Research Expenditures, Proposals, and Awards

Presented to the Regents of the University of Michigan
Homer A. Neal, Vice President for Research
December 15, 1994

The rich diversity of research activity by University of Michigan faculty have established this institution as the leading public research university in the country.

- National Science Foundation Rankings

The University of Michigan has demonstrated leadership in the discovery of knowledge and in the application of new technologies for the benefit of society. In order to maintain this momentum, it is very important that our annual research expenditures increase each year, as measured by absolute commitmentsand real purchasing power of these dollars (expenditures discounted for inflation).

Some indication of both the new research opportunities being offered by prospective sponsors and the responsiveness of faculty to these program opportunities is provided by the research proposals submitted during a given fiscal year.

One measure of the UM's research "momentum" is found by comparing research awards to annual research expenditures. Many federal awards are made on a multi-year basis, and therefore, the funds cannot be expended in a single fiscal year. Nonfederal awards are often made on an annual basis.

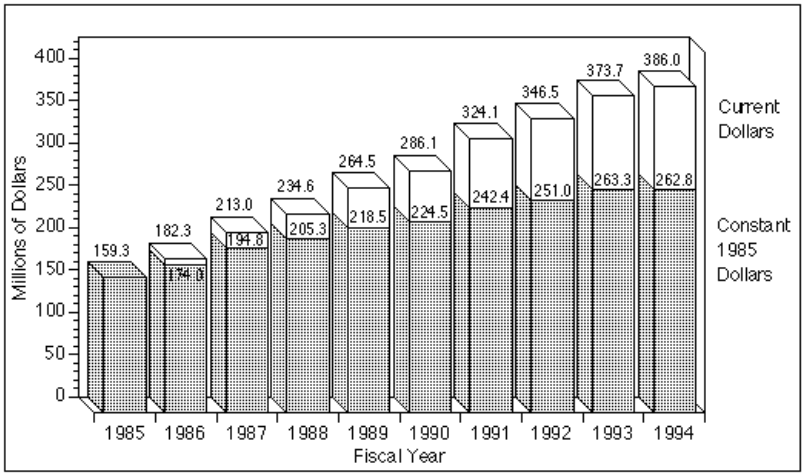
We also analyze UM research expenditures by university unit. Please note that several factors affect research support among UM schools, colleges, departments, and centers: availability of external support for various disciplines; relative cost of undertaking research; size of the academic unit; relative emphasis place on research, and national competitive position. Collaborative efforts among units further complicate an accurate relection of research spending broken down by unit.

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FY 1994 Annual Report to the Regents

Research Expenditures at the University of Michigan

Total research expenditures at the University of Michigan have **increased by 142.2 percent** over the past decade - from $159.3 million in FY 1985 to $386.0 million in FY 1994. Real purchasing power of these expenditures (i.e., discounted for inflation) has also continued to increase. Over the past decade, research expenditures increased by 64.9% in constant (FY 1985) dollars.



Total research expenditures increased by only 3.3% in current dollars during the last year, from $373.7 million in FY 1993 to **$386.0 million in FY 1994**. This compares to current dollar increases between 7% and 13% during the previous six years. There was a decrease between FY 1994 and FY 1993 in constant dollars, amounting to -0.2%.

Analysis of the Sources of Research Funding

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Research Expenditures by Source of Funding

Spending for federally sponsored projects increased significantly between FY 1984 and FY 1989. These expenditures leveled off in FY 1990, reflecting the perceived uncertainty and actual delays in the authorization of federal support for university research during this fiscal period. The 5.4% increase in research expenditures from federally sponsored projects in FY 1994 closely approximated the national average. Federal projects accounted for 69.2% of the total research expenditures at the University of Michigan in FY 1994.

Increases in expenditures from federal sources over the past several years have tended to mirror the expenditure patterns of projects funded by the National Institutes of Health (NIH). In FY 1990, for example, when the overall growth in federal expenditures was only 2.0%, NIH expenditures grew by only 1.3%. The increase in expenditures from NIH supported projects in FY 1994 was the same as the overall increase in federal expenditures-5.4%. NIH accounted for 57.0% of the total federal expenditures in FY 1994.

Expenditures from non-federal sources show a 3.4% decrease, from $76.3 million in FY 1993 to $73.7 million in FY 1994. Declines in support from private foundations, public charities, and endowment income sources, in large measure, accounted for the overall decrease in non-federal expenditures. This decrease in research expenditures from nonfederal sources, in some measure, reflects the overall status of the national economy and the financial uncertainty that many public charities and private foundations faced during the past year.

University funds in support of research accounted for $45 million (11.7%) of the $386.0 million in total research expenditures in FY 1994. These funds have been committed to meet critical capital facilities and equipment needs in support of the research mission, as well as the increase in University cost sharing expectations on federal grants and contracts. Over the past five years, these University commitments have remained fairly constant, however, as the total expenditures for research have risen.

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Research Proposals at the University of Michigan

In FY 1994, 3,141 proposals were submitted to prospective sponsors for support of research activities, requesting a total of $1,412,378,884. This requested funding for research represents a significant increase of 22.6% over the previous fiscal year. The dollar level of support requested of federal agencies exceeded $1 billion for the first time in the University's history.

After two years of decline, the 26.4% increase in the dollar value of proposals submitted to the Department of Health and Human Services (primarily NIH) is a promising indicator---710 proposals for $763.1 million were submitted in FY 1994. The increases in the number and dollar value of proposals submitted to the National Science Foundation---483 proposals for $179.5 million---and the agencies of the Department of Defense---175 proposals for $118.6 million---also bodes well for the future. The decline in the dollar value of proposals submitted to NASA, in part, reflects a change in the program orientation of this agency-that is, fewer open solicitations and more negotiated contracts.

The total dollar value of proposals to federal sponsors increased by 23.9% in FY 1994, while the total dollar value of proposals to nonfederal sponsors increased by 16.3%. A more detailed distribution of proposals by sponsor and by University unit is provided in Appendix B of this report.

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FY 1994 Report to the Regents

Research Awards at the University of Michigan

The dollar value of research awards increased by 12.6% overall. However, the increase in awards from federal sources was less than 1.0%. The number of awards (1,532) increased by 2.5%.

The "margin" between awards and expenditures in FY 1994 was $34.5 million ($375.5 million in new awards and $341.0 million in expenditures from externally funded sources). The University received several large, multi-year awards in FY 1994, the dollar values of which were recorded at the time of the initial award. Funds from these major awards will be expended over the next three to five years.

The decrease of 2.3% in the dollar value of awards from the Department of Health and Human Services follows on declines of 4.4% in FY 1992 and 9.2% in FY 1993. It should be noted, however, that major funding from the National Institutes of Health in support of various research centers at the University is on a five-year cycle, with the most recent awards being recorded in FY 1991 and FY 1992. Therefore, awards recorded in these two years tended to "inflate the base" when comparisons are made with the more recent data.

The $36.0 million in awards received from the National Science Foundation represents a turnaround, following a significant decline in award dollars from NSF in FY 1993. While the dollar value of awards from the Departments of Energy, Commerce, Transportation, and Justice are significantly higher than in the prior fiscal year, these totals can be impacted one way or the other by one or two major awards.

Nonfederal sponsors (industry, public and private foundations, public charities, trade and professional organizations, state and local governments, and other nonprofit organizations) committed $102.1 million to the University of Michigan, accounting for 27.2% of the dollars awarded in FY 1994.

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Expenditures by Unit at the University of Michigan

- Research expenditures in the Medical School were slightly lower in FY 94, down 0.6% from the previous fiscal year. This decline was a major contributing factor in the overall modest growth in research expenditures, since the Medical School accounts for just over one-third of all research expenditures.
- College of Engineering research spending increased by 11.0%, from $72.9 million in FY 93 to $80.9 million in FY 94.
- Expenditures in the School of Public Health also increased by 11.0%, from $12.0 million in FY 93 to $13.3 million in FY 94.
- Research spending in the College of Literature, Science and the Arts increased by a modest 2.3% from FY 93 to FY 94.
- Research expenditures dropped 29.1% in the School of Natural Resources and Environment
- School of Social Work research spending declined 4.8%.

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Ten-year trends for the research spending

Cumulative increases over the ten-year period:

- Medical School -- 162%
- College of Engineering -- nearly 300%
- College of Literature, Science, and the Arts -- 66%
- Institute for Social Research -- 110%

It is important to recognize that research opportunities during the decade of the 1980's have been largely centered in the fields of medicine, engineering, biotechnology, and applied science and technology.

Trends for all other Ann Arbor units

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Changes in Dollar Value of Proposals by Unit

Overall, research proposals showed a healthy 22.6% increase in the dollar value of proposals submitted in FY 94 compared to FY 93. All data cited below compares FY 94 to FY 93.

- After two years of decline, the 24.5% increase in the dollar value of proposals submitted by the Medical School is a promising indicator.
- Literature, Science and the Arts aggregate proposal value is up 40.3%
- Dentistry proposal value is up 78.5%
- Public Health increased 43.1%

Three units recorded negative changes in the dollar levels of proposals in the previous fiscal year.

- The College of Engineering recorded a relatively modest increase (3.4%) in the dollar value of proposals submitted.

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Changes in Dollar Value of Awards by Unit

The dollar value of research awards increased by 12.6% overall. The dollar value and number of awards received by the Medical School declined for the third straight year. However, much funding from the National Institutes of Health in support of major centers in the Medical School is on a five-year cycle, with the most recent awards being recorded in FY 1991 and FY 1992. In FY 1991, for example, the Medical School recorded awards in excess of $217.6 million, which marked the high point in research awards for the University as well ($382.0 million).

The 16.3% decline in research awards received by the College of Engineering may also reflect a cyclical phenomenon of federal funding (for example, the notice of award for the NSF Science and Technology Center renewal funding was anticipated in FY 1994, but has been held up at NSF; other major federal awards have been under negotiations for several months).

Significant increases in dollars awarded in FY 1994 were recorded in other units.

- College of Literature, Science, and the Arts (23.9%)
- School of Dentistry (30.8%)
- School of Public Health (33.1%)
- School of Natural Resources and the Environment (91.5%)
- School of Nursing (213.3%)
- Institute for Social Research (58.5%)

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