SPECIAL REPORT

Public universities left reeling by recession

Slumping state revenues are putting US public universities under pressure. **Rex Dalton** reports on how one institution is coping.

TUCSON, ARIZONA

At the University of Arizona in Tucson, the weekly finance cabinet meeting now resembles a council of war. Under the watchful eye of Hopi warriors in a painting, president Robert Shelton and other top administrators try to plot a course through financial and political landmines.

In January, the state of Arizona cut \$55 million from the \$418 million it had planned to give the university this fiscal year. That came atop a \$20-million cut, out of \$438 million, last July. Even more bad news is expected for the fiscal year beginning 1 July.

It is a dire scene being echoed at campuses across the United States as public universities struggle through the annual legislative budget processes in the worsening economic downturn. Private universities are facing their own challenges, including plummeting endowments¹ and shrinking philanthropic gifts. The problem for public universities, though, is especially acute in the sunbelt states such as Arizona, where the burst of the housing bubble has hit tax revenues hard and slashed the budgets of universities that, until recently,

RECESSION WATCH

had ambitious expansion plans.

Driven by the philosophy that technological discoveries make a state competitive, universities and legislatures nationwide — particularly in states experiencing rapid population growth — have been pouring public dollars into research

programmes.

California created major research complexes associated with University of California campuses, but since then has struggled to fund their operating budgets. Florida set up satellite complexes of some of California's powerhouses, such as the Scripps Research Institute in La Jolla, which last week dedicated its facility in the Florida town of Jupiter.

Arizona pumped more than \$500 million into research facilities, and the Arizona College of Medicine and Arizona State University (ASU) collaborated to build a satellite campus in downtown Phoenix². That medical complex was supposed to serve as the heart of a larger biotechnology cluster³ — but after a cut in the building budget of nearly \$100 million in January, the partner universities are now looking instead to secure \$375 million in bond

The University of Arizona has used state monies to fund ambitious expansion plans.

funds this spring in order to keep the project on track.

In Florida, the University of Central Florida (UCF) in Orlando and Florida Atlantic University in Boca Raton are similarly building new medical schools as state funding evaporates⁴. UCF's first \$92-million research facility is set to open in April, but the university started the second \$62-million medical education building on a \$40-million credit line, because expected state funds were not forthcoming. How does the university expect to pay the credit line back? "Lots of bake sales and car washes," says provost Terry Hickey, in the gallows humour of the day. Both universities are now lobbying the state for money; UCF's first 40-student class is due to start in August. "We will fund it one way or another," Hickey says.

Anti-education stance

Arizona's problem is particularly challenging because it faces not only the recession pressures but also a state legislature stocked with Republican ideologues who talk of eliminating the nearly \$1 billion provided annually to the University of Arizona, ASU and Northern Arizona University in Flagstaff. "It is a militia legislature," says Meredith Hay, provost at the University of Arizona. "They are playing politics with the university budgets."

Hay, a cardiovascular physiologist, arrived in May from the University of Iowa, where she had served as vice-president for research. In Iowa

US PUBLIC UNIVERSITIES: STUDENT NUMBERS SOARING

City, she had dealt with challenging legislators, but nothing like she has experienced in Arizona. “They want to go backward,” she says.

Leading the way in the legislature’s push to slash university budgets is state Senator Russell Pearce. A former longtime sheriff’s deputy in Phoenix known for putting county prisoners in tents to swelter in the summer heat, he argues that state funds are best spent on law enforcement. Shelton says that Pearce has argued for ‘a zero budget’ for state universities, saying university education should be privatized. (Pearce received a college degree from the University of Phoenix, the largest for-profit university in the nation.)

Like many states, Arizona’s legislature meets for set times, then sends its budget to the governor for approval. Former Arizona governor Janet Napolitano, a Democrat who presided over many of the recent university expansions, has left to join Barack Obama’s administration as secretary of homeland security. Napolitano was replaced by Arizona’s secretary of state Jan Brewer, a career Republican politician. Brewer is expected to support cuts proposed by the Republican legislators, who control both state houses. Neither Brewer nor Pearce responded to *Nature*’s requests for comment, but the next step in the process will come this spring, as the outlook for the state’s annual tax revenue becomes clearer.

Hay and Shelton will be on the front line of that battle, marshalling numbers to strengthen

their arguments. The University of Arizona receives around \$500 million annually in external grants for all research. It is consistently a top recipient of physical-science research funds from the National Science Foundation; in 2007, it was first among all universities in this category, beating out such private heavyweights as the California Institute of Technology in Pasadena. With federal research budgets climbing (see page 18), there could be more on the way. Last month, at a legislative committee hearing at a local high school, Shelton and Hay argued forcefully that state investments are similarly needed: “Every state dollar appropriated to Arizona generates \$6 to \$7 in economic activity,” Shelton told the assembled crowd.

Fund raising

Even so, Hay spends much of her days trying to figure out new revenue sources. At US universities, a provost is a chief operating officer, handling daily administration while the president grapples with the broader issues. Last month, as a *Nature* reporter shadowed Hay for a day, she and Shelton went to the war room to debrief from a meeting the evening before with key legislators and the university’s board of regents. Under discussion were nitty-gritty details of how to increase tuition without violating the state constitution, which requires low levies. One tough question is how to raise class enrollment fees — the current fee of \$270 may increase several-fold — in a way that would be accepted by both legislators and students.

At the same time, some of the very researchers the universities have sought to attract are

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— Meredith Hay

leaving, turned off by the state legislature’s anti-education stance. University of Arizona chemist Mary Wirth is a perfect example. After five years, a colleague notes, “she didn’t see a future here”. The day *Nature* visited, Wirth was buying a house in Lafayette, Indiana, having been recruited by Purdue University. “I probably wouldn’t have talked to Purdue if things were different here,” she says. “I haven’t had a salary increase in five years.” Her husband Dennis Evans, also a chemist at the university, will depart with her.

Wirth had been exactly the sort of person the sunbelt universities were trying to attract.

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An interdisciplinary researcher, she worked at the university’s BIO5 Institute and founded a spin-off company through Arizona’s Center for Innovation. The company, bioVidria, capitalizes on her team’s research showing that slides or wells coated with silica can produce faster and more distinctive reads during low-expression microarray analyses⁵. Ironically, the director of BIO5, plant biologist Vicki Chandler, also departed last month, to head science at the Gordon and Betty Moore Foundation in California.

Asked about such losses, Hay puts on a good poker face. But she continues to struggle with which finances to cut. More than 90% of department budgets at the university involve staff, so few cuts can be made without affecting personnel. For researchers, that means potential cuts in teaching-assistant allocations, which translates to more professorial teaching and less lab time. For students, that means that degrees in less popular specialities — such as some types of engineering — are being phased out. And for youngsters considering a science career, it means closings or minimal visiting hours at museums. These include the Flandrau Science Center that heralds Arizona’s internationally renowned successes in optics and astronomy, including the Phoenix mission to Mars.

Over the past few months, Hay has emerged not with a reputation as a hatchet wielder, but as an academic executive who has learned quickly how to work with faculty leaders. Nutrition scientist Wanda Howell, who is in her second elected term as head of the 1,400-member faculty, says that Hay has gone from talking about what cuts had to be made to working with the faculty to boost university strengths to overcome the financial crisis. “Hay is a phenomenon,” says Howell. “She is incredibly bright; there isn’t much she misses.”

Back in her office, Hay stares at a desk covered with financial documents. “Now the real work I have to do,” she says. Top of the list is figuring out how to keep the university tuition — currently at about \$5,550 per year for resident undergraduates — affordable.

But as the finance cabinet meets in the war room, times are so tough there is talk of keeping university account balances liquid enough to pay monthly bills, in case the legislature slashes yet more. If Arizona is a bellweather of what other public universities can expect, there is little reason to expect the war to end anytime soon. ■

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3. Dalton, R. *Nature* **446**, 971–972 (2007).
4. Dalton, R. *Nature* **442**, 729 (2006).
5. Zheng, S. *et al. Anal. Chem.* **79**, 3867–3872 (2007).

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