The University of Nebraska at Omaha's Contribution to the Omaha Regional Economy

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Abstract

Education is a primary mission of metropolitan universities. This article measures the value of education at the level of a student credit hour—the metric. It applies this metric to determine the value of education transmitted at the University of Nebraska at Omaha (UNO) for one academic year and the total contribution of UNO to the economy of the Omaha metropolitan region. The results show a much larger contribution than typical impact studies indicate.

The typical study considering the economic impact of a university considers the salaries of faculty and staff and the operating and capital expenditures within the region by the university. It usually includes additional expenditures such as those due to students coming from outside the region. All these expenditures lead to further "indirect" expenditures and "induced" incomes which are included with an appropriate multiplier.

However, as it will be shown, a most important item is not usually considered. Education at a university increases the skills, and thus the productivity, of the student. And the increase in this productivity results in increased earnings. It is found that these earnings contribute, by far, a much larger effect than the combined sum of all the other factors. To measure this, it comes down, in effect, to obtaining a metric—the value of a credit hour of instruction.

This paper will first explain the method of obtaining that metric. This will be used to determine the value of the University of Nebraska at Omaha's (UNO) output in one year. Then, again using the metric combined with the expenditures used in typical impact studies, this paper will go on to find the total economic contribution of UNO to the Omaha, Nebraska metropolitan region.

The Metric: The Value of a Credit Hour

It is common knowledge and well documented in economic literature that education increases incomes. This is based on the concept that education increases a person's skills which increases productivity which in turn results in higher incomes. Thus, the value of education can be measured by the increase in the incomes that result.

The ideal way to measure the value of an education is to survey previous students about the credit hours taken and their current income. Then one could find the average increase in income due to each credit hour. However, such a survey is financially prohibitive.

The alternative is to use Census Bureau data which gives average incomes by education level for the United States. It further subdivides the data by race and gender. This data was adjusted for Nebraska's relative income and the profile of UNO students. An adjustment was also made to adapt the data to the logarithmic functional form typically used to estimate salaries as a function of education. This allowed adjustment for the distribution of students in different years. The greatest increment in learning occurs in the freshman year.

Finally, account was taken for what is known as the "sheepskin effect." The literature on the sheepskin effect takes into account that degrees have an independent effect on the returns to education, which is an increase in income for completely finishing and becoming certified. A student completing all course work and completing his/her degree sends a more affirmative signal to prospective employers than one who completes almost all course work but does not quite get the degree.

After these adjustments it was found that the average increase in income each year over the working lifetime of an undergraduate student was $123 per year for each credit hour taken or $372 for a three-credit course. Further, the value of receiving the degree over the value of all the credit hours was $7,266 per year. Thus, 120 credits plus degree was worth a $22,026 increase in earnings per year for the typical UNO undergraduate student in 2003.

Total Value of UNO's Education for One Year

From the above results it is a straightforward process to compute the value produced by UNO in educating undergraduates in one year. Simply put, it is the total production of undergraduate credit hours times the value of a credit hour plus the number of graduates times the value of a degree. To get the total value of UNO's education, graduate students also must be included. So, the same procedure was used to compute the value of educating graduate students as was used for undergraduates. The findings are that the total increase in earnings per year for undergraduate and graduate students combined at UNO is $63.5 million per year for all student educated in 2003. This is the combined average increase in income for all students at UNO for each year of their working lives based on their education for that one year.

The next step in determining the total value was to calculate the working life of an average student. This was determined from a distribution of their average age of the UNO students. Thus the total increase in value of UNO can be obtained by simply summing the average number of working years times the average increase in salaries for one year. However, it is appropriate when considering a stream of dollars over time to discount to find the present value. Using a discount rate of 5 percent, the present value of the increase in earnings from one year's instruction at UNO is calculated to be

$750 million. This is the total value of all the instruction that occurred at UNO for the year 2003. This is a remarkable figure given that UNO's expenditures on wages and salaries, and operations and capital expenditures were $96.7 million in that year. This is a 7.7 fold increase of value over cost.

Contribution of UNO to the Regional Economy

To consider UNO's value to the region other factors must be taken into account: the expenditures on wages and salaries, the operations and capital expenditures within the region, the expenditure of foreign students who bring in monies from outside the region, and the expenditure of UNO retirees who stay in the region. Further, the social savings associated with an education—that is less welfare, greater health and less crime—must be considered. For all of these a multiplier would be applied because they cause an indirect increase in expenditures and induce more earnings. However, it is noteworthy at this point that together these factors account for less than 10 percent of the total contribution of UNO to the Omaha Metropolitan Region.

The single largest contribution from UNO to the Omaha region is the embodied knowledge of former UNO students. UNO being a metropolitan university, 70 percent of the former students at UNO stay within the region. To determine the value they create, the first step is to calculate the total credit hours from UNO embodied in the current active workforce. Likewise, the number of degrees from UNO held by former UNO students in the current active workforce must be determined. This calls for adjustments for migration from the area, retirement, and natural attrition. The total increase in earnings to these former students that can be attributed to their education at UNO is $1,194 million. These earnings, like other expenditures must be subject to a multiplier effect for they give rise to indirect expenditures and induced earnings.

The end result entails combining the expenditures of former UNO students, wages and salaries paid by UNO, operating and capital expenditures by UNO within the region, expenditures of retirees from UNO and students from outside the region, and the social savings that result from an education. These are all subject to a multiplier effect for they cause indirect expenditures and induced incomes. The outcome is that the total contribution to the Omaha metropolitan regional economy each year due to the existence of UNO is $1.6 billion. This is 6.4 percent of the total regional domestic production.

Summary

The key statistic in determining the value created is the dollar value of a student credit hour, the metric. This in turn depends upon the increase in earnings associated with an education. Once this is determined it can be shown that the value created by a university in one year is many times the value indicated by conventional economic impact studies. Further, a factor which probably is more important for metropolitan universities is that a large fraction of their former students stay in the metropolitan region. This means that they continue to add to the economy as a result of their education. Thus the effect is cumulative. The sum total of the university's contribution

is the effect of all the former students still located and working in the area.

The metric of the dollar value of a student credit hour can be used to answer other questions: What is the investment return to students? What is the value of teaching faculty? What is the return to state appropriations to education due to the increased taxes collected as a result of the education? More appropriately, how much will a reduction in appropriations affect taxes due to a number of students not attending college or leaving the region? These questions can be approached very sensibly with this metric: the value of a student credit hour.

References

Mincer, J. 1958. Investment in human capital and personal income. *Journal of Political Economy* 66 (August): 281-302.

Minnesota IMPLAN Group, Inc. 2002. *IMPLAN Professional Social Accounting and Impact Analysis Software.* Stillwater, MN: Minnesota IMPLAN Group, Inc.

Pursell, D. E., and J. A. Diechert. 1984. *The economic impact of the University of Nebraska.* Lincoln, NB: Bureau of Business Research, University of Nebraska, March 19.

Robinson, M. H., and K. A. Christophersen. 2004. *The socioeconomic benefits generated by Nebraska's community colleges*, May 3, CC Benefits, Inc.

Simpson, N., and B. Ingram. 2000. *The regional economic impact of the University of Iowa: An update.* Institute for Economic Research, University of Iowa, June 1.

U.S. Census. Income/income/cps/tables of income/203 asec92002)/persons/pinc04 educ/both sexes all races.

Weiss, A. 1995. Human capital vs. signaling explanations of wages. *Journal of Economic Perspectives* 9 (Fall): 133-54.

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