TOWN AND GOWN JOIN FORCES TO BOOST STATE

By Edward E. Penhoet and Richard C. Atkinson
***Los Angeles Times*, December 31, 1996**

California is blessed with a combination of advantages that exists here and nowhere else. This state has more high-technology entrepreneurs, more venture capitalists and more scientists and engineers than anyplace else in the world. We have the world's strongest basic research and graduate education, thanks to such premier institutions as Stanford, Caltech, the University of California and the University of Southern California. What we haven't had, and urgently need, is a coherent program that will transform these advantages into a strategy to secure California's economic leadership.

Five years of recession have plagued California but now the economy is turning around. Two recent developments are helping to form the basis for a strategy to maintain California's international competitiveness in high-technology industries. The first is a bill approved by the Legislature with bipartisan support and signed by the governor in September, farsighted legislation doubling from 12 to 24 percent the tax credit that industry can claim for investments in cooperative research projects with universities. California's tax credits for industry-university research partnerships are now the highest in the nation.

The other development is the University of California's Industry-University Cooperative Research program. This program will reinforce and extend the impact of the tax credit by mining the most promising research areas for new products and processes that create jobs.

What is so earthshaking about a change in the tax code and a cooperative research program? Knowledge is to California's economic infrastructure what water has long been to its physical infrastructure: the vital difference between boom and bust. Research and development are the lifeblood of California's high-technology industries, among them microelectronics, telecommunications, multimedia, biotechnology and pharmaceuticals. These industries are leading the state's recovery. All are ripe for innovations that will give our state a critical edge if we invest the funds and energy to transform research ideas into commercial products.

The tax credit for R&D will encourage the private sector to invest more of its own funds in such activities. A recent report on the federal tax credit

found that a $1 reduction in the after-tax price of R&D stimulates about $1 of additional private R&D spending in the short run and about $2 in the long run.

The UC program also complements the tax credit by forging research relationships with industry to focus on those areas likely to have the highest economic payoff. The tax credit encourages more industry investment in research and development generally; the program targets specific, next-generation research in areas of California's greatest strength and opportunity. The program is especially valuable to small, entrepreneurial firms that derive no immediate benefit from tax breaks for research because they have not yet begun to generate significant profits. It enables them to leverage their slim assets by sharing the university's experience, equipment and expertise.

The program works like this. A UC researcher joins with a scientist or engineer from a private company to develop a research proposal. A panel of experts drawn from industry and academia selects the best projects for funding. At least half of the funding for each project comes from industry, with the remainder from the university.

The benefits to companies and to California are tremendous. Using research originally done by faculty members at UC Berkeley, for example, a cooperative research project with an industrial consortium developed a high-speed, high-capacity disk technology that can store eight times the information capacity of the Library of Congress. Today, this technology is the foundation of an industry that takes in $10 billion a year. Many of the firms are located in California and were involved in the original project.

The most important benefit is that the UC program involves graduate students in every aspect of the research it sponsors. Industry thus gets the benefit of some of the world's brightest young minds. Graduate students gain the opportunity to learn firsthand about industry's needs. As a result, they have an incentive to stay in California and continue contributing their talents to our economy. There is no more potent form of technology transfer than this kind of one-on-one involvement.

As knowledge increasingly drives our economy, states and nations that expect to prosper will have to pioneer new partnerships to convert basic knowledge into useful products. The outlines of California's strategy for getting there first are beginning to take shape.

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