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Highlights

Utah's research universities generated almost \$2.1 billion in revenue in FY 2003. Of this, only 17% was in the form of state appropriations. For every \$1 received in state appropriations, Utah's research universities generate \$6 in revenue from other sources.

About 47%, or \$981.3 million, of the universities' combined revenues is considered "new" money; that is money coming into Utah from sources outside the state. This "new money", in the form of grants, contracts, patient revenue, and out-of-state tuition would not have come to the state had the universities not been in place.

In FY 2003, Utah's research universities spent \$658 million of the new money locally. The impact of this spending supported 24,000 jobs, generated \$739.1 million in income and \$1.5 billion in new business activity.

Based on these impacts, the state's treasury captured at least 17 cents of every dollar appropriated to the U of U and USU in FY 2003.

Through the technology transfer process, about 60 active companies can trace their roots to Utah's research universities, or are licensing University-developed technology. In 2003 these companies employed almost 5,000 people and paid wages totaling \$223 million. The total impact (direct, indirect and induced) was 13,300 jobs and \$468 million in income.

In FY 2003, the U of U and USU generated \$413.9 million in contracts and grants—most of which was used for research. Of this, \$265.3 million was spent locally. The impact of this spending supported 16,281 jobs, generated \$302 million in income and \$610 million in business activity.

Every \$1.0 million in research generated by Utah's research universities created \$1.5 million in increased business activity.

Utah's Research Universities: Generating Jobs, Wages and Tax Revenue for the State of Utah

Jan Crispin-Little, Senior Economist

The University of Utah (U of U) and Utah State University (USU) are the largest state institutions of higher education in Utah. During the 2003 academic year, more than 50,000 students were enrolled in courses and programs of study at these universities. The combined university revenues were \$2.1 billion, together, these institutions employed more than 25,400 people and paid \$1.0 billion in wages and benefits.

The U of U and USU are also the only Carnegie-classified public Doctoral/Research Universities in the state of Utah.¹ As such, they are responsible for transmitting and creating knowledge. In their role as educators, they transmit knowledge by offering professional educational services to thousands of students each year. In their role as knowledge creators, they attract millions of dollars in research each year to fund activities that broaden the existing intellectual, scientific and technological knowledge base.

Utah's research universities play yet another role. They are engines of economic growth and development. By attracting new money into the state and through the commercialization of university-developed technologies, the U of U and USU exert a significant and enduring impact on the local economy. A summary of these economic contributions is presented in this analysis.

Revenue and Spending

Economic impacts occur when money generated from outside a region is spent locally. Therefore, it is necessary to first identify out-of-state funding and in-state outlays in order to determine the economic impacts that can be attributed to Utah's research universities.

Revenue

In FY 2003, revenue from all sources, generated by both universities totaled \$2.1 billion. Of this, just 17%, or \$351 million was in the form of state appropriations. In fact, most of the revenue of

Table 1
Summary of Revenue Sources: FY 2003

Source	University of Utah	Utah State University	Total	Share of Total
Patient services	\$620,460,000	\$0	\$620,460,000	29.8%
State appropriations	\$227,821,000	\$124,048,756	\$351,869,756	16.9%
Federal appropriations, contracts and grants	\$187,484,000	\$133,959,696	\$321,443,696	15.5%
Sales and services	\$258,314,000	\$15,535,188	\$273,849,188	13.2%
Tuition and fees	\$107,796,000	\$47,356,409	\$155,152,409	7.5%
Auxiliary enterprises	\$63,508,000	\$32,625,680	\$96,133,680	4.6%
All other sources	\$201,147,000	\$58,546,260	\$259,693,260	12.5%
Total	\$1,666,530,000	\$412,071,989	\$2,078,601,989	100.0%

Source: University of Utah: *University Annual Financial Report 2003* (revised); *Utah State University Financial Report, 2003*.

these two institutions comes from sources other than the state of Utah. Approximately 30% (\$620 million) of the \$2.1 billion came from patient services provided by the University of Utah Hospitals and Clinics. Federal agencies provided 15.5% of the total and selling goods and services accounted for 13.2% of all funding. The remaining 25% came from other sources. (Table 1)

From this revenue analysis, it is clear that Utah's research universities are a good investment for Utah taxpayers — for every \$1 received in state appropriated funding, Utah's research universities generated almost \$6 in revenue from other sources.

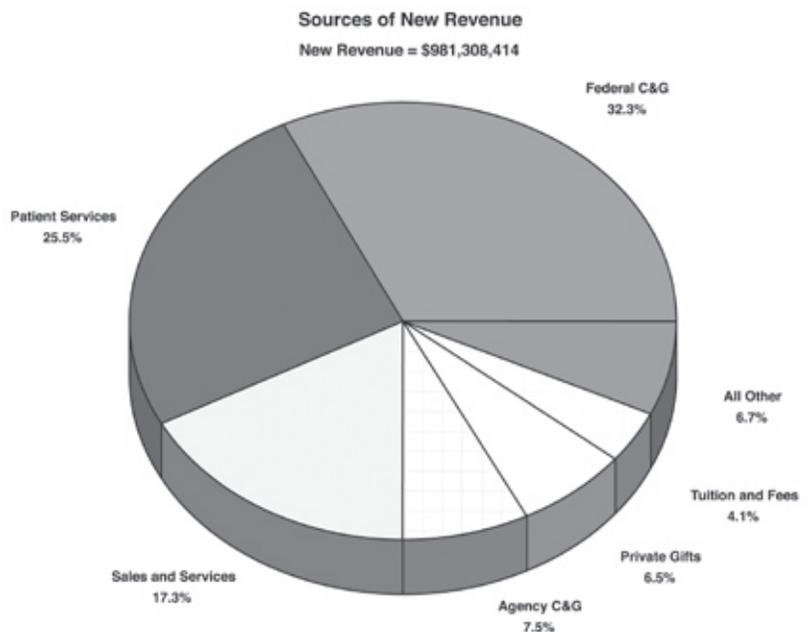
Because economic impacts are generated from “new” money entering the economy, it is necessary to identify the share of total revenue that is exogenously derived. In FY 2003, the U of U and USU generated \$981 million from sources outside Utah — about 47% of the two institutions combined revenues. Roughly one-third (\$321.4 million) of this “new” money came from federal agencies in the form of contracts and grants (C&G)—the largest share of which was committed to research. Other sources of new money included agency C&G, patient services (services provided to nonresident patients and payments from Medicaid and Medicare), out-of-state student tuition, gifts, and sales of goods and services to non-Utah residents. (Exhibit 1)

Spending

The second component in estimating economic impact is identifying how and where the universities spend their money. The U of U and USU contribute directly to the state's economy through (1) their purchases from local suppliers and (2) wages paid to university employees. Goods and services purchased from suppliers located outside the state of Utah represent “leakage” and do not contribute to Utah's economic base.

In FY 2003, Utah's research institutions spent a total of \$1.8 billion on payroll and other goods and services.

Exhibit 1



Wages and salary payments comprised the single largest expenditure group at both universities. Total employment at the two universities during FY 2003 was 25,429, including full-time and part-time faculty and staff as well as undergraduate and graduate students who were employed on a part-time basis. The wages and salaries paid to these workers totaled \$835 million which accounts for 45% of the combined expenditures. Nearly all of these workers reside in the state so most of this outlay remains in Utah.

Purchases of goods and services totaled slightly more than \$1 billion, of which \$522.6 million (about 51%) was spent locally. These purchases included a range of goods and services including office supplies, utilities, books, repair services, food, insurance, capital outlays for equipment, improvement of existing buildings and the construction of new ones. Therefore, of the \$1.8 bil-

lion spent by the U of U and USU in FY 2003, \$1.4 billion, or 73% was spent locally.

Economic Impacts

The economic impacts presented in this analysis include the direct, indirect and induced impacts from (1) operational spending of the two universities, (2) new construction, (3) research-related spending (a component of operational spending), and (4) technology transfer. (See box below for a discussion of the components of economic impact).

Economic Impact of Operations

The impacts of Utah's research universities are the real, or "net" effects on the state's economy that occur when the universities spend "new" dollars in the local economy. As previously indicated, the U of U and USU spent approximately \$1.4 billion in Utah during FY 2003.

Multiplier Analysis

The economic impact of Utah's research universities consists of three elements: the direct impact, the indirect impact and the induced impact.

The direct impact is the purchase of local resources (labor, goods and services). This includes the wages and salaries paid to University employees as well as the non-payroll purchases from local suppliers.

The indirect impact is the purchase of local resources by local businesses to produce the goods and services purchased by the universities. It also includes the consequent purchases by other businesses that supply the first group of businesses.

The induced impact is the local household spending of the wages earned by university employees and by the employees working for companies that supply goods and services, (directly and indirectly) to the universities.

The components of economic impact measurement include jobs, income and sales. The "jobs" and "income" measures include all jobs (full-time, part-time and self-employed) and the income connected to those jobs. Business activity corresponds to industry output which is a measure of the value of goods and services produced by industries in Utah.

By definition, economic impact measures changes in the size and structure of a region's economy when

goods and services are purchased locally using money generated from outside the region. In the strictest interpretation, economic impacts occur only when "new" money is injected into a local or regional economy and is spent locally. For example, tourist spending in Utah brings new money into the local economy. By analogy, money that the universities receive from federal agencies in the form of contracts, grants and gifts is considered new money since it originates outside the state of Utah.

Not all new money will impact the state's economy. A certain portion leaks out of the state when goods and services are purchased from businesses located outside the region. Therefore, the economic impacts shown here take into account the source of funding and the location of expenditure.

Tax Revenue Impacts

In addition to creating jobs, and increasing income and sales, the universities also generate tax revenues for state and local governments. The tax revenue impacts are generated by the spending of University employees, by workers whose jobs are attributable to University purchases and by supplier firms. These incremental tax revenues are difficult to measure with any precision, but they suggest that some portion of the state support provided to the University of Utah and Utah State University flows back into the state's treasury.

Table 2
Summary of Economic Impacts from Operational Spending: FY 2003

	University of Utah	Utah State University	Total
Jobs	18,635	5,283	23,918
Income	\$597,949,304	\$141,109,307	\$739,058,611
Business Activity	\$1,239,874,598	\$338,828,809	\$1,578,703,407
State Tax Revenue	\$48,015,329	\$11,331,077	\$59,346,406
Local Tax Revenue	\$8,550,675	\$2,017,863	\$10,568,538

Source: Calculated by the Bureau of Economic and Business Research, University of Utah.

About 47% of the combined budgets for both universities came from sources outside Utah; therefore, only \$658 million of expenditure was included in the impact analysis (\$1.4 billion x 47%).

Pumping \$658 million into the Utah economy increased business activity by almost \$1.6 billion, created almost 24,000 jobs state-wide and generated \$739.1 million in income for Utah workers. The increase in tax revenue from the income impact was about \$69.9 million—\$10.6 million in local tax revenue and \$59.3 million in state tax revenue. Table 2 shows the total economic impacts (direct, indirect and induced) generated by each university's purchases in FY 2003.

Based on these impact estimates, the state's treasury captured at least 17 cents of every state dollar appropriated to the U of U and USU in FY 2003. Further, for every \$1.0 million in state appropriation, the universities generated \$4.5 million in business sales. Table 3 shows the economic impacts relative to state appropriations.

Impact of New Construction

In addition to the construction activities undertaken by the universities, the state's building program funds on-campus construction. The Utah State Division of Facilities and Construction Management (DFCM) administers these funds, which amounted to \$53.7 million at the University of Utah and \$13.5 million at Utah State University in FY 2003. Although these are state-funded projects, in economic analysis, construction is typically treated as a change in final demand regardless of funding source. In this case, the money to finance these construction projects could have been raised through the bonding process or from other sources outside Utah.³

State-financed construction of \$67.3 million generated \$158.6 million in business activity, supported 1,669 jobs and about \$51.3 million in income in FY 2003. The tax revenue impacts included \$4.1 million in state tax revenues and \$733,225 in tax revenues for local governments.

Table 3
Economic Impacts Relative to State Appropriations

<i>Every \$1.0 million in state appropriation was associated with...</i>	
Jobs	68
Income	\$2.1 million
Business Activity	\$4.5 million
State Tax Revenue	\$168,880

Note: Estimates include the direct, indirect and induced impacts of the University of Utah and Utah State University.
Source: Calculated by the Bureau of Economic and Business Research, University of Utah.

Impact of Research Spending

Research is a defining characteristic of the U of U and USU, setting them apart from other state institutions of higher education. The impact of the Universities' research activities is determined by the wages and salaries paid to employees working on research contracts, and the research-related purchases made from local businesses.

Research Funding

In FY 2003, the University of Utah and Utah State University generated \$413.9 million in contracts and grants (C&G). Most of this money was earmarked for research programs. The largest share of C&G funding (77%) came from federal agencies such as the National Institutes of Health, National Science Foundation and Department of Defense. Non-government agencies (including private companies and foundations) provided about 17% of all research funding. The remaining 6% was provided by state and local agencies. Clearly, the research activities underway at both universities are largely funded by sources outside the state.

Research Spending

The combined research-related spending by the University of Utah and Utah State University totaled \$386.3 million in FY 2003, or about 93% of the dollars obligated or appropriated that year. Research grants are frequently awarded for more than one year and any given year's expenditures may include money awarded in the previous year as well as the current year. Likewise, some of the research dollars awarded in FY 2003 will be spent in future years.

Most of the money spent for research stays in Utah. Approximately \$265.3 million, or 69% of all research-related spending, was spent locally. The largest outlays

were the wages and salaries totaling \$164.2 million paid to the faculty, support staff and students who worked on research contracts during the year. An additional \$31.3 million was paid to administrative personnel and support staff to cover the costs associated with supporting research activity on campus. In total, more than 12,200 employees at the University of Utah and Utah State University were supported to some degree by research funding.⁴ About \$70 million was spent directly to purchase goods and services from Utah businesses, state and local government agencies and private foundations.

Research Impacts

The impact of research-related spending in Utah increased business sales by about \$610 million in FY 2003. University research contracts and grants supported almost 16,300 jobs statewide. The income associated with these jobs totaled \$302.8 million. The tax impacts included \$24 million in state tax revenue and \$4 million in revenue for local governments. (Table 4)

Based on these ratios, each \$1.0 million in research generated by the U of U and USU returned \$1.5 million to Utah's economy, created 39 jobs and \$732,000 in earnings. The impact on the state's treasury was \$59,000. (Table 5)

Technology Transfer Impacts

In addition to their role in education and training, Utah's research universities create knowledge, are sources of innovation, and stimulate economic development. Using a variety of technology transfer models, Utah's research universities collaborate directly with businesses to commercialize products and processes developed in research. Both of Utah's research institutions have active technology transfer offices. By 2003, approximately 60 active companies in Utah could

Table 4
SUMMARY OF ECONOMIC IMPACTS FROM RESEARCH-RELATED SPENDING: FY 2003

	University of Utah	Utah State University	Total
Jobs	9,127	7,154	16,281
Income	\$201,009,004	\$101,774,652	\$302,783,696
Business Activity	\$390,242,879	\$220,071,952	\$610,314,813
State Tax Revenue	\$16,141,026	\$8,172,505	\$24,616,531
Local Tax Revenue	\$2,874,429	\$1,455,378	\$4,362,807

Source: Calculated by the Bureau of Economic and Business Research, University of Utah.

Table 5
IMPACT OF RESEARCH GENERATED BY
UTAH'S RESEARCH UNIVERSITIES

<i>Every \$1.0 million in research generated...</i>	
Jobs	39
Income	\$732,000
Business Activity	\$1.5 million
State Tax Revenue	\$59,000
Estimates include the direct, indirect and induced impacts of the University of Utah and Utah State University.	

either trace their roots to research undertaken initially at the U of U and USU, or licensed university-developed technology. These spin-offs and licensees of university research ranged in size from one-person operations to companies that employ more than 1,000 people. The companies' technologies and related products and services also represent a broad range—including bio-medical products, food services and waste management technologies. Although there is not always a direct correlation between University research expenditures and technology transfer activities in a given year, there are derivative impacts. Many of the University spin-offs included in this analysis have been in business more than 10 years. The research expenditures and activities underway at the U of U and USU may not have directly influenced these well-established companies in FY 2003 but at some point, university research was integral to their success—the seeds of research may be sown today, but the fruit will be harvested in the future.

Roughly 13,300 jobs and an estimated \$468 million in wages and salaries are attributed to start-up and spin-off companies directly associated with Utah's research universities. The tax revenue impact was \$37.5 million. Local units of government received almost \$7 million.

Summary Impacts

Each year Utah's two research universities generate millions of dollars in new money for the state of Utah. These dollars, when spent locally, increase business sales, and create jobs and income for Utah's residents. Ultimately, state and local units of government also reap the benefits of this increased economic activity with the generation of new tax revenue.

In addition to the ongoing impacts of operations, Utah's research universities make long-term contributions to the state's economy through the transfer of technology from university labs to the private sector, both in terms of start-up companies and technology licenses to well-established companies.

Broadly defined then, the total impact of Utah's research institutions is the sum of impacts derived from operational spending (including research-related spending), combined with the impacts of state-financed construction and technology transfer activities. A summary of these impacts is shown in Exhibit 2.

A subset of this analysis is the impact of the research activities associated with the University of Utah and Utah State University. These impacts include the economic contributions derived from research-related spending in Utah for wages, salaries and other goods and services, as well as the technology transfer impacts. (Exhibit 3)

As seen in Exhibit 3, the impacts of research represent a significant percentage of the total impact of the research universities, accounting for 76% of the employment impact, about 60% of the income impact and 50% of business activity. Clearly, the research programs at the University of Utah and Utah State University are a significant source of economic growth.

**Exhibit 2
State-wide Impacts of
University Operations, Construction
and Technology Transfer**

- 38,867 jobs
- \$1.3 billion in income
- \$2.2 billion in business activity
- \$101 million in state tax revenue
- \$18.0 million in local tax revenue
- 68 jobs for every \$1.0 million of state appropriation*

* Based on university operational spending only.

**Exhibit 3
State-wide Impacts of
University Research-Related Spending
and Technology Transfer**

- 29,561 jobs
- \$770.3 million in income
- \$1.1 billion in business activity
- \$62.2 million in state tax revenue
- \$11 million in local tax revenue
- 39 jobs for every \$1.0 million in research funding

Notes

¹ “Carnegie classification of Institutions of Higher Education: 2000 edition. www.carnegie-foundation.org. Doctoral/Research Universities are institutions that offer a wide range of baccalaureate programs and are committed to graduate education through the doctorate awarding at least 50 or more doctoral degrees per year across at least 15 disciplines. Brigham Young University is the only other Doctoral/Research University in the state of Utah.

² The tax revenue impact estimates presented here do not include taxes generated by the businesses that supply goods and services to the Universities. The tax

impacts are simply the result of the direct, indirect and induced earnings attributable to the U of U’s and USU’s local purchases.

³ The construction impacts presented here do not include maintenance, rehabilitation or new construction undertaken by the individual universities. Those impacts have already been included in the impact analysis shown in Table 2.

⁴ This number includes all employees who were paid under a research contract in FY 2003, including full-time and part-time faculty, staff and graduate students.



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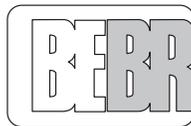
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