
THE FINANCES OF A PUBLIC FLAGSHIP UNIVERSITY

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A common claim is that public flagship universities are public in name only; that they are not especially dependent on state funding. After all, as an example, just 14% of the University of California, Berkeley’s budget comes from the State of California.¹ Although not trivial, such a percentage nevertheless suggests that Berkeley’s fortunes should be fairly independent of the state’s: the vicissitudes of state funding should have only a marginal effect on Berkeley’s budget. Yet, as this essay will make clear, such a view is far too rosy and Berkeley far more dependent on the state than 14% might suggest.

A caveat upfront: this is a case study of a single university. That is important insofar as institutions of higher education are exceedingly heterogeneous; indeed, there are non-trivial differences even among the ten campuses of the UC system. Consequently, one is cautioned against ascribing too much generality to what follows. That being said, from conversations with my counterparts at other public universities, I believe what follows does offer lessons beyond Berkeley.

To understand why Berkeley is more dependent on state funding than that 14% figure might suggest, we need to peel back the onion of funding to get to the revenues truly available to support the campus’s educational mission. First, nearly a quarter of Berkeley’s overall \$3.5 billion budget consists of grants and contracts. That funding, while vital for sustaining the campus’s research enterprise, including graduate-student training, is highly restricted; for the most part, these aren’t funds that can be used to support classroom instruction, pay most salaries, or otherwise fund the campus’s operations.² Similarly, other revenues, such as those generated by auxiliaries (*e.g.*, housing & dining) are part of the \$3.5 billion, but, as auxiliaries are largely self-sustaining—or, in some instances require subsidies from the campus—they don’t contribute financially to the educational mission. When one finishes peeling the onion, central campus resources—the “*central ledger*”—is slightly more than \$1.7 billion. The central ledger pays the salary and benefits of nearly all permanent faculty,³

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¹Unless stated otherwise, financial figures are for the 2022–23 academic year (FY 23). Financial data for UC Berkeley can be found at <https://controller.berkeley.edu/accounting-and-controls/financial-reporting/uc-berkeley-financial-reports-unaudited>.

²Berkeley’s \$840 million in grants & contracts includes \$147 million in indirect cost recovery, which is available to the central administration. The rest (\$693 million) is a pass through to pay for research activities.

³Permanent faculty is essentially synonymous with tenured and tenure-track faculty. To be precise, they are Senate faculty in the Professor and Teaching Professor series. At last

funds much of instruction (even beyond the cost of permanent faculty),⁴ largely funds academic support units (*e.g.*, the library), and pays utilities, as well as most of the campus's administrative costs. Central ledger funds are, thus, critical to Berkeley's operation. Consequently, as state support (\$520 million in FY 23) represents 30% of the central ledger's funding, it is clear that Berkeley's dependence on state funding is far greater than the 14% figure quoted above.⁵

While the 30% figure begins to explain why ups and downs in state funding can have a meaningful effect on Berkeley, it can't be the whole story: after all, if fluctuations in state funding are not too great, then the campus can presumably insure itself against shocks by building up reserves in years of relatively good state funding as a buffer against leaner years. The problem with that presumption is that there have simply been too many lean years. Indeed, the history of state funding this century has largely been one of disinvestment: in *nominal* terms, state funding early in this century was not much lower than funding now (\$451 million in 2004 vs. \$520 million in 2023); in real terms, however, this represents a tremendous cut—in 2023 dollars, state funding in 2004 was \$727.5 million.⁶ Sadly, this 28.5% reduction in funding, in real terms, over the last 20 years actually *understates* the impact of state disinvestment: in this same period, Berkeley—in response to political pressure—expanded the size of its student body from 30,318 student FTE to 38,902 student FTE. Consequently, when viewed on a per student FTE basis,⁷ the real reduction in state funding in this period is 44%—a massive disinvestment.

Growing the student body might seem to represent a welcome addition in tuition income. Unfortunately, while it increased tuition revenue, that expansion also increased costs. Accurately calculating the *economic* cost of educating a student is a challenging exercise.⁸ Accurate calculations are not, however,

census, Berkeley had 1594 individuals in those series with a full-time-equivalent (FTE) number of 1570. Except for 68 individuals funded from philanthropic sources or revenues from certain master's programs, these faculty are all funded from the central ledger.

⁴Instructional costs consist principally of compensation, including benefits, for lecturers, teaching assistants, and readers. There are some other, relatively minor, costs. The central ledger funds instruction mainly via a yearly determined allocation based largely on estimated need. For FY 25, that allocation exceeds \$85 million. There are additional channels through which the central ledger funds instruction. Instructional costs not covered by the central ledger are covered by the schools and colleges using, *inter alia*, revenue from certain master's programs, annual giving directed to them, and certain endowment payouts.

⁵Even the 30% figure doesn't fully reflect Berkeley's dependence on the state: historically, most of its buildings have been state funded, either directly or from state bond measures. I discuss capital issues more below.

⁶Inflation calculated using the Minneapolis Federal Reserve Bank's CPI calculator (<https://www.minneapolisfed.org/about-us/monetary-policy/inflation-calculator>). As a rule, the CPI understates the inflation rate for higher education, the higher education price index (HEPI) being arguably better.

⁷A student taking a full load counts as one FTE. Less than a full load is a partial FTE.

⁸One can readily calculate an average cost per student; that being said, such a measure is sensitive to how the numerator is calculated, which is more art than science. Berkeley's "official" average cost estimate is \$33,000 ("Campus Budget Update," March 22, 2023).

necessary to conclude that an *in-state* student's tuition (\$11,928 in FY 23) falls far short of any reasonable cost estimate of educating that student, even without accounting for the UC-mandated assessment on tuition dollars to support financial aid ("return to aid"). Evidence does suggest that the tuition paid by a non-California resident probably exceeds the cost of educating them; however, non-residents make up a small (never more than 24%) fraction of the undergraduate population. Moreover, due to political pressures to educate more California residents, that fraction (now 22%) is shrinking and must be brought to no more than 18% within a few years. Over all, *net* tuition, as of 2023, was \$786 million, representing 46% of the \$1.7 billion central ledger budget.

As the largest component of the central ledger, tuition warrants a few words. Owing to political pressures, UC tuition was held flat in nominal terms for much of this century: there was only one year (FY 18) between FY 12 and FY 22 in which tuition was increased (and, then, only by 2.5%). This has put further financial pressure on Berkeley. Recently, the UC system adopted a cohort tuition model in which the tuition rate of the entering class is increased by the rate of inflation (CPI) or 5%, whichever is less, over the rate paid by the previous class. Once the tuition rate is set for a class, it remains fixed for that class's time at Berkeley. While, in steady state and if the inflation rate is low and stable, tuition income will *almost* grow at the same rate as Berkeley's costs—tuition increases reflect the CPI not HEPI⁹—during the phase-in period or periods of increasing inflation, tuition income grows at a rate far less than inflation.¹⁰

That 76% of Berkeley's sources of core funding have failed to keep pace with inflation—markedly so—for much of this century immediately explains why Berkeley has faced significant financial challenges nearly all of this century. Before addressing how Berkeley has coped with these challenges, let me touch on a few additional financial pressures beyond simple inflation. One is the growing cost of regulatory compliance:¹¹ higher education, especially public

⁹Recall footnote 6.

¹⁰To gain insight into the logic of cohort tuition, assume, for convenience, that each class is the same size, which we can normalize to 1 without loss of generality. Assume inflation is stable, so there is a constant rate of inflation, i . Let r_t be the tuition rate of cohort t , which, given the normalization, is also tuition income from that cohort. Let T_t be total tuition income at t ; *i.e.*, $T_t = \sum_{j=0}^3 r_{t-j}$ (as a further convenience assume each cohort graduates in four years). Just prior to the start of cohort tuition, time 0, we have $r_0 = \dots = r_{-3}$ and, thus $T_0 = 4r_0$. In the first year of cohort tuition, $T_1 = r_1 + 3r_0 = (1+i)r_0 + 3r_0 = ir_0 + T_0$: the growth rate in tuition income is, thus, $i/4$ (recall $r_0 = T_0/4$); so the campus continues to fall behind inflation. In steady state, $r_{t-j} = (1+i)^{t-j} r_{t-\tau}$ (the tuition rate in any year can be found by compound inflating of any past year), so we have

$$T_t = \sum_{j=0}^3 (1+i)^{3-j} r_{t-3} = \sum_{j=0}^3 (1+i)^{4-j} r_{t-4} = (1+i) \sum_{j=0}^3 (1+i)^{3-j} r_{t-4} = (1+i)T_{t-1};$$

hence, the rate of increase of T_t over T_{t-1} is i —the growth in tuition income matches the inflation rate. This analysis is readily adapted to show why a spike in inflation (*i.e.*, from i to $i + \Delta$) would not be immediately reflected in full in the growth of tuition income.

¹¹My noting the growing cost of regulatory compliance should not be read as my suggesting

higher education, is one of the most regulated industries in America.¹² While I am unaware of any quantification of these costs overall, it's clear, extrapolating from specific examples, that these costs are in the tens of millions annually.¹³ Unfortunately, increased funding to offset the costs of new regulations is almost never provided. Another driver is that, in keeping with its mission to be an instrument of social mobility, Berkeley seeks to draw from a broader range of socioeconomic strata; expanded access brings its own costs in terms of increased financial aid and other support services. One last cost driver to mention is the rising cost of faculty.¹⁴ While, to an extent, faculty salary growth tracks inflation and, thus, is part of the already discussed challenges of funding failing to keep pace with inflation, there are reasons to suspect that the competition for top faculty has been more heated than inflation over much of the relevant period. Consistent with that supposition, average full professor salaries at Berkeley rose 48%, in nominal terms, from 2012 to 2022, but only 30 percentage points of that can be accounted for by cost-of-living increases provided by the University; the remaining 18 percentage points reflect other drivers, arguably including competition.¹⁵ Related evidence is that, in *real* terms, average full professor salaries at Berkeley increased by 14.4%, an increase similar to a number of its main competitors (but interestingly not all).¹⁶ Adding to this is the fact that

that these compliance measures are intrinsically bad or inappropriate. Many measures help ensure that Berkeley is living up to its goals around access, equity, inclusion, and belonging. My purpose in discussing them is only to note that they are a cost driver.

¹²For an interesting take on these issues see Guard and Jacobsen (2024), which, as one measure of the challenges, notes between a two and threefold increase in legal cases involving higher education from the beginning of the century to now (p. 7, Figure 1.1).

¹³As just one example, new sports facilities at Berkeley to meet Title IX requirements will exceed \$80 million. (This should not, in any way, be read to indicate opposition to Berkeley meeting its Title IX obligations.)

¹⁴In noting rising faculty costs, I'm in no way seeking to blame the faculty for Berkeley's financial challenges. Attracting and retaining the world's best faculty is simply a cost of Berkeley's fulfilling its mission of providing access to excellence.

¹⁵Sources: the 48% number from the *Chronicle of Higher Education* website www.chronicle.com/article/explore-faculty-salaries-at-3-500-colleges-2012-20 and the 30 percentage points from comparing salary-scale tables for 2012 and 2022 (increases to those in percentage terms vary slightly across the different steps but cluster tightly around 30%). That 30% is essentially the cumulative cost-of-living increases from 2012 to 2022 (there are some technical nuances, not worth elaborating on here). While it is true that professors at Berkeley also get *merit*-based pay increases, which correspond to advancements in step, in a steady state with a fixed distribution across steps (*i.e.*, one in which those moving into a step annually simply replace those moving out, where moving in encompasses both progression up the scales and hiring and moving out encompasses both progression and leaving the university), those merit increases can't raise *average* compensation. Of course, reality isn't a steady state with a fixed distribution, but the variance from that hypothetical state is too minor to explain much of the residual 18 percentage points.

¹⁶From FY 12 to FY 24, Berkeley's five top rivals for faculty have been Chicago, Harvard, Princeton, Stanford, and Yale (based on head-to-head retention cases). Of those, Stanford and Yale had similar real increases (10.2% and 11.2%, respectively), Princeton was somewhat higher (20.4%). Surprisingly, Harvard's increase was just 1.9% and Chicago had a 2.2% real

California has become an increasingly expensive place to live relative to the rest of the country.¹⁷ It is not surprising, therefore, that, among the top 10 highest paying public universities in the country, UC campuses occupy eight spots.¹⁸ As a sense of the financial implication, it is notable that if Berkeley's average *full* professor salary were that of the University of Michigan in FY 22, it would have paid \$46.7 million less in compensation.¹⁹

So how has Berkeley coped with these funding challenges? To an extent, it has cultivated other sources of revenue—although not enough to fully offset the real cuts in state funding and tuition. These other sources include philanthropy, improved financial return from intellectual property (IP),²⁰ new high-fee master's programs,²¹ and investment income earned on reserves.²² Of those, only the last goes completely to the central ledger; much of the income from the others flows to the various academic units.²³ The precise accounting for these revenue sources on the central ledger is complex; that being said, a ballpark estimate is they contribute well over \$200 million annually. At first blush, that would seem to cover the \$207.5 million in real cuts in state funding since 2004; however, not all that \$200+ million is new (*i.e.*, some of that funding existed in 2004), to say nothing about the revenue lost to stagnant tuition.

Let me say a bit more about philanthropy. Berkeley's raising \$7.37 billion in its recent capital campaign,²⁴ while impressive, has a more limited impact on its finances than might at first be evident. True, were all \$7.37 billion unrestricted endowment, then the central ledger would be better off by roughly \$295 million

decrease. Source: *Chronicle of Higher Education* website www.chronicle.com/article/explore-faculty-salaries-at-3-500-colleges-2012-20. It is also worth noting that, of Berkeley's top ten competitors, eight currently pay higher average salaries to their full professors than Berkeley (source: *Chronicle of Higher Education*, 2023, p. 60).

¹⁷From 2001 to 2023, the *California* consumer price index rose 82% (source: https://www.cdfa.ca.gov/AHFSS/cabb/docs/202406_notice_Feb_California_Consumer_Price_Index_1955-2024.pdf), the national CPI only 72% (source: Minneapolis Fed).

¹⁸Source: *Chronicle of Higher Education* (2023), p. 60, "Highest Average Pay for Full Professors, 2021–22." Among the publics, UCLA is first, Berkeley second.

¹⁹The difference in average salaries (source: *ibid.*) multiplied by 1.359, to account for the FY 22 composite benefit rate, then multiplied by the number of *full* professors at Berkeley.

²⁰Berkeley has always received royalty income from the patents resulting from research done on the campus. Recently, it has sought to capture a greater fraction of the wealth its IP creates via investing in new firms and creating incubators (*e.g.*, the Bakar Bioengineer Hub). The campus also has eight shared-carryforward venture capital funds.

²¹UC campuses can create Self-Supporting Graduate Professional Degree Programs (SSGPDPs), principally professional master's programs, for which "market" tuition may be charged. The majority of Berkeley's 21 SSGPDPs were created in the past decade or so.

²²The UC system provides a number of investment vehicles—essentially different mutual funds—in which campuses can invest reserves, both central reserves and unit-level reserves.

²³Although this, too, can be budget-relieving for the center insofar as it lessens the funding demands of the academic units on the center.

²⁴The Light the Way Campaign, which ran 2014 to 2023.

to \$350 million annually.²⁵ However, only a trivial fraction of the funds raised went to unrestricted endowment—no more than a few million;²⁶ indeed, only \$1.5 billion (20% of total) went into the endowment at all. To be sure, even restricted funds can be budget relieving: the campaign raised, *e.g.*, funds for 42 new Senate FTE. Additionally, some of the funds that went directly to decanal units will help support instruction (recall footnotes 4 & 23).²⁷ Still, philanthropic funding—while absolutely critical—is not as fungible as other funding *vis-à-vis* the center and is, therefore, a less-than-perfect substitute *currently* for lost state funding and the forgone tuition increases from FY 12 to FY 22;²⁸ long term, it will hopefully prove to be a key part of the solution to state disinvestment, but it is not fully there yet.²⁹

Berkeley has also coped on the cost-side of the ledger. Here it's less a tale of stop doing and more a tale of *not* doing. Universities are notoriously bad at stopping things. This reflects many forces: a reverence for tradition, shared governance, and an ability of aggrieved parties to mobilize protest campaigns.³⁰ Not surprisingly, stopping programs, closing centers, and the like have been rare events. Even when something ends, its resources are more likely to be redeployed than returned to the center. So Berkeley's "cost-side" strategy has largely been one of *not* doing. For example, the aforementioned 28% growth in student FTE was not matched by a growth in Senate FTE; indeed, its headcount of Senate faculty increased by only five from 2004 to 2022.³¹ Another significant not-doing is with regard to deferred maintenance: while estimates vary widely, the amount of deferred maintenance at Berkeley could exceed \$5 billion. Not doing maintenance—kicking that cost can down the road—is a way to avoid making painful and controversial cuts to operations. Moreover, for the first decade or so of this century, this strategy wasn't wholly crazy insofar as the

²⁵Berkeley has two endowments, one run by the University of California, Berkeley Foundation (UCBF), the other by the UC Regents. Currently, the former has a payout rate of 4%, the latter 4.75%; the numbers in the text are \$7.37 billion times those payout rates.

²⁶A report for the Light the Way Campaign suggests that 0.3% of the \$1.75 billion that was unrestricted in use went to endowment, so \$5.25 million.

²⁷\$5.62 billion (76%) of the money raised (or pledged) is restricted in use. Of the remainder that is not restricted in use, 94% has restrictions in terms of *user* (*i.e.*, who controls use).

²⁸Philanthropy is, of course, valuable even when it doesn't add to the central ledger: it has allowed Berkeley to create new programs and build buildings that it otherwise wouldn't have been able to do. Additionally, philanthropy has funded research and other endeavors that are too "high risk" or otherwise not viewed favorably by government agencies.

²⁹Erasing the \$207.5 million cut in state funding requires an *unrestricted* endowment of between \$4.37 and \$5.19 billion; Berkeley's current endowments are ~\$7 billion combined, almost all restricted (see, also, footnote 25).

³⁰See Rosenberg (2023) for an interesting take on resistance to change in higher education. Also see Getz and Siegfried (1991) for how those pressures might explain rising costs.

³¹The headcount jumped significantly, by 42, in 2023 due to additional *non*-state-funded positions, a campus decision to be slightly more expansive in authorizing state-funded lines, and a drop in separations. Even then, the 2023 headcount is only 3% over 2004.

state did provide dedicated allocations for new buildings and seismic retrofits.³² In the last decade, however, there has been considerably less state funding for those purposes.³³ Hence, there is a sense that we're fast running out of road down which to kick the deferred-maintenance can.

A further word on capital: as observed earlier, historically, the state was the principal funder of buildings (recall footnote 5). While the state has not wholly abandoned building—a state-funded classroom building is currently under construction—the campus has become more reliant on philanthropic support for new building and, to a limited extent, for retrofitting existing buildings. The campus has also used public-private partnerships (P3s). Yet, capital projects remain a major challenge: state funding is anemic (recall footnote 33); P3s require a revenue stream for the private partner;³⁴ and the development office describes fundraising for buildings as the hardest dollars to raise. Another issue is that philanthropists tend to favor buildings that will host new endeavors, exhibiting less of—but by no means no—appetite for classrooms and facilities for existing endeavors. Moreover, while philanthropists have supported retrofitting buildings for new endeavors, they have essentially no desire to refurbish buildings for existing uses. While a small portion of the operating budget does go to deferred maintenance, the pressure to kick the can down the road—as discussed above—has proved difficult to resist. To an extent, the campus can commit not to kick the can by borrowing—debt payments effectively being mandated spending—however, the campus's debt capacity is rather limited.

So how does Berkeley solve its financial challenges? If I knew the answer, I would have far fewer sleepless nights. State reinvestment in the UC is not imminent. Nor will pressures to enroll principally California residents at a relatively low rate of tuition abate anytime soon. If Berkeley can sustain the momentum it has in philanthropy (bringing in over \$1 billion in a number of recent years), then this will help tremendously, especially if giving can be steered more toward core activities and/or capital needs. Capturing more of the value its IP generates will also prove important to Berkeley. At the same time, it is difficult to see that Berkeley can overcome its financial challenges unless, one, it actually stops doing things that are less central to its teaching and research mission; and, two, it figures out how to do things differently. No university is a paragon of efficiency, but Berkeley often seems remarkably inefficient (*i.e.*, to be operating well inside the production frontier). But getting to the frontier is not enough: Berkeley needs a better production technology—as, I suspect, do most universities: while Baumol's (1967) cost disease is a debated explanation for why

³²Although funding for seismic retrofits is intended to bring old buildings closer to ever more stringent seismic-related building codes, such retrofits often afforded opportunities to address other maintenance needs.

³³The last state general obligation bond measure that included UC was passed in 2008.

³⁴A revenue stream is readily identified when the building is directly revenue generating (*e.g.*, a dorm). Another way to generate revenue is for the campus to lease the building or a portion of it. Such leasing arrangements are not, conceptually at least, that different from borrowing and, indeed, such leases factor into the campus's overall debt capacity.

higher education costs have historically outpaced the rest of the economy,³⁵ it is nonetheless hard to see how Berkeley will be able to afford what it currently does unless it can improve its productivity via technology, such as artificial intelligence (AI). Indeed, the logic of Baumol’s cost disease being what it is, if AI leads to productivity gains in other sectors, but not higher education, then higher education’s relative cost problem will only get worse.

Despite all this, Berkeley remains the #1 public university in the world. I do not expect that to change anytime soon: in part, because I don’t foresee Berkeley deviating from its steadfast commitment to recruit and retain the best faculty; and, in part, because I don’t see that other *public* universities are in significantly better financial shape given that state disinvestment has been a widespread phenomenon (see, *e.g.*, Bound et al., 2019). To be sure, the University of California has some challenges *vis-à-vis* other state universities—higher cost of living, limited capacity to enroll non-resident students, and seismically related deferred maintenance being especially notable—but California also offers myriad advantages. A bigger worry is whether Berkeley will continue to be able hold its own against elite *private* universities; although there is no evidence so far that Berkeley is slipping.³⁶ This may reflect, as Campbell et al. in this volume suggest, that even the elite privates are not without financial challenges.

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³⁵For a discussion of the competing hypotheses for the rising cost of higher education, including Baumol’s cost disease, see Getz and Siegfried (1991). Archibald and Feldman (2008) offer some evidence in favor of Baumol’s cost disease as an explanation.

³⁶Except for Harvard and Stanford, Berkeley has a winning average against top privates in retention battles, ranging from 67% to 100% in head-to-head competitions.

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