2 (continued)

**Motivational Factors Influencing Economic Development In  
Public Institutions (N=21)**

Motivational Factors	Mean Influence Score
Point of view of faculty	3.14
Attracting federally supported research	3.05
Recruiting, retraining faculty	3.05
Transfer of technology, discovery in commerce	2.90
Accommodating faculty entrepreneurial activity	2.90
Recruiting noncredit students	2.76
Fund raising among alumni and other individuals	2.76
Point of view of alumni	2.71
Increasing industry-sponsored research	2.67
Academic freedom of inquiry and open exchange of information	2.62
Ability of faculty to augment their base salaries	2.52
Increasing faculty publishing activities	2.48
Proprietary rights, inventions, discoveries	2.43
Recruiting undergraduate students	2.38
Tax exempt status of the institution	2.00
Recruiting graduate students	1.95
Revenue generation through equity participating in commercial ventures, related direct investment	1.90
Potential liabilities of commercialization of research	1.76

SOURCE: Author's calculations from surveys.



## CONCLUSIONS

The partial findings presented here suggest some provisional conclusions. Oklahoma's public institutions of higher education are increasingly involved in economic development activities. These institutions must decide upon the nature and level of their involvement in economic development activities in the context of a complex array of external and motivating factors. Additional study in this area, in particular with regard to the purported linkage between increased economic development involvement and expanded funding, would be of assistance to leaders contemplating more extensive commitment of their institutions' resources to economic development initiatives.

The participation by Oklahoma public colleges and universities in economic development does not happen in any organized or systematic fashion. There appears to be no relationship between the level of economic development activity and the type of public institution, with the possible exception of the comprehensive universities. This is contrary to much of the literature, which suggests that different types of institutions participate in different type of activities. (AASCU 1986; Cote 1993). Colleges and university in Oklahoma have been seeking on their own to determine if their institutions have areas of specialization that can contribute to economic development and have explored potential industry-university relationships to secure resources for these activities.

The findings reported here highlight the "motivating" factors responsible for encouraging increased institutional involvement in economic development activities among public institutions. The results closely mirror similar national studies of four-year institutions (AASCU 1986) and land grant institutions (Cote 1993). While institutional involvement in economic development activities is increasing in Oklahoma, albeit in a variety of ways, the factors motivating this activity are not different in Oklahoma compared to the rest of the country.

The literature suggests a strong correlation between level of economic development activity and change among selected academic policies (Cote, 1993; AASCU 1986). The findings of this study found no significant relationship. Institutions in Oklahoma may not be associating increased in economic development activity with initiating changes in related faculty or other internal policies but are instead, dealing with individual issues in isolated ways. Recently approved State Questions 680 and 681 may signify a change in this pattern of institutional behavior.

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