How Public Universities Close Budget Gaps Matters For States

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When the Great Recession took its toll on state budgets, public universities felt the pain. Nationally, state support for higher education in 2011-12 declined an average of 7.6 percent from 2010-11.[1] The cuts have been dramatic enough that universities couldn't balance the books with just the usual belt-tightening. Instead, some universities have pursued revenue strategies that ultimately have implications for who gets to attend the university, or how much they pay—so much so that the budget-closing strategies are now prompting questions about what it means to be a *public* university.

Many public universities attempted to offset reductions in state funds by raising tuition, shifting admission spots to more out-of-state students (who pay higher tuition), and, in some cases, increasing enrollment. For a given budget gap, these three strategies should be weighed both for their revenue-generating capacity and for their impact on the university's mission.

Toward that end, university leaders should compare the magnitude of change needed to yield a set amount of funds for each of the three strategies. For instance, depending on the university, a seemingly modest rise in tuition might yield the same funds as a larger shift to reliance on out-of-state students. Further, while each strategy may bring in more dollars to the university, each also has very different implications for how well the university meets its historical obligation to the state as a public institution. If a key purpose of a public flagship university is degree production among the state's residents, then a significant factor in comparing the different budget-closing strategies is the extent to which the university continues to serve the state's students.

This analysis considers how these three revenue-generating options compare for use in public flagship universities, first in terms of the relative magnitude needed to close a gap in state funds, and then in terms of the extent to which they contribute to degree production for students in their state.

Flagship universities react to state budget cuts

States' flagship universities primarily generate revenue from students through two main sources—tuition and state allocations—so it is not surprising that many universities first reacted to state cuts by raising tuition (to the extent that their state authorized them to do so). For instance, the University of California system raised its tuition by 21 percent, University of Arizona students saw tuition jump

1. Doug Lederman, "State Support Slumps Again," *Inside Higher Ed,* 2012, http://www.insidehighered.com/news/2012/01/23/state-funds-higher-education-fell-76-2011-12.

17 percent, and tuition at University of Georgia is up 16 percent.[2] In each case, the strategy did produce more revenue, but where tuition hikes were steeper, so was the pushback from students. Press coverage of double-digit increases in tuition in some locales has prompted leaders to consider other options to raise revenue to cover gaps in state funds.

Several public universities have employed a second strategy of admitting more out-of-state students because nonresidents typically pay much higher ("unsubsidized") tuitions. Flagship universities in Michigan, Colorado, South Carolina, and Oregon used this strategy specifically to raise more revenue. Similarly, at the University of Washington, the number of international students in the freshman class jumped from 564 in 2010 to 1,036 in 2011.[3]

A third revenue strategy is one that is counterintuitive to some—that of simply expanding overall enrollment. Even without shifting the balance to more nonresidents, increasing resident enrollment brings in more revenue as all students come with some tuition dollars. Some might assume the marginal costs of serving an additional student exceed the in-state tuition rates, but the evidence on this point is not clear. Where universities can find ways to serve more students efficiently, perhaps by shifting some delivery models, they might be able to lower marginal costs such that expanding enrollment is a net win for the budget.[4] Some conclude that they already operate at capacity, but others are rethinking course scheduling to take advantage of facilities that typically sit empty on weekends or over the summer in order to facilitate larger student bodies.[5] While this strategy might depend on the context, enrollment increases at the University of Maryland, University of Washington, and Arizona State University all helped to draw in more funds and erase some of that red ink.[6]

For each strategy, the magnitude of change needed depends on the university

The revenue options discussed here—increase tuition, shift admission spots to out-of-state students, or grow overall enrollment—are not mutually exclusive, and some universities are employing some combination of the three. But for this analysis, we compare each as an individual revenue strategy in the context of the university's own revenue and enrollment data to better understand the magnitude of change required to close a given gap, and the impact on state residents' degree attainment.

We focus on more typical flagship universities, as these institutions are often the most competitive in terms of admissions, enabling us to model changes in tuition or enrollment and still assume a surplus of qualified and interested students.[7] Further, the relatively high rates of degree completion make enrollment changes

2. Jonnelle Marte, "Five States Where College Tuition Is Soaring," *Wall Street Journal,* August 18, 2012.

3. Grant Blume and Marguerite Roza, *Are Residents Losing Their Edge In Public University Admissions?* (Seattle, WA: Center on Reinventing Public Education, University of Washington, 2012).

4. Stephen A. Hoenack and Eileen L. Collins, *The Economics Of American Universities: Management, Operations, And Fiscal Environment* (Albany: State University of New York Press, 1990).

5. The Indiana University proposed a tuition discount to encourage taking summer courses in part to make better use of its facilities. Carrie Richie, "IU summer tuition could fall 25%,"*Indianapolis Star,* Oct. 25, 2011.

6. See for example: http://newamericanuniversity.asu.edu/ and the University of Virginia's increased enrollment as a response to the Virginia Higher Education Opportunity Act of 2011, http://www.virginia.edu/finance101/answers.html.

7. A few notable flagships like UC Berkeley, Pennsylvania State University, Rutgers University-Newark, University of Colorado Boulder, University of Idaho, and University of Delaware are not included because we were unable to obtain complete data for these institutions or their figures were either in too great of flux or unrepresentative for the years studied.

in these institutions consequential for the states' overall degree production.[8] We start with a hypothetical 5 percent loss in state funds, then compute the magnitude of change needed for each strategy as it pertains to undergraduate students to offset the loss in state revenues and the corresponding effect on degree attainment among state residents.

We begin with 2010-11 state appropriation, tuition revenue, enrollment, out-of-state tuition rates, and graduation data for 40 flagship institutions from the U.S. Department of Education's Integrated Post Secondary Education Data System (IPEDS). With these data we first estimate the total dollar loss resulting from a 5 percent reduction in state funding and then compute the required change in each revenue strategy needed to fully offset the reduction in state funds. For the tuition change, the analysis computes the percentage change to the current revenue realized per undergraduate student to offset the gap in state funds.[9] To determine how many enrollment spots would need to shift to out-of-state students, we divide the gap by the difference in resident to nonresident undergraduate student tuition. In our third analysis, we assume that marginal costs of adding another student are negligible,[10] and thus to determine the enrollment growth, we divide the gap by the average tuition collected per student.[11]

8. We cannot assume, however, that degree production rates would be stable across economic groups. Higher tuitions would likely dissuade some lower-income students from seeking enrollment in the flagship universities, as these tend to be the most expensive of the public institutions.

9. Tuition revenue per student is different from published tuition rates as the former captures actual revenue received by the university after scholarships, aid, etc. has been awarded. This simulation uses average current revenue, thereby assuming the university is continuing to enroll a roughly similar student population into the future as it currently enrolls, i.e., that rates of delivering aid, scholarships, and mix of in-state and out-of-state students grow proportionately with the tuition increases.

10. As discussed earlier, ensuring that marginal costs are indeed low or negligible would likely require some changes in delivery model, so that additional students do not necessitate additional hiring, etc.

11. This analysis assumes few limits on the demand for higher education and the supply of resident and nonresident students. Here again, we assume that the mix of students remains constant, as do the actual per student revenues.

Table 1. Three options modeled for each university to offset a 5% reduction in state appropriations

	5% of state funds	#1: Increase tuition		#2: More out-of-staters		#3: Expand enrollment	
		Increase tuition for all undergrads by:	Equivalent change in tuition revenue	Number of in-state spots replaced with out-of-state:	Change in percent of all undergrads	Expand enrollment by (assumes negligible marginal costs):	Percent increase in undergrad enrollment
Auburn University	$10,644,867	$521	5%	730	4%	1,018	5%
Indiana University-Bloomington	$12,150,242	$373	3%	607	2%	861	3%
Louisiana State Univ. and A & M College	$12,667,257	$528	8%	N/A*	N/A*	1,871	8%
Ohio State University-Main Campus	$20,625,864	$481	4%	1,385	3%	1,698	4%
SUNY at Albany	$8,735,226	$683	14%	1,077	8%	1,795	14%
The University of Alabama	$6,871,360	$262	3%	517	2%	754	3%
The University of Montana	$2,729,698	$204	3%	185	1%	427	3%
The University of Tennessee	$22,650,936	$1,068	13%	1,345	6%	2,774	13%
The University of Texas at Austin	$15,132,759	$394	4%	666	2%	1,688	4%
University of Alaska Fairbanks	$8,033,743	$942	24%	690	8%	2,037	24%
University of Arizona	$17,455,500	$569	6%	1,077	4%	1,806	6%
University of Arkansas	$10,009,426	$526	11%	959	5%	2,127	11%
University of Connecticut	$27,710,968	$1,555	16%	1,640	9%	2,902	16%
University of Florida	$28,956,150	$888	16%	1,365	4%	5,200	16%
University of Georgia	$19,178,435	$727	9%	1,081	4%	2,340	9%
University of Hawaii at Manoa	$9,549,669	$663	9%	644	4%	1,328	9%
University of Illinois Urbana-Champaign	$14,284,881	$443	3%	929	3%	1,079	3%
University of Iowa	$11,495,050	$533	5%	663	3%	1,105	5%
University of Kansas	$12,561,394	$638	8%	1,057	5%	1,482	8%
University of Kentucky	$14,823,624	$737	9%	1,542	8%	1,808	9%
University of Maine	$4,788,200	$534	7%	305	3%	655	7%
University of Maryland-College Park	$20,361,710	$759	8%	1,172	4%	2,037	8%
University of Massachusetts Amherst	$11,784,900	$540	6%	1,433	7%	1,209	6%
University of Michigan-Ann Arbor	$15,812,750	$581	3%	629	2%	839	3%
University of Mississippi	$3,531,434	$230	3%	392	3%	492	3%
University of Missouri-Columbia	$11,407,233	$439	6%	892	3%	1,562	6%
University of Nebraska-Lincoln	$12,128,986	$627	10%	987	5%	1,889	10%
University of Nevada-Las Vegas	$8,486,350	$383	7%	624	3%	1,504	7%
University of New Hampshire-Main	$3,267,666	$259	3%	245	2%	316	3%
University of North Carolina-Chapel Hill	$26,009,925	$1,411	14%	1,312	7%	2,614	14%
University of North Dakota	$4,420,852	$384	5%	457	4%	596	5%
University of Oregon	$3,083,843	$149	1%	163	1%	264	1%
University of Rhode Island	$2,830,946	$218	2%	176	1%	248	2%
University of South Carolina-Columbia	$5,079,170	$225	3%	314	1%	564	3%
University of Utah	$12,526,800	$516	7%	856	4%	1,681	7%
University of Vermont	$2,227,050	$194	1%	113	1%	121	1%
University of Virginia-Main Campus	$7,351,622	$468	3%	302	2%	499	3%
University of Washington-Seattle	$14,838,473	$492	4%	849	3%	1,080	4%
University of Wisconsin Colleges	$1,993,879	$137	5%	286	2%	774	5%
University of Wyoming	$10,660,555	$1,051	32%	1,526	15%	3,201	32%
						58,245	

*Tuition rates are already the same for residents and nonresidents

As is clear from Table 1, the magnitude of effect on each revenue strategy differs substantially by university. One key element is the extent of the university's reliance on state funding: a 5 percent reduction in state funds amounts to a larger portion of some universities' budgets. Institutions like the University of Wyoming and the University of Alaska-Fairbanks, where state funding provides over 80 percent of their operating revenue, take a bigger hit when state support drops by 5 percent. At these universities, in order to cover a 5 percent drop in state funds, tuition would need to jump 24 percent ($942 per student) and 32 percent ($1,051 per student) respectively. Larger institutions like the University of Vermont and the University of Oregon, where state funding accounts for 16 percent ($149 per student) and 23 percent ($194 per student) of student-based revenue, would require only a 1 percent increase in tuition to make up for what amounts to a much smaller cut in state funds. Across all the flagship institutions we examined, to offset a 5 percent drop in state funding would, on average, require a 6 percent increase in tuition ($553 per student).

On the second strategy of shifting to more out-of-state residents as a way of closing a gap in state funds, here again the magnitude of effect needed depends on the university. The analysis illustrates the impact if the shift was implemented evenly over all cohorts (and thus over several years) instead of affecting only the entering cohort.[12] Of the 40 universities we examined, 12 would need to shift 5 or more percent of their total undergraduate spots to nonresident students in order to close the gap in state funds.

For the third strategy—that of expanding enrollment to close the budget gap—the implications are again varied. If universities could indeed contain marginal costs for serving students, 19 could close their gap by growing their enrollment by 5 percent or less. For eight of the universities, offsetting the gap in state funds would require enrollment growth of over 10 percent—calling to question the viability of such a strategy for these universities, particularly under the assumption of negligible marginal costs.

Decisions about short-run gaps have long-term impacts on degree production

It is not surprising that public universities, like other organizations, have responded to recent funding cuts by seeking additional revenues where they can. But as the headlines suggest, strategies like raising tuition or shifting spots to more out-of-state students have prompted some less-than-positive reactions. Generally, critics argue that public universities are becoming *less public* and that public universities have a responsibility to the state to create a path to degree attainment for *state* residents. Revenue strategies that make it more difficult for state residents to obtain degrees are at cross-purposes with the goals of the institution, the argument goes.

Some universities, such as the University of Michigan, University of Virginia, or the University of California campuses, are now debating whether they want to be public at all. Given the declining state support, they wonder whether they would be better off detaching themselves from a declining revenue source and seeking survival on their own. While the calculus on this issue might differ depending on context, states should know that what they lose in the deal is an institution focused on degree production for their states' students. And as states articulate goals to grow their economies (which they hope will restore state revenues), evidence

12. Using this strategy, it is unlikely that the university would offset the state cut all in a single year. If attempting to offset the gap in a single year with a single cohort, a much larger shift would be needed for that cohort (roughly 4.5 times the impact).

suggests that their future economic health is tied closely to post-secondary degree attainment in their state.[13] More degree production for resident students—not less—will help grow the state economy.

It is in light of this goal of degree production for the states' students that we compare the three revenue strategies using the graduation rate data from IPEDS. For this analysis, we use current completion rates at each university to project the impact of these different policies on resident enrollment and then on the production of degrees.

Given the hypothetical 5 percent reduction in state funding, Table 2 demonstrates the annual impact on resident degree production for the flagship institutions in our sample.

Not surprisingly, the strategy of raising tuition has essentially no effect on resident degree attainment for residents, as flagships will likely continue to fill their spots (possibly with a different mix of students), keeping graduation rates steady.

If institutions chose the second strategy—shifting the mix of students to rely more heavily on out-of-state students—then while overall degrees awarded would remain constant, the number of degrees awarded to a state's *residents* would fall. As Table 2 shows, for most institutions the magnitude of the shift would only amount to a change in a few hundred degrees per year. Over a decade, however, the figure gains significance, as for each institution, a few thousand resident degrees hang in the balance.

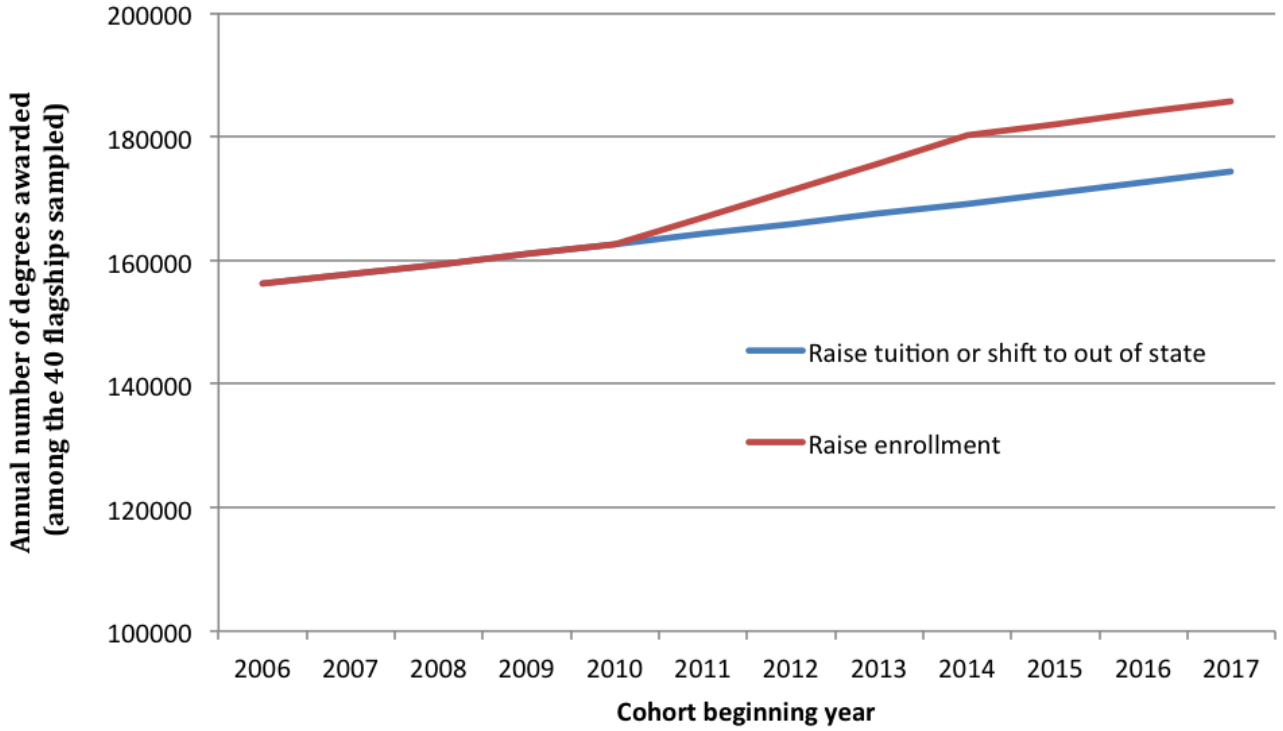
13. For a sampling, see: *The Road Ahead*, available at http://www.doa.state.wi.us/documents/theroadahead.pdf; or Anthony Carnevale, Nicole Smith, and Jeff Strohl, *Help Wanted: Projections of Jobs and Education Requirements Through 2018* (Washington, DC: Center on Education and the Workforce, Georgetown University, 2010).

Table 2. Change in annual degree attainment for residents

	#1: Increase tuition		#2: More out-of-staters		#3: Expand enrollment	
	Number	%	Number	%	Number	%
Auburn University	0	0%	-136	-4%	190	5%
Indiana University-Bloomington	0	0%	-122	-2%	173	3%
Louisiana State Univ. and A & M College	0	0%	N/A	N/A	318	8%
Ohio State University-Main Campus	0	0%	-250	-3%	306	4%
SUNY at Albany	0	0%	-224	-8%	374	14%
The University of Alabama	0	0%	-101	-2%	148	3%
The University of Montana	0	0%	-23	-1%	54	3%
The University of Tennessee	0	0%	-219	-6%	451	13%
The University of Texas at Austin	0	0%	-140	-2%	354	4%
University of Alaska Fairbanks	0	0%	-74	-8%	219	24%
University of Arizona	0	0%	-198	-4%	333	6%
University of Arkansas	0	0%	-193	-5%	429	11%
University of Connecticut	0	0%	-323	-9%	571	16%
University of Florida	0	0%	-303	-4%	1153	16%
University of Georgia	0	0%	-232	-4%	501	9%
University of Hawaii at Manoa	0	0%	-98	-4%	203	9%
University of Illinois Urbana-Champaign	0	0%	-213	-3%	247	3%
University of Iowa	0	0%	-139	-3%	231	5%
University of Kansas	0	0%	-181	-5%	253	8%
University of Kentucky	0	0%	-255	-8%	298	9%
University of Maine	0	0%	-55	-3%	117	7%
University of Maryland-College Park	0	0%	-226	-4%	393	8%
University of Massachusetts Amherst	0	0%	-291	-7%	245	6%
University of Michigan-Ann Arbor	0	0%	-150	-2%	200	3%
University of Mississippi	0	0%	-82	-3%	103	3%
University of Missouri-Columbia	0	0%	-182	-3%	318	6%
University of Nebraska-Lincoln	0	0%	-173	-5%	330	10%
University of Nevada-Las Vegas	0	0%	-68	-3%	165	7%
University of New Hampshire-Main	0	0%	-53	-2%	68	3%
University of North Carolina-Chapel Hill	0	0%	-295	-7%	588	14%
University of North Dakota	0	0%	-78	-4%	102	5%
University of Oregon	0	0%	-34	-1%	55	1%
University of Rhode Island	0	0%	-30	-1%	42	2%
University of South Carolina-Columbia	0	0%	-66	-1%	119	3%
University of Utah	0	0%	-149	-4%	292	7%
University of Vermont	0	0%	-22	-1%	24	1%
University of Virginia-Main Campus	0	0%	-90	-2%	148	3%
University of Washington-Seattle	0	0%	-198	-3%	252	4%
University of Wisconsin Colleges	0	0%	*	*	*	*
University of Wyoming	0	0%	-241	-15%	505	32%
***Insufficient data**	**0**				**10872**	

For the third strategy—that of raising enrollment (using the current mix of resident and nonresidents)—the effect is to accelerate degree production for in-state students. In fact, growing enrollment as described here would yield over 1,000 new resident diplomas annually in each of 26 of the 40 institutions in our sample. All told, as Figure 1 illustrates, for this set of universities, the impact nationally would be to produce over 10,000 new baccalaureate degrees annually or roughly 100,000 additional degrees in a decade. For states looking to increase degree production as a means to grow their state's economy (and restore state revenues), such a strategy could work both to bolster revenues to universities, and to accelerate the state's economy.

Figure 1. Increasing enrollment can yield more degrees annually over the long term



Navigating for the long haul

The current budget circumstances are a challenge for universities. For most, the response will likely be a combination of strategies, including rethinking cost structures, considering new delivery models, and some mix of strategies to bolster revenues. As the analysis here suggests, decisions made by public universities can have implications for degree production over the long term. Shifting spots to out-of-state students may appear to be an expedient response in the short run, but when that shift lowers the number of degrees produced among residents, the strategy could put a damper on a state's efforts to build its economy by developing its workforce. Many may assume they have no choice but to raise tuition, but doing so will undoubtedly put higher education out of reach for some demographic groups, and may be an unsustainable response over the long term.

Where possible, increasing enrollments could actually serve two goals: dealing with the budget cuts and increasing baccalaureate degree attainment in states. For the most part, the selective flagship institutions have the highest graduation rates among the public universities in their states. Moreover, most of these flagship institutions annually have students sitting on their waitlist ready, willing, and qualified to take seats. Enrolling more students into these institutions will likely optimize degree production.

The viability of increasing enrollment will vary by institution. Students may experience larger classes and more crowded facilities, and faculty may have to shift their focus toward serving more undergraduates.[14] In some cases, adding 30 students to a class that already has 300 students would hardly impact the learning experience. Adding more students to under-enrolled classes can also be done at little or no cost.

The findings here are qualified, of course. We acknowledge that institutional budgets are more complicated than tuition plus state support. And, given existing data, it is almost impossible to know the actual capacity of institutions and to what degree they can actually accommodate more students. Practically speaking, for most institutions, growth would almost certainly correspond with some additional costs. The trick for universities would be to keep marginal costs below average tuition levels. For many universities, a more practical solution will likely be an increase in tuition *and* an increase in enrollment.

While the above caveats are all limitations to this analysis, there is still an opportunity for institutions to consider different strategies for addressing budget gaps. It is probable that the current fiscal conditions will persist well into the future and that state revenues will continue to be strained. Given competing demands on state budgets, and with higher education being one of the largest discretionary items, it is likely that postsecondary institutions will need to find new sources of revenue and new ways to finance the increasing costs of higher education. Raising enrollments presents an opportunity to help close budget gaps and increase the quantity of baccalaureate degrees produced.

14. Many students would likely choose to put up with such costs when faced with the alternative of attending a less-prestigious institution.

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