

New challenges for a new leader

Will the ongoing financial crisis prevent Barack Obama from increasing funding for the biomedical sciences?

In the extraordinary and historic 2008 US presidential primary season leading up to the general election, the US role in international affairs—especially the war in Iraq—took center stage. As the general election campaign unfolded, domestic concerns about energy and healthcare policies became more prominent. By 4 November, election day, the scope of the failures in the US housing market and worldwide investment banking system were forefront in the news. Indeed, 2008 will probably be remembered as the year the world financial markets collapsed. Whatever goals candidate Barack Obama envisioned for the government when he entered the race for president, he must govern beginning 20 January 2009 in this economic reality. To achieve his long-term goals, he should not sacrifice funding increases for scientific research.

Scientific inquiry, whether funded publicly or privately, has long been a tremendous driver of technological innovation, economic growth and greater societal well being. The mantra that lowering taxes leads to more private-sector spending on research and development is proving false, as many companies are now struggling. The drop in the capital markets has limited the ability of even venture capitalists to invest in new technologies. As private-sector business slows, government income from taxes falls and thus the pot of public money available for funding research shrinks.

This scenario is particularly problematic given the budget shrinkage already sustained by the National Science Foundation and the National Institutes of Health (NIH) since fiscal year 2000. Mandel and Vesell have tracked the number of NIH R01 grants awarded over the past 8 years (*Science* 322, 189 (2008)). Although the success rate for new applications was over 20% in 2000, by 2007 the success rate had fallen to slightly over 7% and that for the National Institute of Allergy and Infectious Diseases was only 5%. Between 2006 and 2007, the number of new R01 applications dropped by 10%, whereas the number of renewal grant applications dropped by 7%.

Senior researchers have voiced despair at such low funding. Yet the greatest negative effect might be on younger researchers and students who are contemplating changing careers rather than risking the dismal funding situation. As crucial as it is to ensure that sufficient funding for innovative research is available, another priority is to ensure that talented people enter the workforce to carry on scientific research.

The irony is that these financial shortfalls are occurring precisely at a time when government investment in science and technology can spur more economic growth in the long term. Many other nations seem to have recognized this principle, responding to the economic crisis with promises to increase investment in new technologies, education and infrastructure. In essence, such action recasts

their governments as the ultimate venture capitalists and positions their economies in a more competitive situation for when the global marketplace recovers. Fortunately, Obama realizes that government spending for research and development and in education is a sound long-term investment strategy and is necessary for the US economy to maintain competitiveness.

During the campaign, Obama solicited advice from many high-profile scientists to formulate his science policies. In response to specific questions about his vision for the US science enterprise (reported in *Nature* online 24 September 2008; <http://www.nature.com/news/2008/080903/full/455446a.html>), he outlined steps he would take as president to increase investment in scientific research and promised to adhere to an empirical evidence-based decision process rather than injecting political ideologies. For the biomedical sciences, Obama advocated doubling the NIH budget over a 10-year period. Likewise, funding for the Centers for Disease Control and Food and Drug Administration would increase, as their surveillance programs for infectious disease and food or product safety can be considered vital for national security.

However, campaign pledges are one thing; implementing those ideas as government policy is another. All funding bills must begin in the US Congress, as it holds the purse strings for government spending. Despite the presence of Democratic majorities in both chambers, the ultimate shape and size of the US budget is influenced by competing priorities espoused by individual House members and Senators—which are influenced by local voters and industries in their home districts—as well as debates on how much spending is required.

In the past, voters have supported funding for medical research, but as the economic crisis worsens and calls for limiting so-called discretionary spending continue, whether they will support the sizeable increases outlined by Obama is not certain. The new president will probably need to use his considerable oratorical skills and his position in the Oval Office as a 'bully pulpit' to convince both legislators and the public that long-term investments are essential for US competitiveness and security. He will need to appeal to those with vested interests in outdated technologies and those against implementing organizational changes or more regulation. In turn, Obama's demand for more efficiency might be needed to overcome opposition voiced by others against a substantial increase in government deficit spending.

Past analysis suggests that massive government investment in new technologies and education is advantageous. Arguments that such spending will be too expensive and the US cannot afford it fall short, as history does not support such claims. The returns, financial and societal, reaped by investment in the future will probably far outpace whatever the initial cost.

