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# EXPLORING FUNDING OPTIONS FOR THE UNIVERSITY OF CALIFORNIA

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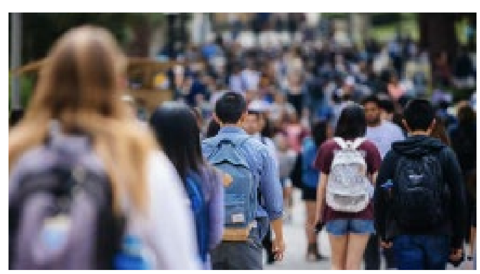
## ABSTRACT
Despite massive cuts in state funding over the past thirty years, the University of California has managed to keep enrollment on pace with growth in population. With California's population projected to grow 22.5 percent (from 40 to 49 million by 2040), that will no longer be the case, unless UC is able to find a new funding model. Informed by the historical analysis in the report *Approaching a Tipping Point: A History and Prospectus of Funding for the University of California*, this essay revisits the options for funding UC from that report, including: reinvestment by California lawmakers and a proposed general bond measure for capital construction; increasing research funding to help subsidize teaching and public service programs; revising the indirect-cost agreement with the State of California; raising undergraduate tuition and fees for upper income students and establishing tuition pricing model tiered by student family income; explore differential fees by major; and reducing the percentage of UC undergraduate tuition income that is "returned-to-aid" in favor of increased fundraising for financial aid. All relate to two central questions: a) can UC afford to grow in its enrollment and academic programs with the state's population and needs? and b) how to identify new sources of revenue and pursue management efficiencies to reduce operating and capital costs? Without a substantial boost in income from the state or other sources, UC may be approaching a crossroads, where it continues to grow in enrollment without adequate funding, or where it instead chooses to halt or limit growth to focus on maintaining quality and productivity, but with serious consequences for California. Any significant state reinvestment will depend on the new California governor. Governors in the past have been key players in creating and building California's pioneering higher education system. A new governor should have ambitions for higher education that match those of Californians.

**Keywords:** Higher Education Finance, University of California, Public Universities

In its first four decades, University of California depended largely on income generated by federal land grants and private philanthropy, and marginally on funding from the state. The year 1911 marked a major turning point: henceforth, state funding was linked to student enrollment workload. As a result, the University grew with California's population in enrollment, academic programs, and new campuses. This historic commitment to systematically fund UC, the state's sole land-grant university, helped create what is now considered the world's premier public university system.



However, beginning with cutbacks in the early 1990s UC's state funding per student steadily declined. The pattern of state disinvestment increased markedly with the onset of the Great Recession. The University diversified its sources of income and attempted to cut costs in response to this precipitous decline, while continuing to enroll more and more Californians. Even with the remarkable improvement in California's economy, state funding per student remains significantly below what it was only a decade ago.

* This paper is an adoption of a chapter in the CSHE report Approaching a Tipping Point? A History and Prospectus of Funding for the University of California (August 2018). John Aubrey Douglass is Senior Research Fellow – Public Policy and Higher Education at the Center for Studies in Higher Education at UC Berkeley and the UC Berkeley PI of the Student Experience in the Research (SERU) Consortium. His latest books include, The New Flagship University: Changing the Paradigm from Global Ranking to National Relevance (Palgrave Macmillan 2016), and Envisioning the Asian New Flagship University: Its Past and Vital Future (Berkeley Public Policy Press 2017).

Like many other public universities, the University of California is transitioning from an era with relatively robust state subsidization and low tuition and housing costs to the new world of public disinvestment, increasing operating costs, and a focus on funding from students and their families and relatively new income sources. The ability of research-intensive universities to cope with this paradigm shift will significantly influence the nation's socioeconomic mobility rates and economic strength.

In the post-Great Recession era, some states may find that their economic competitiveness depends on a return to greater levels of public investment in their higher education systems. Some states will never return to that model, convinced that education is more a private than a public good, or a cost they can no longer afford to fund at historical levels. Which path will California take?

Informed by the historical analysis in the report *Approaching a Tipping Point: A History and Prospectus of Funding for the University of California*, I offer a series of policy options for contemplation by the University community, some of which are politically challenging and would mean a significant alteration to the historical mission of the university. All relate to two central questions: a) can UC afford to grow in its enrollment and academic programs with the state's population and needs? and b) how to identify new sources of revenue and pursue management efficiencies to reduce operating and capital costs? The following is not an exhaustive list, but an exploration of multiple options. Underlining all of them is the concept that the UC system, and each of its campuses, will need to envision and develop a substantially revised funding model and greater administrative freedom to pursue it.

## A. BIG PICTURE VARIABLES

***1.*** A Renewed State Budget Funding Commitment – UC Continues Enrollment and Program Growth to Match California's Population and Economic Needs

The University of California is a complex academic ecosystem that includes, for instance, the need for additional faculty and sufficient numbers of graduate students, along with facilities and support services, to support high-quality undergraduate education. Faculty and graduate students, along with staff, also form the nucleus for UC's robust research productivity, which translates into cutting-edge undergraduate programs and bolsters the University's public service activities. Undergraduates are exposed to faculty research (particularly at the upper division level) and have opportunities to engage in faculty- and graduate student-led research, which they value highly.[1] UC's academic ecosystem is under severe strain, coping remarkably well with the realities of a long-term decline in public funding per student and increasing concerns about real declines in quality and productivity.

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How can this academic ecosystem be maintained and improved while continuing to grow in enrollment and academic programs? A preferable option from the veiwpoint of the academic community is a resurrection of a systematic and increased rate of investment by California taxpayers in the University's operating and capital budgets. This public investment would be balanced with options for securing other revenue sources and a measurable improvement in educational quality.

State bonds traditionally funded capital costs, including new academic buildings and student housing, maintenance, and seismic retrofitting. Renewal of capital funding focused on expanding enrollment capacity and increasing the stock of housing near campuses, combined with a return to workload funding, would help UC maintain its Master Plan-era admissions policies and continue to grow with California's labor and socioeconomic mobility needs.

The University, and prospective students, already experience significant supply and demand problems, restricting the choices students have to apply and be admitted to the UC campus of their choice. All but two of the University's undergraduate campuses have or have nearly reached their enrollment capacity and must reject a significant number of UC eligible students. UC remains committed, for the time being, to provide access to at least one of its campuses for all UC eligible students. But this commitment is under severe strain, with no clear funding pathway or expansion plans to accommodate long-term enrollment demand.

[1] See results of the 2016 University of California Undergraduate Survey (UCUES) and student responses on their academic experience and learning outcomes – part of the Student Experience in the Research University Consortium surveys based at the Center for Studies in Higher Education, UC Berkeley.

In the late 1980s, UC planned for three additional campuses with the understanding that geographic location in growing population centers was a key strategy for expanding access, academic programs, and public services to Californians. Politics and state funding challenges led to only one new campus: UC Merced. While not discounting the potential role of instructional technologies, and achieving efficiencies noted later in this section of the report, state reinvestment could include:

- Maximizing and expanding enrollment capacity at existing UC campuses past their Long-Range Development (LRDP) agreements with local communities – contingent on both a sufficient funding model, negotiations with local governments, and an analysis of the cost efficiencies related to campus enrollment and program size.[2] Most UC campuses already exceed their LRDP's in their effort to enrollment students and to retain UC's commitment to the California Master Plan. There is no contemporary analysis of the cost efficiencies, or impact on academic culture, related to campus enrollment and program size.
- Exploring strategic geographic location of new UC campuses. Geographic expansion of UC campuses was a key driver for increasing educational attainment rates, bolstering regional economies, and fostering political support for the University. At the same time, planning new campuses is a much longer process than it was in the 1960s.

Both options would require significant additional funding for operating and capital expenses, including a major general obligation bond initiative for capital construction. However, there has been no significant interest in the current governor's office, or among most lawmakers, to return to the level of state funding needed for UC to rejuvenate itself and grow. Even with a markedly improved California economy, state coffers remain constrained by rising entitlement costs and an inadequate tax structure relative to the size of California's population and public service needs – in part a legacy of Proposition 13.

*The University community and Californians need to reassess what is achievable, and they need to calculate the cost-benefits of maintaining the size and quality of UC system versus the path of significantly underfunded enrollment and program growth.*

Barring some significant tax reform increased state revenues and, for example, an unlikely reinvestment by the federal government in health care and the like, it seems that some form of reinvestment might only come via state issued bonds and through Cal Grants.

If UC were to raise tuition, the state could provide additional indirect funding for operational costs by expanding Cal Grants A and B targeted to supporting low-income and middle-income students. California already offers a fairly robust level of state financial aid when compared to other states, one of the reasons why UC sets the standard for inclusion of low-income students.[3] But some combination of increased tuition and an increase in Cal Grants would provide a path of increased funding support for UC while maintaining access for lower and middle-class students (see the discussion of tuition fees below).

***2.*** Steady State or Further Decline in State Funding – UC No Longer Grows in Enrollment and Programs with California's Population, Economic Needs, and Enrollment Demand Under the Master Plan

There is a real possibility that the financial resources to maintain access, expand academic and public service programs, and sponsor innovation will be elusive. As stated throughout this report, UC needs to consider if it should, or can, grow in the long-term to match California's population and its economic needs if the state will not reinvest at a significant level. A choice not to grow in enrollment and programs would have a detrimental impact on access to four-year degree programs for a state undergoing a dramatic demographic shift, with a significant impact on underrepresented minority groups and the labor market for college graduates.

To grow without significant additional state investment, and resources from other sources, would mean continued erosion in faculty to student ratios, larger classes, inadequate capital financing, and possible declines in federal funding support if faculty cannot compete for research funding. It would also mean a decline in the University's ability to attract and retain the best faculty and graduate students.[4] Not to grow might maintain the quality of UC's academic programs but would have an impact on California's economic competitiveness and reduce the University's role as a path for socioeconomic mobility.

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2 In the 1960s, UC originally planned for no campus to be larger than 25,000 students. Today the largest campus is UCLA with just over 44,000 students (fall 2017). The 1960 Master Plan, for instance, assumed that there are no significant economies of scale once a UC campus exceeded the 25,000 student enrollment level.

3 C. Eaton, S. Kulkarni, R. Birgeneau, H. Brady and M. Hout, "Affording the Dream: Student Debt and State Need-Based Grant Aid for Public University Students," Center for Studies in Higher Education, Research and Occasional Paper Series. CSHE 4.17 (February 2017)

4 For a review of policy choices, see John Aubrey Douglass, "Funding Challenges at the University of California: Balancing Quantity with Quality and the Prospect of a Significantly Revised Social Contract," California Journal of Politics and Policy, Vol 7 Issue 4, 2015.

***3.*** An Alternative Path to Grow – Using Technology or Partnerships with Other Higher Education Providers to Create Another Class of UC Undergraduates

One alternative, with or without significant increases in state investment, is to more fully explore a significant expansion of UC's online course and degree programs at the undergraduate level, essentially providing an alternative path to a UC degree and credentials built on a model of revenue generation and the assumption of lower operating costs per student. This is a path taken by Arizona State University, in part as a reaction to large-scale disinvestment by its state government.

The UC system explored a version of this option in earlier years, but serious questions arose regarding the quality and organizational challenges for such an enterprise. Campuses have a growing array of fully or "hybrid" online degree programs for non-traditional students, but the scale is relatively small. Most online efforts at UC have focused at the graduate and professional level, and on offering individual courses but not degree programs. In earlier debates, the University community voiced concern that online degree programs cannot match the quality of on-campus courses and, just as important, the overall educational experience, the expectations of students, and the personal connections and community opportunities offered by enrollment on a campus.

More generally, the initial infatuation with online courses led to a more sober assessment: they are considered a useful tool for increasing outreach and serving under-served populations, but not a panacea for reducing costs given the investment needed to develop and sustain high-quality online courses. Previous initiatives orchestrated by UC's Office of the President, supported by the current governor due to the promise of large-scale private investment, were poorly conceived, not grounded in extensive research on markets and feasibility, and failed to integrate faculty and the Academic Senate in the early stages of its development.

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At the same time, there are significant policy questions related to creating essentially two Universities of California – the on-campus undergraduate programs and degrees, which include highly selective admission and a holistic approach to human talent development with mentorship and peer-group opportunities, and an online student population that will likely be less selective, lower-income, and less likely to graduate. Particularly among 19- to 24-year-olds, the attrition rates for online courses and degree programs are extremely high. It would also require a substantial up-front investment to create new courses.

Faculty workload is also an important consideration. Tenured faculty already have broad teaching, research, and public service responsibilities. How could they be appropriately integrated into such an expansionist effort? It might require, or result in, a further expansion of teaching-only faculty, significantly changing UC's extremely successful model of high-performing research faculty essential both for shaping the educational experience of students and bolstering California's economy.

California not only needs UC to expand its enrollment capacity, it also needs the University to train researchers, expand the frontiers of knowledge, and maintain and enhance its public service mission in the state. It is important to remember that, historically, California's robust rates of socioeconomic mobility and economic growth related directly to the geographic expansion of UC campuses, which acted as anchor institutions for regional economic innovation systems. Nevertheless, technology offers an enhancement, if not a replacement, to UC's vital role in California. If UC does not gain significant increased state investment, or other sources of additional income, a further exploration of alternative paths to providing a UC education is important. Per previous proposals, this also might mean partnering with other existing college and universities or private entities. UC experimented with "dual" enrollment schemes, in which students enrolled in a community college are also technically enrolled at a UC campus.[5]

Shifting some enrollment demand to other institutions is possible, including online degree programs via private institutions or providers. In some configuration, UC will need to innovate to meet the needs of Californians while also increasing its income. University Extension also offers a platform for providing a UC education to a wider population – this policy option is discussed later in this section of the report.

## B. SEEKING NEW FUNDING STREAMS

***4.*** Reconsider Tuition and Fees

What should students and their families pay in tuition and fees to help partially cover the cost of a UC education? There are significant concerns regarding the impact of rising tuition and student debt levels. But there are also misunderstandings about the

[5] For example, see Saul Geiser and Richard Atkinson, "Beyond the Master Plan: The Case for Restructuring Baccalaureate Education in California," California Journal of Politics and Policy, vol. 4, 67-123 (January, 2013).

relation of the “sticker” price at a UC campus and what students actually pay. The counter-intuitive fact is that increasing tuition at UC did not lead to decreased access for low-income students. The ability to increase tuition will likely be a decisive factor in UC’s ability to create a more stable funding model and grow in enrollment and programs.

UC has pursued a “progressive tuition model” that raised tuition but provided significant financial aid to low-income and middle-class students. This approach was disrupted when UC entered a political agreement with the current governor for a five-year freeze of in-state undergraduate tuition beginning in 2014, and then only allowing for UC to increase tuition at the rate of inflation beginning in 2017-18. The governor’s assumption was, in part, that higher tuition makes a UC education unaffordable for the economically disadvantaged, even though the number and graduation rate of low-income students increased during the period of rising tuition following the 2008 financial crisis.[6]

Particularly in societies with substantial disparities between the rich and poor like California, a low tuition rate represents a substantial subsidy for more wealthy students. Tuition fees and UC’s financial aid model should be revisited. The lack of a coherent and long-term approach to tuition and fees is a major political and financial obstacle for developing appropriate funding model for UC.

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With the breakdown in the historical workload funding model that helped to build and grow UC, university administrators, and the Regents, resorted largely to short-term, year-to-year negotiations with lawmakers on tuition and fees. In the current era, the usual pattern is that the university proposes a marginal increase in tuition and then attempts to bargain with lawmakers to buy-out tuition increases. The record is mixed regarding this tactic; the result is often volatile tuition rates and income for the university and unpredictable costs for students and their families. A more recent deal with the current governor resulted in a five-year freeze on undergraduate tuition and a promise of a percentage increase each year in state funding. In both cases, lawmakers have viewed tuition and fees as a political issue that equates tuition with affordability and as a way to gain favor with voters.

How to change this dynamic and progressively seek additional tuition revenue?

*Differential Tuition by Field* – One possibility is the development of a differential tuition and fee structure for upper division students in certain fields (STEM fields) where expenses and projected lifetime incomes are higher. Many universities in various parts of the world are already setting tuition rates in this manner, though there are concerns that by distorting student incentives.

*Differential Tuition by Campus* – The university community has debated the idea of allowing different tuition fees among the UC campuses as a path to relieve the system’s financial strains. There is already differential tuition among the professional schools, but the university generally retained the same tuition fee structure for all undergraduate, masters and doctoral programs. One argument for differential campus tuition rates is that the market demand, and value in the labor market, would allow higher tuition rates at, for example, Berkeley and UCLA.

But this option would raise serious policy issues related to UC’s “one-university” model and potential inequities, and prestige, among the various campuses. UC’s historical strength is the unity of the various campuses in policy areas such as admissions, tuition and fees, and academic personnel policies. Moving toward a differential fee structure among the campuses would pose large challenges to this model that might only be mitigated by an agreement on revenue sharing among the campuses.

*Explore a New Pricing Model* - Tuition rates might be more clearly stated for middle- and lower-income undergraduate students (under the university’s Blue and Gold Opportunity Plan, students with family incomes below $80,000 pay no tuition or fees). For this reason, UC should consider a revised tuition pricing model that offers four (or so) tiered tuition rates for students depending on their family income, with university-sourced financial aid directly reflected in the pricing. The purpose is to clearly state the cost of tuition to prospective students and to be able to charge differential rates to high-income students to generate additional income.

Clarity of costs could enhance access to disadvantage groups who, like all students, are often confused by complicated sticker price tuition, which can only be mitigated by complicated pathways for financial aid. It could also change the dynamics of often misinformed debates on the real impact of tuition on students and affordability.

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[6] Patrick A. Lapid and John Aubrey Douglass. “College Affordability and the Emergence of Progressive Tuition Models: Are New Financial Aid Policies at Major Public Universities Working?” Center for Student in Higher Education, Research and Occasional Paper Series (ROPS): CSHE 7.16 (June 2016).

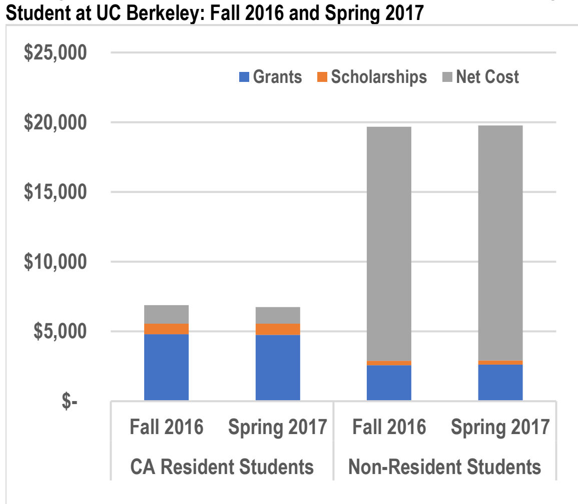
Because of the UC's high return-to-aid rate, when an increase in tuition and fees is proposed, there is an assumption that it is an increase for all students, when only about 50 percent of students are affected. Explicitly raising tuition for high-income groups while, for example, maintaining costs for middle and lower-income students, would change the contentious politics and symbolisms of the tuition debate in California.

*Reduce Return-to-Aid Rates to Boost Operating Income* - Another less desirable option is to reconsider UC tuition and return-to-aid program. More than 33 percent of all tuition is funneled into grants to lower- and middle-income students. Within the UC system, this amounts to an estimated $700 million a year of financial aid at the undergraduate level. If one includes other sources of UC funding, including scholarships, the return to aid rate is closer to 41 percent (as measured at UC Berkeley).

As illustrated in the accompanying chart, in-state students (at UC Berkeley, and likely similarly on other campuses) pay a net cost of only about $2,500 each academic year, and almost half of all UC resident undergraduates pay no tuition at all.

If UC is faced with continued disinvestment from state coffers, one policy option is to reduce this very high return-to-aid rate to, for example, 28 percent of undergraduate tuition income. This would generate more than $100 million for UC's operating costs to support lower student-to-faculty ratios and a specific set of programs that support undergraduate education.

**Undergraduate Tuition, Financial Aid and Net Costs for the Average Student at UC Berkeley: Fall 2016 and Spring 2017**




Note: Annual 2016-2017 UC Berkeley tuition was $13,600 for California residents and $39,400 for non-residents. Residents covered 82 percent of their tuition costs using federal, state, and institutional grant and scholarship aid (including $105 million in grants provided by UC Berkeley), while non-residents received only 15 percent of tuition costs in scholarship and grant aid. Source: CalAnswers.

To help mitigate this redirection of income to academic operating costs, UC could seek other sources for undergraduate financial aid. This could include fundraising and possibly the creation of an endowment fund for this explicit purpose. Lawmakers could also be persuaded to increase funding for California's Cal Grant Program and increase the total individual grant limit to mitigate tuition increases – essentially providing an indirect increase in funding to UC.

Housing and living costs pose one of the greatest challenges to middle- and lower-income students and their families – a much more significant policy issue than tuition and fees. In modifying UC's return-to-aid policies, it would be vital to secure additional and new sources to support the housing and other living expense for students. The state should find the political will to pass a bond act to specifically fund student housing or mixed housing near UC campuses.

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***5.*** Revise Non-Resident Domestic and International Student Enrollment Targets

For many public research-intensive universities, out-of-state tuition for undergraduate and graduate students became a major component of their revised funding models (e.g., Michigan, Virginia, Wisconsin, and now many others). Out-of-state and international undergraduate students also provide a more diverse body and a richer intellectual experience for California students.[7] Moreover, these students often stay in California, start businesses, and enrich the state.

But the admission of out-of-state and international undergraduate students also raises important questions related to the perceived and real displacement of Californians students. What percentage of students should or might be enrolled at UC, and at Berkeley, and how might their enrollment generate financial aid for native students and enrich the academic environment of UC?

[7] See "The International Student Diversity Effect: A Profile of a Global Movement of Talent at a Group of Major US Universities." Chun-Mei Zhao and John Aubrey Douglass. Higher Education Forum, Vol. 9, pp. 29-44. March 2012; Irina Shcheglova, Gregg Thomson, and Martha C. Merrill "Fostering Global Competence Through Internationalization at American Research Universities." Research and Occasional Papers (ROPS). Center for Studies in Higher Education. CSHE 10.17. October 2017.

UC needs a way to enroll all UC-eligible students and expand the number of out-of-state and international students. Attracting talent in a global market and increasing degree attainment rates of the domestic population are not mutually exclusive goals. Indeed, they are both hallmarks of the most competitive economies.[8] This would require a long-range enrollment plan linked to a significant increase in UC's enrollment capacity.

***6.*** Grow Professional Degree Programs

UC campuses must continue to develop professional programs at the graduate-degree level that provide positive rates of financial return. In the "knowledge society," demand for graduate education is increasing, and not just in STEM fields. UC has the capacity to selectively develop or further expand enrollment in high-quality programs that include significant tuition income. By doing this, many professional schools could become self-supporting, and their current state support could be diverted to undergraduate programs and to doctoral education in selected fields with employment opportunities. Revenue sharing helped build the University in the past, and it will remain key to maintaining the overall quality of the UC campuses.

To help accomplish growth in graduate education, the University needs to consider increasing Professional Degree Supplemental Tuition (PDST) relative to market demand and seek new self-supported degree programs that provide net revenues. There must also be some consideration of those professional degree programs such as social welfare, public policy, or public health where graduates' wages are well below those of law or business school graduates.

More generally, there must be some way to allow law, business, or other professional degree graduates to enter public service work that pays less than the private sector. One approach: provide these students with UC-managed loan forgiveness programs or with a requirement to provide only a fixed portion of their income to loan repayment for 20 years. But this would cost money and be logistically complicated. There are some professional degree programs that appear to be at saturation – law school applications, for example, are down at UC and nationwide. But the quality of a UC education, and the University's brand, will continue to provide a market advantage that should be leveraged as part of the University's evolving financial model.

***7.*** Expand University Extension and Concurrent Enrollment

University Extension provides an avenue for increased campus revenue, for helping the University produce more degrees, and for improving the alignment of UC's educational offerings with California's workforce needs. Extension includes continuing education outside the regular offerings of the University. Concurrent Enrollment is a program that enrolls students from outside the University to pay fees and participate in existing University courses. Both no longer receive any funding support from the state, another indicator of declining state funding support for UC; instead they must generate revenue by charging student fees and drawing income from contracts and grants.

Californians enroll in Extension for the purpose of continuing education or life-long learning, with courses leading often to a credential or certificate. In the 2017 fiscal year, UC Extension programs on all campuses reported enrollment of 400,000 students and close to $280 million in revenue. Even with this substantial gross revenue, many campuses report net income in fiscal year 2016-17 ranging from nearly $4 million to deficits close to $1 million.[9] Both Extension and Concurrent Enrollment already raise significant revenues for UC campuses; could they be strategically expanded and marketed to raise more income and to boost UC's production of degrees and credentials needed in California's labor market?

Thus far, UC has not followed the path of other institutions that provide Extension courses leading to a degree, such as Columbia University's Liberal Studies program. With an increasing interest in short-term professional programs and credentials, UC Extension represents a major brand with growing market opportunities. For example, Extension programs could provide an alternative online or hybrid pathway for providing UC courses for the large number of Californians who have some college and have a desire to complete their bachelor's degree. In turn, this could be part of UC's effort to help the state meet the growing demand for those with bachelor's degrees in the labor market.[10] Short-term and sequential Extension courses and credentials

[8] John Aubrey Douglass, Richard Edelstein, Cecile Haoreau, "Seeking Smart Growth: The Idea of a California Global Higher Education Hub," California Journal of Politics and Policy, Vol 5 Issue 1, 2013.

[9] University of California Extension and Statewide Programs: Statistical and Financial Report 2016-17.

[10] Gary W. Matkin, "Alternative Digital Credentials: An Imperative for Higher Education," Center for Studies in Higher Education, Research and Occasional Paper Series (ROPS), CSHE 2.18. (February 2018).

focused on professional development might also be integrated in both undergraduate and graduate education at each of the UC campuses.

There is a divide between the regular academic degree programs offered on the UC campuses and Extension, which thus far has not been granted authority to offer UC degrees. Among the concerns by the Academic Senate is the ability of the faculty to manage and assess the quality of courses and programs that are offered outside the direct purview of academic departments. Some reconsideration of the role of University Extension is needed that both extends the public mission of the University and improves the financial standing of UC campuses.

***8.*** Research Funding and Renegotiating Indirect Recovery Cost Rates

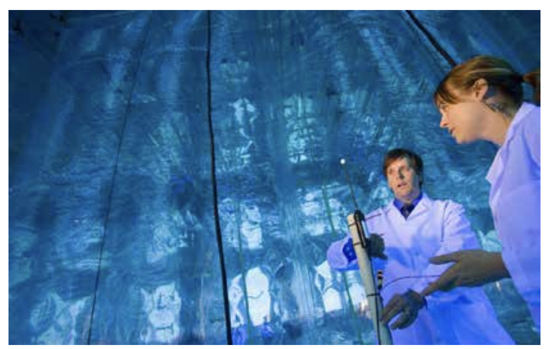
UC's research activities are a fundamental part of its mission and service to society, and a large provider of operating and sometimes capital funds. UC conducts nearly one-tenth of all academic research and development in the United States, totaling an estimated $516,000 in research expenditures per tenured and tenure-track faculty, compared to $413,000 for AAU private and $283,000 for AAU public peers.

UC's current indirect cost rate for federal grants, the primary source of extramural funds, is about 57 percent. The rate charged for state-funded research is about 25 percent — much lower than the federal rate — under the historical assumption of substantial state operating and capital investment in UC. The true indirect costs of research are typically much higher than research sponsors are willing to pay. Actual indirect cost recovery rates vary according to the type of research but are typically over 70 percent. Both the federal and state indirect cost rates should be revisited, although it is unlikely that there will be much change with the current administration in either Washington or Sacramento.[11]

***9.*** Patent and Licensing Income

UC's research activity and the interaction of faculty, graduate students, and undergraduates to develop new technologies results in the generation of intellectual property (IP) and expertise of high value in the private sector. California start-ups based on UC technology licenses generate nearly $14 billion in annual revenue in the private sector. As a result, UC patents and licenses do provide additional income to the campuses and to academic departments. In 2015, UC earned a total of $158 million in patent and fee income. After accounting for legal and administrative costs, and distributions to the generators of Intellectual Property (generally about one-third of total income), the annual contribution to UC's general fund is about $26 million.

There is the possibility of a significant increase in output of patents and licenses with the hope for more "home runs" – that rare occasion when UC-generated intellectual property creates a highly profitable application or drug. The CRISPR-Cas9 (Clustered Regularly Interspaced Short Palindromic Repeats) gene editing technology may provide just such an infusion of funding, although most new revenue will go to the inventors and the home campus. In general, there is volatility in the year-to-year generation of patent and licensing income related to legal cases that have, in the past, involved large technology companies, such as Genentech, or the development of breakthrough technology.[12]



UC can hope to generate additional income through its generation of IP, but it appears unlikely to make a dramatic contribution to the University's operational costs.

***10.*** Fund Raising and Endowments

Philanthropic gifts to the UC system and its campuses have risen by a dramatic 50 percent since 2000 and now totals more than $2 billion per year. Virtually all of these funds are restricted and are not available to support general operating costs. Even if philanthropy to UC were to double in the next 10 years, the increase would nominally offset only a quarter of the decline in state funding per student since 2000. Fundraising may help with capital costs, but it is less likely to be a significant income source for ongoing educational costs.

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[11] For more information, see, "Indirect Costs at Berkeley: A Primer," November 16, 2004; GAO Report: Policies for the Reimbursement of Indirect Costs Need to Be Updated: US Government Accountability Office, Report to Congressional Committees, September 2010.

[12] See the UCOP website UC Inventions at a Glance.

Yet fundraising must be part of a larger funding model for UC. There may be opportunities to focus more on corporate gifts that relate to expanding UC's significant role in educating engineers and other professionals, mindful of the University's policies to retain its institutional autonomy. A stronger link among the University's enrollment capacity and range of high-quality academic degree programs, and the state's labor needs, appears to be one avenue to expand the revenue stream to the campuses.

UC's growing ranks of alumni also offer an opportunity for increased fundraising. In 2016, the University raised in excess of $320 million from individual alumni and alumni foundations, and over the last decade the total dollars raised from individual alumni increased by 26 percent. Yet UC's 10 campuses lag behind the public members of the Association of American Universities in the percentage of alumni who give to their university (7.2 percent versus 11.2 for the public AAUs).[13] There is room for growth. Besides general contributions to specific academic departments, scholarships, and selected units (like athletics), endowed faculty chairs also provide a path for enhancing operating costs and attracting and retaining talented faculty.

## C. MANAGEMENT EFFICIENCIES AND INNOVATION

### *11.* Academic Efficiencies

Higher education is a labor-intensive endeavor, highly dependent on professionals who have teaching, research, and public service responsibilities. The search for efficiencies generally means lowering labor costs by increasing teaching workloads or reducing the academic labor force. Many observers of higher education predict a significant disruption of how universities and colleges, and more generally "educational services," are delivered. This disruption model focuses almost exclusively on course delivery and the structure of the curriculum, and not on the research and public service mission of major research universities, and how they interact with a university's teaching role.

The potential use of online degree programs to create an alternative path to a UC degree was previously outlined. Here are six additional options, most related to the disruption model, without an attempt to fully gauge their impact on the quality of a UC education.

Increased Student-to-Faculty Ratios – A major concern is the growing student-to-ladder-ranked faculty ratios, perhaps the best single benchmark of the significant decline in overall resources for UC. It is also a measure of the quality of an institution (these ratios are a factor in college rankings). UC has higher ratios then all its major competitors. What should be the goal of UC regarding student-to-faculty ratios (ladder-ranked and otherwise)? Can UC achieve its teaching and mentoring goals with fewer faculty?

In the 1960s, the ratio was approximately 14 to one (including all ranks); significant erosion in the ratio began in the 1990s. Today, according to our estimate, the ratio is 25 students to one faculty member – including lecturers and adjunct professors. What would be the consequences if the ratio grew from around to 28 to one, or even 30 to 1? The push toward fewer faculty while enrolling more students has, in fact, been the approach taken by recent governors who care more about greater student access and lower state costs than measures of quality or the robust outputs by UC faculty. One drawback of this approach, of course, is that many students may never be able to take a small seminar class in which they get to know a professor and their fellow students; there are also challenges to provide a sufficient number of courses to ensure students can progress toward their degree.


Larger Classes and More Credit Hours Per Faculty Member – Fewer faculty per student means increasing faculty teaching workload (credit hours per student, not necessarily more courses) and, therefore, large increases in class sizes. For that scenario to continue, many campuses will require new and larger classroom facilities and enhanced technology. Another consideration is that the attraction for future faculty to come and stay at UC may decline. Some may find lower teaching loads, smaller classes, and the larger number of talented graduate students at other universities more attractive. This points to a further decline in UC's academic ecosystem.

*Instructional Technology to Gain Efficiencies in Current Academic Programs* – online and hybrid courses (now nearly the norm) offer some hope for economies of scale and methods to manage larger and larger classes and workload for faculty. The reality is

[13] UC Office of the President, UC Regents Discussion Item, "University of California Alumni Relations Overview," May 17, 2017.

that online education, as currently conceived, is a needed supplement but not always a reliably transformative tool for current UC students—or for large public research universities—in general.

It is hard to beat the inexpensive model of large classroom courses (using technology as an additive) in terms of outcomes and costs. A teaching model that requires undergraduates to take most freshman and sophomore courses online might result in greater course attrition rates, a longer time-to-degree, and a higher percentage of dropouts.[14] UC must further explore how instructional technology can improve undergraduate education and make it more efficient, but it requires an understanding of student behaviors and the real costs and benefits of a significant scaling of, for example, fully online courses and degree programs.

*Accelerated Graduation Rates* – As noted previously, graduation rates for those receiving a bachelor's degree have increased even in the midst of state disinvestment and increased enrollment. This is in part because of a concerted effort to protect undergraduate education from financial cuts, better coordinate course offerings toward the major, and new investments in student advising, including personalized on-line platforms that chart a student's progress toward their degree. UC's current six-year graduation rate stands at 85 percent and increased by four percentage points since 1999. But there is variation among the campuses: Berkeley's graduation rates have stabilized at 93 percent.

The UC Office of the President estimates that a significant increase in the four-year graduation rate, plus much more robust summer session enrollment (see below), might provide enough additional capacity to enroll some 12,000 additional students. This may be an important path for enhancing enrollment capacity. But there are many variables that suggest a significant increase in graduation rates may be elusive.

As noted previously, many UC students are from low-income families, are the first generation to enroll in college, and use their summers to work or for internships, or to meet family obligations. Students also sometimes take longer to graduate because they may change their majors or seek double-majors; others choose to leave the University before graduating to enter the job market or to transfer to another college or university. And there is the growing concern for students in "impacted majors" – majors with high demand and few faculty – that they cannot get the courses they need to gradute in a timely manner. Additional resources, including student support services and additional faculty and lecturers, would likely be required to successfully improve graduation rates further.

There may also be limits to significant increases for transfer students who enroll at UC typically at the junior year and currently have a two-year graduation rate of only 55 percent. Any further increase in the four-year and two-year graduation rates for these students would be an important way to improve efficiencies. The following two policy options also focus on ways to accelerate graduation rates.

*Expand Summer Session Enrollment* – The 1960 Master Plan envisioned summer as a regular quarter or semester, with enrollment equivalent to the other periods in the academic year. But the enrollment demand for summer sessions never materialized. Instead, students use the summer to work, gain job experience, take courses at community colleges often near their family homes, or take short-courses or credential programs. Summer is also increasingly a period in which universities provide Continuing Education courses for non-traditional students, and host conferences and outreach programs – many of which generate income and create competition for classroom facilities.

UC could attempt to expand its own summer session enrollment and also further encouraging their students to take courses to fulfill general education requirements at other institutions (such as local community colleges). Under formal agreements, private instutitions could enroll students in UC-accredited courses, if they are affordable. For low-income students, extension of the Cal Grant program to cover the costs of summer sessions would be critical.

*Three-Year Bachelor's Degree* – Decreasing the number of years it takes to earn a degree may be a pathway to expand enrollment capacity. The UC Davis campus already offers three-year degree programs in 13 majors for "students who are highly focused on graduating early and moving on to graduation school and their careers . . ." Other campuses are experimenting with "accelerated degree plans." But here too there may be significant limits to scaling these programs.

First, there are issues regarding the quality of academic programs with reduced major requirements or lacking the general education courses which are a fundamental component of a liberal arts education. Second, the actual number of students who are

[14] Bettinger, Eric, Lindsay Fox, Suzanna Loeb, and Eric Taylor. "Virtual Classrooms: How Online College Courses Affect Student Success." American Economic Review, Vol 109 Issue 9, September 2017.

attracted to a more intensive curriculum, and what may seem like an abbreviated degree program, may be relatively small. Students come to the University of California not simply to attend classes, but to build social networks, participate in extracurricular activities and engage in other on-campus opportunities as they transition from the campus to the workplace. They seek mentorship opportunities and, increasingly, research experience with faculty and graduate students.

Most undergraduates at UC are 18-24 year olds, with very different needs than older students who tend to be more focused on direct career goals and might be more attracted to shorten time-to-degree. In short, the market for the three-year degree is complex. Any concerted effort to improve academic efficiencies, the academic goals of the University and the behaviors and needs of students must be considered in order to succeed.

***12.*** Administrative Efficiencies

There are generally three drivers for administrative costs: a) growth in the research enterprise (which also generates significant income and overhead revenue); b) the need for student support services, particularly as the student population become more socioeconomically diverse and requires further institutional effort to guide them through their university experience; and c) federal and state regulatory requirements.

In the past 10 years, the University's administrative staff grew significantly slower than the student population; the number of students to each UC staff member increased from 5.5 to 6.3 between 2007 and 2016.[15] Many campuses have pursued reforms in administrative costs that focus on eliminating staff positions and include significant efforts to centralize services, often with mixed results in cost savings and with concerns about the quality of campus support services.

Technological innovations appear to offer paths for efficiencies and cost savings, but they often require significant up-front costs and often do not result in improved services. It is unlikely that UC will be able to significantly cut its costs further by eliminating administrative staff. Yet this remains an area of university operations that offers some hope for reducing operating costs. Some reform of federal regulatory rules now being debated in Washington may provide marginal reductions in administrative costs. At the same time, the UC campuses have an administrative culture and operating rules that still reflect its historical roots as a state agency. Although the University achieved a high level of autonomy from state lawmakers in 1979, its internal financial practices and bureaucracy that reflect its origin as a state entity, despite reforms, remain complex and arguably a hindrance to innovative approaches to new revenue generation.

13. UC Governance and Management Structure

Without a large-scale reinfusion of funding from the state that approximates previous levels of investment, UC may need to consider options that provide greater autonomy to the campuses to expand their management capacity and pursue additional revenue streams. While UC's one-university model in which certain policy realms are uniform across all campuses (including undergraduate admissions standards and policies for the hiring and promotion of faculty) continues to serve UC well, some reconsideration of its organization seems inevitable.

One proposal is an "evolution" in UC management that includes the addition of campus governing boards that have a level of authority that enhances local decision-making and regional and alumni ties to each campus.[16] The Board of Regents would retain broad policymaking and fiduciary responsibilities, but the campus boards could have authority over tuition rates (within limits set by the Regents), allocations of financial aid, investments of campus-based endowments, and provide a closer link to its donors and surrounding regional communities. Many other multi-campus systems have campus-based governing boards that could inform UC.

*No other university reaches out beyond the borders of its campuses so extensively via its University Extension programs, University Cooperative Extension, research stations, and Natural Reserve System. As in the past, UC's mission is to touch and support, in some way, every Californian in every part of the state.*

A decentralization of authority in some financial and program areas to campuses may be required for UC to maintain quality and productivity if public investment and the fiscal health of the UC system further declines. Campus boards are one possible management innovation, but one with many important policy questions. What is clear is that the erosion in a coherent approach

[15] Data from the UC Information Center. There is currently a 26 percent federal cap on reimbursement of the administrative portion of overhead costs. True administrative indirect costs are in fact higher.

[16] See Robert Birgeneau, George Breslauer, Judson King, John Wilton, and Frank Yeary, "Modernizing Governance at the University of California: A Proposal that the Regents Create and Delegate Some Responsibilities to Campus Boards," Center for Studies in Higher Education, Research and Occasional Paper Series (ROPS), CSHE.4.12 (April 2012)

by state government to fund UC and CSU is leading to a devolution in which campuses, and even academic departments and schools, must seek their own financial solutions.[17]

*UC's network of premier universities has managed to do more with less state funding. This may have created a false sense, among lawmakers in particular, that it can continue to crowd more and more students onto its campuses without a significant boost in funding for operational costs or capital funding.*

## D. SOMETHING IS GOING TO GIVE

Public universities are the bulwarks of America's famed higher education system.[18] Among all research universities in the United States, the University of California stands alone in its role in educating a state's future professionals, entrepreneurs, researchers, and citizens. UC is an engine of social mobility through both its education of low-income students; No other university produces as many patents and licenses or generates as many start-ups, fueling innovation and economic growth. No other university reaches out so extensively beyond the borders of its campuses via its University and Cooperative Extension programs, research stations, and Natural Reserve System. As in the past, UC's mission is to touch and support, in some way, every Californian in every part of the state.

But the story of the University of California is not only its emergence as a multi-campus university of high quality and with an unparalleled international reputation. With systematic funding support by the State of California, UC has also managed to grow in pace with California's burgeoning population and its increasingly complex social and economic needs. Can UC maintain its historical role in the most populous state in the nation?

UC is a network of campuses that were largely established in the 1950s and 1960s. Most have reached or are nearing their enrollment capacity. Demand for access is already outpacing the University's capacity to enroll more Californians, and there is no clear funding model. California is projected to grow from 40 million to nearly 49 million residents by 2040.

Unless there are substantial unexpected demographic changes, UC would need to grow at a similar rate as in the past to maintain its social contract in admissions. This is particularly important if California hopes to mitigate growing income inequality and to expand access to underrepresented minorities.

Past governors and lawmakers understood the value of UC and supported its broad mission and geographic expansion with consistent and predictable funding. In turn, UC helped shape California's spectacular rise as one of the world's most innovative economies. Clearly, that historical pattern of investment and support dissipated. Workload funding and paying for capital costs and ongoing operational costs have been replaced by year-to-year deals reflecting the temporal political priorities of lawmakers and, to some degree, state fiscal constraints.

**A Revised Funding Model - Exploring Options**

**Big Picture Approaches**

1. Significant State Reinvestment = enrollment and program growth with needs of California
2. Steady State or Further Decline in State Investment = end of enrollment and program growth – seek stabilization
3. Alternative Paths – online degrees and partnerships with other higher education providers, but with limits and policy implications

**Seeking Funding Streams**

4. Reconsider Tuition and Fees
   - Increase Tuition and Financial Aid
   - Differential Tuition by Field
   - Differential Campus Tuition
   - New Pricing Model – tiered tuition rates by family income
   - Reduce Return-to-Aid Percentage
5. Revise Non-Residential and International Enrollment Targets
6. Grow Professional Degree Programs
7. Expand Extension and Concurrent Enrollment
8. Research Funding and Raise Indirect Recovery Rates
9. Patent and Licensing Income
10. Fund Raising and Endowments – target program areas such as student financial aid

**Management Efficiencies and Innovation**

11. Academic Efficiencies
    - Higher Student-to-Faculty Ratios
    - Larger Classes
    - Uses of Instructional Technology
    - Accelerated Graduation rates
    - Summer Session Enrollment
    - Three-Year Bachelor's Degree
12. Administrative Efficiencies
13. Revise UC's Management Structure – including establishment of campus governing boards

A major conundrum for UC is that it has, so far, navigated its financial troubles despite massive state disinvestment. UC's network of premier universities has managed to do more with less state funding. This may have created a false sense, among lawmakers in particular, that it can continue to crowd more and more students onto its campuses without a significant boost in funding for operational costs or capital funding.

[17] John Aubrey Douglass, "Tales of University Devolution: Organizational Behavior in the Age of Markets," Center for Studies in Higher Education, Research and Occasional Paper Series (ROPS), CSHE.6.12 (April 2012)

[18] Public research universities educate about 20 percent of all students nationwide; they award 65 percent of all master's degrees and 68 percent of all research doctorate degrees. They enroll 3.8 million students, including almost 900,000 graduate students, annually. See "Public Research Universities: Serving the Public Good," part of a four-part series of reports by the Lincoln Project, and funded by the American Academy of Arts & Sciences, 2016.

In exploring the options for generating addition revenue, not all are intuitive, many have substantial political risks or present a significant alteration to the mission and role of the university in California society. Also, briefly explored are ways to achieve efficiencies (which usually means reducing labor costs).

In the short run, UC may be able to generate new revenues streams to maintain its quality and productivity, and, for example, reduce student-to-faculty ratios. But it is difficult to imagine a scenario where UC can generate sufficient funding for its long-term operational and capital costs that will allow the UC system to expand its enrollment capacity and academic programs in pace with California's growing population and economic needs. California state government and the University share a history of under-predicting enrollment demand and the growing desire of California stakeholders for its scientific discoveries, expertise, and public services, and medical centers.

In a December 2016 Public Policy Institute of California poll, almost two-thirds of Californians said that UC was doing an excellent or good job, but an equal number also thought that the state's funding for higher education was inadequate. UC has enabled California to emerge as the fifth largest economy in the world. It seems a matter of political will to return to past investment patterns in higher education that can sustain access and research productivity.

Governors in the past have been key players in creating and building California's pioneering higher education system. The new governor should have ambitions for higher education that match those of Californians. There is a tremendous opportunity for a renewed collaboration among California's lawmakers, local communities, the business sector, and public higher education to update and enhance the state's network of colleges and universities for the 21st century. But failing that, there are significant choices that will confront the University, with potentially disastrous consequences to California's once robust promise of access for its citizens to one of the great universities of the world.[19]

UC may be approaching a tipping point beyond which it can no longer sustain enrollment and program growth without severely eroding the quality of its academic programs and mission to serve Californians.

[19] The University of California has an unusual level of autonomy from state government as a "public trust" in the state constitution. The UC Regents have the authority to make this choice, with the input and recommendations of the UC President and the Academic Senate. The California State Constitution states: "The University of California shall constitute a public trust, and its organization and government shall be perpetually continued in the form and character prescribed by the organic act creating the same…subject only to such legislative control as may be necessary to insure compliance with the terms of its endowments, and the proper investment and security of its funds. It shall be entirely independent of all political or sectarian influence and kept free therefrom in the appointment of its regents and in the administration of its affairs…" California State Constitution of 1879, Article IX. UC History Digital Archives.