

**REGENTS' PRESENTATION ON
STUDY OF THE STATEWIDE IMPACTS
OF THE UNIVERSITY OF CALIFORNIA
NOV. 19, 2003**

The web-based slides that accompany this presentation (indicated by number in brackets) may be viewed at
http://www.universityofcalifornia.edu/itstartshere/regentpresentation/main_regents.html

Remarks by Bruce B. Darling, Senior Vice President, University Affairs

[1] Good morning, Madam Chair and members of the Regents. Two years ago – in dramatically different economic times – we commissioned ICF Consulting to quantify the University's impact on the state's economy, on the health of its residents and on the vitality of its communities. I am pleased that Rula Sadik is here from ICF to review the findings of the report. She is, coincidentally, an alumna of the Berkeley campus.

As you prepare to discuss the challenges presented by the state budget, this report suggests that no institution in the state is as effective at translating state financial support into such far-reaching benefits for all Californians.

[2] We asked ICF to answer two questions. First, what are UC's current impacts on the prosperity and quality of life in California? And second, how will the University shape California's future economic growth and competitiveness? The resulting ICF report is entitled "California's Future: It Starts Here." The Annual Financial Report, which is at your places today, contains a compact disc with the contents of the ICF report.

[3] The ICF Report documents a wide range of University impacts on the state. Among those impacts is the University's crucial role in health care, medical training and biomedical research. Another is the vital role that UC employees and students play as volunteers and leaders in local community organizations.

[4] UC's medical centers, schools and community clinics play a vital role in addressing California's healthcare challenges. For example, the University operates the largest health sciences education and training program in the nation, enrolling more than 13,000 students annually. Our hospitals and clinics are the second largest MediCal provider and the fifth largest health care system in the state. Our healthcare professionals provide more than \$3 billion in patient care each year and more than \$425 million in charitable care for the poor. And one in three California biotechnology firms were founded by UC scientists. Eighty-five percent of these firms employ UC alumni in key research and development positions.

To keep today's presentation brief, and to inform the budget discussion, we will focus exclusively on the University's economic impact this morning. Dr. Sadik...

Remarks by Rula Sadik, Project Manager, ICF Consulting

[5] Thank you, Vice President Darling. I am pleased to join you this morning to present the key economic findings of ICF Consulting's Impact Report. Just as UC a century ago drove California's agriculture economy, today UC is the catalyst in biotech, telecommunications and computer technology and is the groundwork for California's future economic growth.

It is no exaggeration to say that UC has the single greatest impact of any institution on California, its economy and its quality of life.

[6] The impact of UC campuses' spending on their surrounding regions and the state as a whole is enormous, ranging between \$14.3 and \$16.7 billion.

These figures include direct spending by the campuses but also the additional spending that these expenditures trigger. We used Regional Economic Models, Inc., or REMI, to calculate the ripple effects for UC's various indirect economic impacts. Compared to calculations used in other impact reports that we see from around the country, these figures are relatively conservative.

This total does not include the economic impacts generated by spinoff companies and UC-industry partnerships – which are dramatic but also difficult to calculate.

UC is also a powerful magnet for federal research funds.

In addition to assessing the current regional and statewide impacts of UC campuses' spending, the report also forecasts the impacts through 2011 to show the long-term benefits of UC-generated spending. I will share some of those numbers with you in a moment.

[7] UC spending is an economic sparkplug. UC campuses are employers, purchasers of goods and services, and magnets for capital attraction, including federal research dollars that bring in billions of dollars from outside California – money that might not otherwise end up in the coffers of California businesses or the pocketbooks of our residents. UC campuses also play a substantial role in the economic prosperity of communities in their surrounding regions and across the state.

UC's payroll totaled \$6.5 billion, with almost double that for non-payroll expenditures [\$11.7 billion, 2000-01].

UC campuses attracted \$1.8 billion from the federal government, including \$712 million in non-wage expenditures.

Our analyses did not include student spending, which also helps to spark local economic vitality.

[8] UC spending is also a stimulus for growing California's tax base. UC campus expenditures resulted in four to five billion dollars in state and local tax revenues last year. Over the next decade, that figure is projected at \$56 billion.

UC campuses also produce excellent taxpayers: state and local tax revenues resulting from UC undergraduates entering the workforce are additionally estimated at \$2 billion through 2011.

[9] A core measure of a prosperous economy and a healthy community is its ability to create jobs. UC is a crucial instrument in accomplishing that goal. There are more than 114,000 full-time campus faculty and staff – not to mention the lab employees Vice President Darling noted.

In another instance of the ripple effect, there are perhaps more importantly another 255,000 to 319,000 non-UC jobs supported statewide through the impact of UC's direct spending.

That means 370,000 to 430,000 total jobs statewide are directly dependent on UC expenditures – more than 2% of all employment in California.

That also means more than \$12 billion in disposable personal income to buy products and services from California businesses – which is why jobs are important to more than the people who have them.

[10] Chart of statewide impacts, campus-by-campus (2002)

We don't have time to examine this chart in detail, but I show it to you as an example of the many charts in our report that break down aggregate systemwide numbers by campus and by region. Here in Los Angeles, UC expenditures generate more than \$4 billion in GSP and \$1 billion in tax revenue, while the neighboring Irvine campus generates more than 30,000 jobs and disposable income of more than \$1 billion. Looking at the jobs column, you can see that the four UC campuses in the Greater LA region alone generate 130,000 jobs.

[11] One of the more challenging and exciting tasks for ICF was addressing the University's interest in assessing UC's long- range economic contributions. Over the next decade, we estimate that UC campuses will generate:

\$144 billion in Gross State Product

\$56 billion in state and local tax revenues, and

2.36 million new jobs statewide.

[12] The UC project manager also challenged us to develop what economists call a "negative scenario" – in this case, What happens to California's economy if the growth in UC expenditures, student enrollment and employment remained flat over the next decade?

Our flat-growth simulation, using 3% growth, forecasts the loss of more than 110,000 jobs, \$22 billion Gross Regional Product, and another \$22 billion in disposable personal income through 2011.

These numbers were illuminating when we ran the model last summer, but, with what has happened to California's economy and budget since then, they are even more eye-opening. Clearly, it is imperative for the state's continuing economic health to invest in the University of California.

[13] Allow me to turn quickly to a big-picture perspective on UC's economic impacts. California's economy, although large and diversified, is driven by several key, knowledge-intensive industries – many the result of UC innovations or grown by UC faculty and alumni.

These industry clusters form a key link between UC research, UC workforce development and California's economic future. They are the drivers of regional and state economic growth.

Seven industry clusters are particularly critical to the current performance and future vigor of California's economy – agriculture, biosciences, computers and semiconductors, information technology, telecommunications, media/entertainment and aerospace.

And while only a small percentage of California's total employment, these industries form California's export base and contribute disproportionately to the state's economic growth. As the chart shows, these seven industries make their impact with just two-and-a-half million workers. Please keep this figure in mind when you consider the number of UC students prepared for these fields.

[14] UC has always played a key role as a center of innovation and technology development. By attracting research funds, enhancing employment and productivity, and producing business spinoffs, UC has been instrumental in the success of some of the world's most dynamic regional economies in the world, from Silicon Valley and Bay Area biotech to telecommunications in Southern California.

UC contributes to innovation through two primary pathways: R&D that enhances both labor and capital productivity; and technology transfers and business spinoffs that carry UC discoveries into the marketplace.

We don't have time to look at all seven clusters this morning, so let me focus on just three – high tech, biotech and agriculture. California high tech and biotech have experienced dramatic job growth and fueled the economies of several regional economies over the past decade.

[15] Through its contributions to the growth and competitiveness of industry clusters, UC creates better paying and more productive jobs. And California industry needs productivity to compete globally. The information technology cluster created more than 180,000 California jobs between 1991 and 2001. IT productivity growth has also been extremely brisk, rising 6% per year. In telecommunications industries, the Bay Area, Sacramento and San Diego regions all experienced job growth between 1991 and 2001. Labor productivity in telecommunications

equipment manufacturing also exceeded 20% annually – an extremely rapid rate – in both San Diego and the Bay Area.

A leading state in the biosciences, California is home to several of the most dynamic bioscience regions in the country. The biotech cluster, which now employs some 217,000 Californians [2001], grew impressively over the last decade, adding approximately 46,000 new jobs statewide.

[16] Of a longer historical involvement is UC leadership in California agriculture. California has been the nation's number one agricultural state every year since 1948. California farmers and ranchers produced more than half of the nation's fruits, nuts and vegetables, and generated \$27.2 billion in gross cash receipts in 2000.

A major employer and revenue generator in the state, agriculture accounts for 1.1 million jobs and more than \$60 billion in personal income. California is the nation's leader in agricultural exports, shipping more than \$6.5 billion in food and agricultural products around the world.

The close interaction between growers, processors, county-based UC Cooperative Extension advisors and scientists on UC campuses has served California agriculture extremely well. Growers maintain a competitive advantage in national and world markets through early adoption of UC-developed technological advances and have access to new varieties of grapes, strawberries, stone fruits and citrus before the competition.

[17] How good an investment is UC's agricultural research? Between 1949 and 1985, the return on the public's investment in California ag research and extension was 20 percent. Much of the growth in the state's agricultural industry can be attributed to productivity gains created by R&D. Many California ag sectors, like \$767 million strawberry industry and multi-billion dollar wine industry, depend on UC research.

[18] UC also contributes by educating the workforces of California's key industry clusters. And it is these clusters that drive the growth in the rest of the economy. UC produced more than 3,000 undergraduates who entered cluster-related fields in California in 2002. And over the next decade, more than UC 34,000 undergraduates will get science and engineering jobs.

Over the past five years, UC student enrollment in computer science and engineering has grown at an incredible pace. The number of undergraduates studying computer science and engineering at UC campuses increased by 60% [to 20,072] between 1996-2001, while the graduate population increased by 44% [to 5,865].

The number of UC engineering degrees awarded between 1996-99 rose 2.7% annually for undergraduates, compared to the national rate of -1.8%. The increase in computer science undergraduate degrees awarded was nearly five times higher than the national average over a similar period.

The impact of UC graduates in these industry clusters is estimated at \$887 million in Gross Regional Product for 2002 and \$7.4 billion between 2002-11.

[19] It is widely acknowledged that in today's knowledge-based economy with ever-increasing competition and where capital and jobs are highly mobile, the quality of the workforce is increasingly the key determinant of industry growth and economic leadership. The education and training provided at UC campuses creates a highly skilled pool of scientists and engineers for California, giving its industry clusters a competitive advantage over those in competing regions elsewhere in the country.

UC contributes to economic vitality in 3 primary ways.

First, UC is critical in fueling the competitiveness of the clusters by producing the innovation necessary to starting and expanding businesses and by training the scientists and engineers who establish these companies, work at and with them, and train the next generation of innovators and skilled workers.

Second, UC, through its research at the intersections of disciplines and fields of inquiry, its role in innovation in both theory and practice, and through the creativity and collaboration of its students and faculty with industry, is helping to diversify and transform industry to spark new, emerging clusters that build future economic growth.

UC is number 1 in producing Ph.D.s and produces nearly 7% of the nation's approximately 41,000 new Ph.D.'s a year. [2000-01]

Third, UC is essential in maintaining the competitiveness of regions and communities by educating and training the workforce required by regional and local industries, and by playing a proactive role in upgrading the knowledge and skill sets of the local labor force.

UC is involved in the entire continuum of workforce training – from preparing high-school students for college to helping professionals upgrade their skills through continuing education courses. Because technology and skilled labor demands are changing rapidly, constant training, retraining, job-hopping and career movement have become more common for the workforce. The average person changes jobs about 15 times and changes careers 3 to 5 times.

Each UC campus' extension program varies in course offerings and academic levels according to the needs of the surrounding community and economy. UC campuses located in the most thriving technology regions have the largest percentage of students enrolled in science and technology extension courses. For example, UCLA has the largest enrollment level in science and technology subjects; and nearly 31 percent of UC Berkeley's continuing education students are enrolled in IT- and engineering-related areas.

[20] UC campus research expenditures are directed at supporting and accelerating the growth of their surrounding regional economies. Davis and Riverside expenditures are concentrated in agriculture. The San Francisco, San Diego and Los Angeles campuses concentrate research in the biosciences; while Santa Barbara and Berkeley have the highest share of research expenditures related to information technology.

In addition to their direct impact on employment and output, UC's research expenditures also play an important role in improving productivity through innovation. Between 2002-11, UC research is expected to be the major source of productivity gains totaling \$5.2 billion and more than 104,000 new jobs in California.

[21] Let me end with a note about UC's economic contributions through its transfer of technology. Today, economic performance and global competitiveness are driven by innovation – innovation in ideas generated, innovation in research, and innovations in industry and the practical applications and products making it to the market and to our homes and offices. Technology transfer is critical to the production of innovations in the marketplace. Virtually, every major region across the U.S and the world is trying to promote and accelerate technology transfer and commercialization. Yet, though highly valued and critical to successful economies, technology transfer and commercialization is often the most difficult task of economic development and the most significant challenge faced by regions.

UC is a global leader in technology transfer. In 2001-02, UC entered into more than 2,500 agreements with industry, valued at more than \$221 million. \$30 million of that was reinvested in UC research and education. Many of these cutting-edge technological R&D projects are often in fields directly related to the knowledge industry clusters and thus amplify many of the productivity gains arising from UC research expenditures.

Over 6,000 UC researchers have disclosed inventions since FY 1997, and over 1,100 received inventor share payments last year – an indication that inventions are being commercialized.

As the foundation for start-up firms, many technologies developed in the UC system also serve as an important engine for economic growth. More than 290 companies have been founded on UC technology. And these start-up figures do not include all the firms started by UC professors, students and alumni.

UC is able to play such a critical role in technology transfer and commercialization because UC is also an important generator of ideas and technologies, which can be measured in part by the reporting of inventions created by UC researchers with university resources. UC campuses have collectively generated over 2,600 such invention disclosures.

Patented inventions lead to technological breakthroughs and devices that create new jobs and enhance the quality of our lives. For the past nine consecutive years, UC has been the nation's leading university in the number of patents developed. According to the preliminary list for 2002 from the U.S. Patent and Trademark Office, UC was responsible for 431 patents during the 2002 calendar year – more than the next three universities combined. UC received \$100 million in total licensing revenue in FY 2002.

It is therefore no surprise then, that many leaders and institutions across the nation and indeed around the world monitor the activities of UC and its faculty and try to emulate its approach to research, technology transfer and university-industry collaboration.

[CLOSING] These facts and figures bear out my opening remark: UC has the single greatest impact of any institution on California, its economy and its quality of life. Truly, California's future starts here, at the University of California.