

# THIS WEEK

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## Impossible arithmetic

*As Congress tries to tackle the \$1.3-trillion US deficit by cutting the \$660-billion discretionary budget, scientists must unite with non-traditional allies to ensure that research doesn't suffer.*

This week, as US presidents have done every year for decades, Barack Obama has sent a budget request to Congress that asks for strong support for research and education (see page 313). And, as usual, academic associations and scientific societies will now descend on Capitol Hill and urge Congress to give that support.

Given the financial mood in Washington DC, however, any community that pursues a slice of federal funding in isolation will probably fail. If scientists hope to maintain the kind of research budgets that they have enjoyed in the past, never mind see the increases that Obama hopes for, they will have to unite with groups that are not traditionally their allies, such as advocates for foreign aid and against poverty. And they will have to rally behind an issue that they have officially ignored in the past: serious federal-deficit reduction.

The election of a Republican majority to the House of Representatives last November made it clear that US voters are deeply disturbed by the deficit, which had not only risen to US\$1.3 trillion in the 2010 fiscal year, out of a total budget of \$3.5 trillion, but is projected to run to trillions of dollars more for the foreseeable future. Yet the election results also showed that voters are not convinced that deficit spending will do much to help the nation recover.

So far, neither the Republicans nor the Democrats in Congress have shown any appetite for cutting the 43% of the budget that goes to benefit entitlement programmes such as Social Security and health care for over-65s, which are hugely popular with voters. And the Republicans oppose raising taxes or cutting the 20% of the budget that goes to defence. So the determination of Congress to address the deficit comes up against impossible arithmetic. The \$1.3 trillion required to bring the budget into balance must somehow be cut from the only piece left: the \$660-billion 'discretionary' segment, which covers activities from air-traffic control and upkeep of national parks to education and research.

The House Republican majority has vowed to press ahead, and last week announced plans to trim the budget for 2011 by \$100 billion. Their list of cuts was overtly political, prominently targeting Obama's priorities in areas such as renewable energy and environmental protection. But these are also areas whose payoff, if there is to be any, lies well in the future. Once budget cuts start to reach deep enough to hurt constituents, risk-averse politicians find it easiest to target those parts of the discretionary budget in which the pain will not be felt immediately — that is, long-term investments such as research.

Obama has shown himself to be a strong supporter of science, education and infrastructure investments. In his State of the Union address on 25 January, he touted them as essential for what he called "winning the future" — a theme that he carried forward in this week's budget. Yet Obama, too, has shied away from tackling the deficit head on, either by cutting entitlements or by raising taxes.

To some extent, the duelling budget proposals can be seen as political theatre, in which the two sides publicly stake out their initial positions ahead of hard bargaining. But the proposals also represent very

different visions of government: when Obama says "win the future", activist Republicans tend to hear "another power grab by Washington DC". It seems all too conceivable that the bargaining will go nowhere, that the gridlock will continue indefinitely — and that science will be just one among many communities paying the price.

This explains why US researchers have to go beyond the usual lobbying. Individually, and through their professional societies, they must join their voices with others calling for a comprehensive solution to the deficit. Plausible blueprints based on the reform of taxes and entitlements were offered last December by several high-level, bipartisan deficit-reduction commissions, including one appointed by Obama. And in the Senate, a bipartisan group led by Democrat Mark Warner of Virginia and Republican Saxby Chambliss of Georgia is working to turn those blueprints into a plan that could be passed into law.

The research community should back these efforts as vocally and forcefully as they can, even if only as a matter of self-interest. The senators are trying to forge a rational solution to an issue fraught with political passion, and they need all the support they can get. ■

**"Risk-averse politicians find it easiest to target long-term investments such as research."**

## Devil in the details

*To ensure their results are reproducible, analysts should show their workings.*

As analysis of huge data sets with computers becomes an integral tool of research, how should researchers document and report their use of software? This question was brought to the fore when the release of e-mails stolen from climate scientists at the University of East Anglia in Norwich, UK, generated a media fuss in 2009, and has been widely discussed, including in this journal. The issue lies at the heart of scientific endeavour: how detailed an information trail should researchers leave so that others can reproduce their findings?

The question is perhaps most pressing in the field of genomics and sequence analysis. As biologists process larger and more complex data sets and publish only the results, some argue that the reporting of how those data were analysed is often insufficient.

Take a recent survey by comparative genomist Anton Nekrutenko at Pennsylvania State University in University Park and computer scientist James Taylor of Emory University in Atlanta, Georgia. The