
FISCAL ISSUE BRIEF



An Analysis of the Impact of the University of Minnesota on Current Economic Activity in the State

Senate Office of Fiscal Policy Analysis

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Questions

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Introduction

The Fiscal Issue Briefs disseminated from this office have usually focused on a pending fiscal problem or have described the funding mechanisms of a new program. This Issue Brief is quite different and provides a distinct perspective on a state-funded program.¹ The program is the University of Minnesota. The perspective is the economic impact of the University on the state's economy.

Why would state policy makers be interested in this kind of analysis? The University represents the single largest post secondary institution and arguably the most important economic engine in the state. The Legislature appropriates over one-half of a billion dollars annually to the institution. Capital budgets contain

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¹ This Issue Brief is based in part on the author's dissertation at the University of Minnesota. That document contains an extended discussion of all of the aspects presented in this Brief.

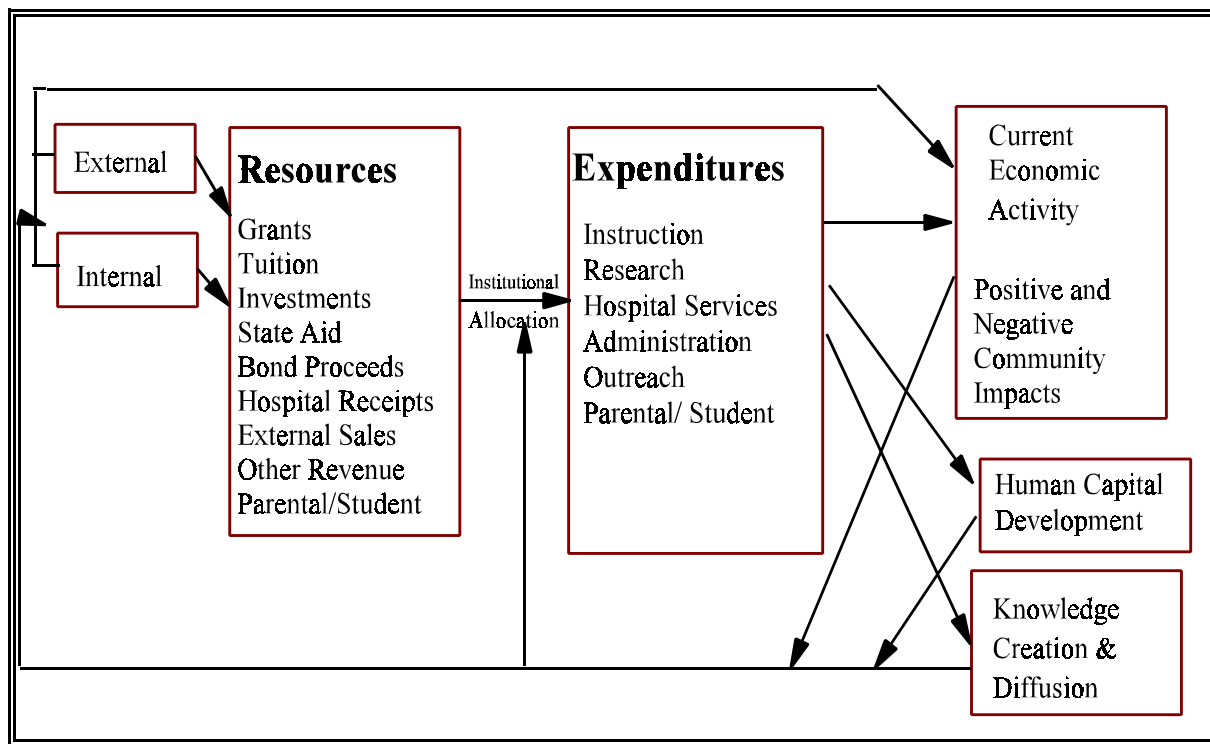
significant appropriations for buildings on the various campuses. There are many University graduates in the state and across the country that are daily engaged in economic activity. The University represents a significant portal to knowledge created around the world and is responsible for important breakthroughs in the medical, agricultural, mining and engineering fields that have resulted in the formation of a number of new companies in the state. While knowledge about the economic impact of the institution may never play a direct role in fiscal policy decisions, it informs the context of the decision process.

The Issue Brief is structured in the following way. The first section presents a simple conceptual model describing the mechanisms through which the impact occurs. The University is a complex institution and it affects the economy in multifaceted ways. This conceptual discussion will help the reader understand these mechanisms and will illustrate the limitations of the empirical analysis. The second section presents estimates of total economic activity *attributable* to the University. Section three presents estimates of new economic activity *created* by the University. This distinction is important and must be drawn in order to properly understand the impact of the institution. The final section is a summary of the Issue Brief.

Conceptual Model

Perhaps the clearest way to show the mechanisms that create economic impact by the University is through Chart 1 below.

Chart 1
University of Minnesota
Economic Impact Mechanisms



Financial resources enter the University in many forms-tuition, federal grants, state aid and others. They also enter the economy in ways not included in University accounting data, but that should be included in the analysis because they are directly related to institutional operations. These financial resources originate in only one of two geographic locations. Either they are generated within the state, such as tuition from resident students, or they are brought into the state from an outside source, such as grants from the federal government. The identification of the original source of financial resources is key in the economic impact analysis. If one is concerned with the total level of activity *attributable* to the University, the total sum of the resources and related spending is counted. If one wants to measure the new economic activity *created* by the University, only the spending related to the resources brought into the state is counted. Resources that are internal to the state only shift activity from other industries or other geographic locations in the state, they do not create new activity.

The institution takes these resources and allocates them through an internal process where they are translated into certain kinds of expenditures. The chart shows these expenditures broken down by major program area, but this is not the only way to think about University spending. For example, we could examine whether the Medical School creates more jobs and income than the College of Liberal Arts. In any case, these expenditures lead to the economic impact.

The right-hand side of the chart is central to policymakers' concerns. The University creates economic impact in three different ways, through current economic activity, through the development of human capital, and through knowledge creation and diffusion. Current economic activity simply measures the impact of the wages paid by the University, the purchases it makes to operate the institution, and the expenditures in the economy that are related to the institution but that are not directly counted by the University. This effect is measured on an annual basis and includes both the direct and indirect impact caused by multiplier effects.²

The development of human capital- the teaching that occurs at the University and the earning potential it generates- is the second way economic impact is created. There is a significant amount of research that demonstrates that higher levels of education lead to higher income. Simple comparisons of average annual earnings show that people with a college education earn much higher incomes than people with only a high school diploma. When this is summed over a whole economy, the difference can be substantial.

The third way that the University creates an impact on the state is through the creation and diffusion of knowledge. The work at the Medical School in the past has inspired a number of new products. Agriculture is more efficient due to research at the University. The mining industry literally owes its life to research that lead to new techniques in taconite production. There are many new companies formed that have had their start in a University laboratory.

² A multiplier is the cumulative measure of the spending attributable to an initial source of a stimulus to an economy. The re-circulation of spending continues until leakages from the system exhaust the original stimulus. These leakages are imports, taxes and savings. A multiplier of two means that the total number of indirect and direct jobs created from a stimulus is twice the number of jobs counted directly.

A complete analysis would measure the economic impact from all three ways. This is an extremely complicated undertaking and would consume significant resources. The major limitation of this Issue Brief is that it only reports estimates of the impact from the first of these, the impact from current economic activity. The reader should clearly recognize the fact that the estimates in Tables 1 and 2 only include the impact from current economic activity and not the total impact of the University on the state.

Current Economic Activity Attributable to the University of Minnesota

This section estimates the current economic activity in the state that is attributable to the University. In order to estimate this impact, we have to perform an experiment that is very unrealistic. We have to remove the University from the state's economy. This requires two things, a sophisticated economic model of the state, and an estimate of all of the expenditures that are connected with the University. The model of the state's economy is readily available. The Department of Revenue operates a model that is well structured for this kind of exercise.³ The data for expenditures related to the University is more complicated. A significant effort was spent analyzing University expenditure data, sometimes at the vendor level, in preparation of this analysis. Other external data sources were also used.

In order to estimate the activity attributable to the institution all of the spending related to the University is removed from the economy through the economic model. This includes all salaries, employment, purchases of goods and services by the institution, and purchases of related goods and services. An example of related goods and services would be spending on a hotel room and dinner by a fan from Wisconsin attending a football game.

The University employs about 34,000 people and spends about \$1.8 billion annually.⁴ Table 1 below shows the impact on jobs, income, gross state product and population by removing this from the state's economy. The impacts are shown as negatives reflecting lower activity because of the absence of the University. The initial impact occurs in 1997, but this impact changes as dynamic aspects of the economy adjust over time. These aspects include shifts in relative wage rates, the supply and demand for labor, investment in capital and population flows. The complexity and dynamic attributes of these reactions are captured in the economic model.

³This model has been employed in a number of policy discussions in the past.

⁴ There are two clarifying points that should be made about these figures. First, the hospital is considered to be part of the University's programs even though it is technically part of Fairview Corporation. Second, this analysis begins with data from 1996, so the employment and spending data may be a bit lower than current numbers. This was necessary since this was the last year that hospital spending was available from the University. While the totals based on data for later years would differ somewhat, the percent of the state total should not be significantly altered.

Table 1
Current Economic Activity Attributable to the University of Minnesota

Economic Measure	1998	1999	2000	2001	2002	2003	2004
Total Employment	-62,700	-60,500	-58,100	-55,900	-54,300	-53,100	-52,300
% of State Total	2.0%	1.9%	1.8%	1.7%	1.6%	1.6%	1.5%
Real Gross State Product (billions)	\$-2.22	-2.15	-2.08	-2.01	-1.95	-1.92	-1.90
% of State Total	1.6%	1.5%	1.4%	1.3%	1.3%	1.2%	1.2%
Personal Income (billions)	\$-2.35	-2.49	-2.56	-2.60	-2.63	-2.68	-2.73
% of State Total	1.8%	1.9%	1.9%	1.8%	1.8%	1.7%	1.7%

By 2004 it is estimated that direct and indirect current economic activity attributable the University accounts for about 52,300 jobs, \$1.9 billion in real gross state product, and about \$2.73 billion in personal income. These figures are about 1.5% of state total jobs, 1.2% of total real gross state product, and 1.7% of total personal income. It is important to focus on the impact in the latter years in the table since these reflect the economy after it had time to adjust to the initial change.

Current Economic Activity Created by the University

Not all of the activity attributable to the University is new to the state. It has simply been shifted to the University from other industries or locations. For instance, a parent in St. Cloud may spend money for tuition either at St. Cloud State or at the University of Minnesota. Spending the resources at the University simply shifts the economic activity from St. Cloud, but it does not create new activity within the state.

Measures of the resources brought into Minnesota from outside of the state are required to estimate new activity created by the University. These resources include federal grants, nonresident tuition, hospital sales from nonresident, tourism related spending, and an estimate of import substitution.⁵ This last concept- import substitution- simply means that if the University did not exist, a number of students would leave Minnesota to attend schools in other states. They would take spending for personal consumption and expenditures related to their education with them. This potential reduction should be treated in the same manner as resources brought into the state. These resources were estimated and removed from the economy through the model in the same fashion as above. Table 2 shows the impact on the economy.

⁵ The estimates of new economic activity created by the University in the dissertation did not include a measure of import substitution. The estimates presented here contain additional measures to address this shortcoming and are higher than those in the original research.

Table 2
Current Economic Activity Created by the University of Minnesota

Economic Measure	1998	1999	2000	2001	2002	2003	2004
Total Employment	-22,400	-21,900	-21,200	-20,300	-19,600	-19,000	-18,500
% of State Total	0.7%	0.7%	0.7%	0.6%	0.6%	0.6%	0.5%
Real Gross State Product (billions)	\$.80	-.80	-.77	-.74	-.71	-.69	-.68
% of State Total	0.6%	0.5%	0.5%	0.5%	0.5%	0.4%	0.4%
Personal Income(billions)	\$.73	-.82	-.86	-.87	-.88	-.89	-.90
% of State Total	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%

These estimates are lower than those presented in the Table 1, but this should be expected. Only a portion of the total activity attributable to the University is really new activity in the state. If the resources that create this activity were removed, there would be about 18,500 fewer jobs, personal income would be lower about \$900 million, and real gross state product would be lower by about \$680 million by 2004. On a percentage basis, the University creates about .5% of state total jobs, .6% of state total personal income, and .4% of state total real gross product. New activity created by the University is about 35% of total activity attributable to the University.

This new activity creates additional state revenue that would not otherwise exist. Using very roughly calculated effective tax rates on income and gross product, the new activity generates about \$43 to \$45 million annually for the state.

Summary

This Issue Brief has presented estimates of the economic impact from current spending by the University of Minnesota on the economy of the state. This is only a limited analysis of the diverse ways the University affects the economy. There remains a substantial amount of work to be done to estimate the impact from the development of human capital and the creation and diffusion of knowledge. These are perhaps the more interesting mechanisms through which the University impacts the state, but the analysis of both contains significant pitfalls that make attribution to the institution difficult to measure. Until this analysis is complete, we have an incomplete picture of the University's impact.

Why should state policy makers be concerned with this kind of analysis? Certainly, it is not suggested that the state only finance those programs that generate the largest economic impact. This would be both shortsighted and incomplete. But policy making occurs within a contextual framework that reflects many diverse facets of an institution or a program. Analysis like this certainly help fill in that framework and creates a more complete context for policy making. For example, this type of analysis has been used before in the tax area. The policy change in the sales tax imposed on capital equipment was informed in part by similar economic impact analysis. This type of analysis may be applied to other policy areas and may lead to better informed policy decisions.

