

Recommendations

While increased public funding of higher education will clearly be necessary to serve a growing number of students in the future, the focus of our recommendations is on institutional reforms that will lower costs without sacrificing quality of education—reforms, in other words, that enhance productivity. What we envision is that the increases in public funding will be contingent on institutional reform.

Our rationale for proposing this combination is that both elements are necessary, but alone insufficient, for meeting the fiscal challenges facing higher education. Moreover, since any future increases in state support for higher education are likely to come through a reallocation

of existing government commitments rather than through new revenues from tax increases, our logic is as follows.

The state legislature and governor must be convinced that the politically painful task of reallocating the general revenues is essential. They are likely to come to this point only if persuaded by the private sector leaders who, after all, are the primary consumers of the graduates and research produced by higher education. And the private sector leaders will make the case for increased state resources for higher education only if they are convinced that California's colleges and universities are truly undergoing the restructuring that leads to increased productivity. Hence, the marriage of

increased public investment and institutional restructuring.²¹

Recommendation 1:

California's political leaders—the governor, members of the state legislature, mayors, and other state and local officials—should reallocate public resources to reflect the growing importance of postsecondary education and training to the economic prosperity and social stability of California.

If Californians had known how the educational requirements of the workforce were going to grow in the 20 years from 1976 to 1995, it is doubtful that they would have allowed public funding for postsecondary education to stagnate as it has. We believe Californians should no longer tolerate inaction: California should not be allowed to continue to drift toward the ominous levels of economic inequality implied by recent

²¹However, Dr. Atkinson, president of the University of California, calls attention to the implications of restructuring for the quality of higher education in a comment on this report (letter of June 9, 1997, to Roger Benjamin, quoted by permission): "The discussion of restructuring needs to be considered in a larger context. Your data point to the increasing value of higher education to the individual. Simultaneously, the complexity of our knowledge—knowledge created, accumulated, and delivered in the research university—is increasing, not decreasing. While there are obviously improvements, enhancements, and efficiencies that can be made in the current system, it is important to note that we are providing an increasingly valuable and complex product and we must direct our efforts to the task of finding the funds appropriate for that product. I worry that we will be asked to carry out our mission with fewer resources and a resulting decrease in the quality of the product. I believe we are mindful of the problems that confront higher education and that we want to solve those problems in a manner that recognizes both family budgets and state and federal resources."

trends. We are confident that once the California public and their leaders are aware of the dangers of the current course, they will act to increase public support for higher education—even if that means reducing the level of support for other public sectors.

For example, we believe it is a reasonable goal for the state government to reduce the deficit facing the higher education sector by half. The state might commit to providing one-third of the needed increase, with federal and local governments providing the remaining two-thirds. We realize that this is an ambitious goal given the current stresses on federal, state, and local budgets, but to do less is to put California at grave risk. The

other half of the future deficit could then be made up through productivity gains resulting from the institutional reforms we recommend coupled with modest increases in tuition and fees.

Our institutional reforms—Recommendations 2, 3, 4, and 5—are to be viewed as an integrated package that would place restructuring at the top of the agenda for California’s higher education leaders. Moreover, when implemented for an institution, system, or state as a whole, any specific restructuring package will involve a variety of tradeoffs in and between the institutional reforms recommended here.²² The promising pilot productivity enhancements being led by the presidents of the state’s three public systems of

postsecondary education should be viewed in this context: the ongoing Cornerstones project, California State University; the reform package initiated by the community college system in 1996; the 1995–1996 compact between the University of California, California State University, and the state which yielded \$10 million in savings; and educational technology innovations in each of the systems. Faculty, too, have put into action many of the reform principles recommended here. The task is to institutionalize these exemplary reforms, to make them the norm rather than the exception,

and to scale them up to create a wholesale, systemic restructuring of the way in which resources are allocated.

Recommendation 2:

California institutions of higher education should make major structural changes in their decisionmaking systems so that their leaders can assess the relative value of departments, programs, and systems in order to reallocate scarce resources.

In our view, the most pressing reform needed today in the

²²As measurement of productivity improves, analysis should be able to show that certain changes may improve the quality of higher education to some degree but are so expensive that they would jeopardize other goals, such as equity of access.

higher education sector is the redesign of the governance structure of institutions so that decisionmakers can think and act strategically in allocating resources. By governance we mean the policies, procedures, and practices that control the allocation of resources within and between units. The current resource allocation structure is incremental, equipped to add 5 percent to existing budgets or to add new functions. What decisionmakers need are new processes and criteria that allow them to assess the relative value of services among units and reallocate resources accordingly. In particular, colleges and universities must

1. Improve performance-based assessment. Academic

institutions should develop a process of assessing the costs and benefits of providing all services. The goal of this effort is to provide an integrated information system about all costs, including capital costs and the value added to students from their educational experience. Although the intent of this recommendation is to improve management practices, it also serves a political objective: we believe that unless California's higher education leaders move toward systematic performance-based assessment, the higher education sector will not be able to compete effectively with other demands on state general revenues in the future.

2. Define and measure faculty productivity. Analysis can identify productivity measures for education in general and for faculty in particular. No fundamental restructuring can occur until the current incentive system governing faculty behavior is changed. The current system of rewarding individual research and publication will continue to discourage faculty, particularly in nonresearch postsecondary institutions, from focusing their energies on teaching improvements unless faculty incentives are connected to measurements of student performance.²³

3. Improve internal accountability in financial management. Budgeting and fund accounting systems, for example, are now completely separate. They should be reconciled so that higher education leaders have access to timely profit-and-loss information in areas for which they provide oversight.

Recommendation 3:

As part of their overall restructuring, California's colleges and universities should pursue greater mission differentiation to streamline their services and better

²³Examples of how to define and measure faculty productivity—such as student/faculty ratios and time to degree—are provided in a related document prepared for the California Education Round Table: Debbie Elms, *Preliminary List: Indicators/Resources Available*, DRU-1597-IET, Santa Monica, Calif.: RAND, February 1997.

respond to the changing needs of their constituencies.

Greater mission differentiation among California postsecondary education institutions and systems is the only way to ensure effective and efficient provision of all teaching and research functions over the next several decades. The current mission “creep” in and among the three public postsecondary education systems—e.g., community colleges attempting to offer four-year degrees, state universities becoming research centers, and research universities offering remedial instruction—violates the mission differentiation principle.

If the higher education systems and the individual institutions

focus on their points of comparative advantage within the overall ecology of higher education, both productivity and improved quality will result. Each system and each institution should carefully redefine its mission and roles, the objective being to more sharply differentiate campuses and academic programs within and between the three systems and the independent colleges, which are an essential part of the overall ecology of postsecondary education in California. Because of resource constraints, leadership on each campus should focus on strategic-planning and priority-setting programs. If this strategy is followed, greater interinstitutional cooperation will be possible because each campus will be better focused on what it can do

well and there will be less duplication. The end result will be a more effective and efficient system of higher education that is greater than the sum of its parts.

In considering whether to maintain, drop, or develop a particular mission focus or academic program, several evaluation criteria should be applied: quality, centrality, cost, and comparative advantage. If, for example, a college of agriculture exists in one system, does it need to be replicated elsewhere? How many classics departments are needed

from the state’s perspective? From the system’s perspective? Can a specific college exist without classics, or is the subject too central to the core mission of the institution to allow its elimination regardless of its possible high costs?²⁴

In short, the community colleges, undergraduate universities, and research universities should embrace different missions, give priority to activities central to those missions, and reduce or eliminate more marginal activities.²⁵ We recommend the following specifics:

²⁴For comparative evaluation criteria see Roger Benjamin and Stephen J. Carroll, “Impediments and Imperatives in Restructuring Higher Education,” *Education Administration Quarterly*, Vol. 32, Supp., December 1996, pp. 705–719.

²⁵A short companion piece to this report, *A Framework for Linking Resources to Mission in Higher Education* (Roger Benjamin and Stephen J. Carroll, DRU-1623-IET, Santa Monica, Calif.: RAND, January 1997), presents a set of analytic tools useful for any institution or system of higher education contemplating changes in its mission or funding priorities by making explicit the tradeoffs to be considered.

1. California community colleges should take a leadership role in workforce preparation. As our analysis suggests, one of the state's most pressing social needs is improving the education level of all socioeconomic groups to avoid creating a larger and more permanent underclass. Affordable education needs to be made available to more students. Because community colleges offer postsecondary education and training at the lowest cost, they will become the entry mechanism for a greater proportion of students in the future. Their curricula need to be targeted to multiple constituencies, particularly workforce preparation, adult education,

remedial education, and English as a Second Language. Because employers, high schools, and local governments are important stakeholders, community colleges should develop long-term strategic partnerships with these entities. We recommend that the state provide greater incentives for employers, high schools, local authorities, and colleges to work together in designing and funding school-to-work programs that reach out to the community at large and to underrepresented groups in particular.

As part of this initiative, colleges need to identify, strengthen, and give visibility to programs already focused

on this outcome. These should be continued, improved, and built upon. To encourage commitment to such socially responsive initiatives, colleges should evaluate faculty work in ways that provide the right incentives. To raise the priority given to the workforce preparation mission, the current governance structure of the California community college system will have to be examined and redesigned. In its current state, that structure is not supportive of the proposed mission.

2. The California State University system should take the lead in teacher training and areas related to regional economic develop-

ment. Eligibility for college will not improve among low-income socioeconomic groups unless K–12 school reform succeeds, and training and retraining of K–12 teachers is a prerequisite to that success. Recent studies show that teacher training in America, including California, is in disarray. We believe the most effective response to this problem is for the California State University campuses, which prepare 10 percent of America's teachers, to assume central leadership for teacher training and to make teacher training one of their highest priorities. In addition, faculty of the state's public undergraduate institutions should be encouraged to

assume a stronger leadership role in research and technical assistance for regional economic development. This applied research capability will enable these institutions to relate to the needs of the regions in which they exist.²⁶

3. The major California research universities, public and private, should focus on the promotion of research and graduate education.

The University of California is the state's flagship research institution. In no way should its research mission be undermined by the extraordinary access demands identified in this study. The state must protect and enhance this mission and, at the same time, respond to

the surge of enrollment demands California will have. The selective admission criteria, designating the top 12.5 percent of high school graduates as eligible for the University of California, is a built-in and appropriate method for ensuring that the resources for undergraduate instruction are used efficiently.

California is particularly fortunate in being able to claim close to one-quarter of the top 40 research universities—private ones such as Stanford and the California Institute of Technology, and an increasingly large number of the University of California campuses, altogether representing the greatest concen-

tration of scientific talent in the nation.²⁷ The question now is how to maintain this critical mass of talent in the face of tightening fiscal constraints. The future of California's economy depends largely on whether the University of California can continue to produce the extraordinary science and technology that fuels the state's economic growth.

The public and private higher education leaders of the state's top research universities should join together to encourage the federal govern-

ment to focus its investment in research on the 40 or so major research institutions across the country. Unlike international competitors such as Japan and Germany, the United States does not direct its federal resources to a few elite research groups. Instead, it spreads them among more than 800 universities and laboratories. From 1976 to 1995, research funding grew only slightly, but the number of institutions receiving this funding increased by several hundred. Even more important, most

²⁶This is especially pertinent in fast-growing parts of California having large urban populations and economically depressed areas.

²⁷See Hugh Davis Graham and Nancy Diamond, *The Rise of American Research Universities: Elites and Challengers in the Postwar Era*. Baltimore and London: The Johns Hopkins University Press, 1997. The authors document the remarkable rise of several University of California campuses in national research rankings in recent years.

of the U.S. institutions now receiving federal support for research are not even Carnegie-rated research and doctorate-granting universities.²⁸ One reason for this move to nondirected funding is that the award process has become increasingly political rather than research based.

This poorly targeted funding may not have mattered much

in the golden years of U.S. science and technology development, but now, with the flattening of federal support of research, it poses a serious threat to the long-term health of the nation's economy.²⁹ This is doubly true for California, where the University of California, for example, receives over 20 percent of its budget from federal research sources.

²⁸The top 40 science and engineering departments garner over 75 percent of federal research support while several hundred other such departments share the other 25 percent.

²⁹We leave open to public debate the most appropriate mechanism for implementing this reform. One option would be for the National Science Foundation to request universities to provide their qualifications in each research area. The Foundation could then identify the most qualified in each area and guarantee them a minimum level of support. Another option would be for the federal government to provide funding to graduate students for vouchers that could be used at the institution of their choice. The resulting competition would effectively decrease the fragmentation of funding to research universities. Whatever the mechanism, we believe there is great value in concentrating scarce dollars in the most worthy institutions, and California has much to gain by encouraging the federal government to do so.

³⁰See David McArthur and Matthew Lewis, *Untangling the Web: Applications of the Internet and Other Information Technologies to Higher Education* (DRU-1401-IET, Santa Monica, Calif.: RAND, 1997), for a thoughtful survey of the effects of the Internet on the traditional university.

Recommendation 4:

Colleges and universities should develop sharing arrangements to improve productivity.

As increased mission differentiation is achieved, a greater sharing of resources will lead to improved productivity of the entire higher education system:

1. **Alignment.** Seamless alignment of undergraduate requirements, transfer requirements, and joint teaching and degree-producing arrangements among California community colleges, California State University campuses, and the University of California is now technically feasible and should be achieved over the next decade. New educational

technologies will multiply the interactions of colleges and universities and promote the alignment of course content and ease of transfer of course credit among the three state systems.³⁰ Achievement of this goal alone would substantially increase undergraduate participation rates.

2. **Classes.** Every college and university teaches microeconomics at the freshman level; virtually every research university offers several introductory statistics courses. Departments and universities should collaborate to pool introductory courses and instructors as a way to save resources and provide the best instruction available in the subject. Use of the

Internet may facilitate this task.

3. **Services.** Joint outsourcing of functions should be encouraged, ranging from physical plant maintenance, electric power, health care, and police protection to joint purchasing of instructional and research equipment and supplies.

4. **Infrastructure.** Free-standing, separate physical plants—and, if they are public institutions, the system administrations that govern them—are currently an unquestioned requirement. In the coming cyberspace age, physical space will assume less importance. Combining all or parts of physical plants of, say, the

California state universities and community colleges that serve the same geographical area could save considerable resources.

5. **Libraries.** Substantial savings and improved library services can be obtained by focusing on the software needed to place library resources on the Internet rather than continuing to support only individual research library collections.

Recommendation 5:

California should reexamine the financing structure for higher education and develop a strategic plan for allocating the limited resources it has available to most effectively meet future educational demands.

Higher education in California is currently financed by a diverse variety of systems, each of which has evolved somewhat independently over time, often in response to immediate pressures. The resultant financing structure includes direct state support to each of the public systems; local support to the community colleges; tuition; federal, state, and private research grants and contracts; and various other revenue sources (e.g., lottery funds). Tuition, in turn, is partially subsidized by state and federal student financial aid programs and includes payments by students and their families out of past savings and current income, as well as payments by students and their families supported by loans. The state needs to systematically review the following issues.

1. **Appropriate shares.**

California must make policy judgments about the share of higher education expenses that should properly be borne by families, the state, and the federal government. One of the issues that should be addressed is whether to invoke the public good argument for subsidizing postsecondary education and whether the state share of expenses should be the same for all three systems. Should tuition be allowed to increase much faster at the University of California, for example, than it does at community colleges? Because of the size of California's congressional delegation, California may be well placed to argue for changes in the federal role.

2. **Institutional versus student support.** California must make policy judgments about the appropriate mix of direct support to public institutions and indirect support to both public and private institutions through student financial aid programs. For example, California grants have declined dramatically in the last two decades and would appear to be candidates for substantial increases.

3. **Need-based pricing.** California must develop a strategy about need-based differentiated pricing. The present mix of state student financial aid programs provides aid to students in both public and private institu-

tions; state appropriations to the public systems, some of which is channeled into support for institutional financial aid/fee-waiver programs; and tuition, some of which is used to support institutional financial aid/fee waivers. Does this mix serve the state's access goals?

4. **Guaranteed financing for higher education.** Propositions 98 and 111 established an explicit commitment to state funding for K–14 education. California should determine whether a similar commitment to state funding for higher education would be appropriate, and, if so, what that commitment should be. In making this determination, the state

should decide whether the community colleges will continue to be included in the Proposition 98/111 guarantee, and, if so, whether their share of that guarantee should be more firmly established.

Recommendation 6:

It is time to redefine the appropriate level of education for all California workers in the 21st century. The Master Plan should be reaffirmed and strengthened, and the educational level expected of all California citizens should be raised from high school to the completion of appropriate post-secondary education or training.

Almost a century ago, Americans established a high school educa-

tion as the basic educational requirement for all citizens. At that time, the telegraph was the height of communications technology and the telephone was on the horizon but far from an everyday instrument. Engineers and scientists looked to their slide rule as the best instrument for advanced calculations. Today, computers, the Internet, and a host of advanced technologies are everyday work tools. Clearly, it is time to recognize that the required educational level of a century ago is no longer adequate for preparing the modern workforce.

Instead of retaining the traditional sharp distinction between the bachelor's degree and all other nondegree categories, we find it preferable to think in terms of a

continuum of learning activities appropriate for attaining specific goals. In the future, the educational focus should move away from bachelor's degrees and toward more-specific, measurable knowledge sets. It is time to encourage the rich range of subbaccalaureate opportunities that can provide California's citizens with the tools needed to survive and succeed in the emerging high-skill economy. The revolutionary opportunities offered by the Internet may help this transformation. ♦