

Talking in billions

INNOVATION | JOSHUA GANS

BEHIND the speeches and media releases, it takes a little work to evaluate the changes in policy direction in the 2004 Federal Budget.

The Treasurer likes talking in billions of dollars so let's start there. In terms of direct funding for science and technology research, the Federal Government estimates it will spend about \$5.3 billion in 2004-2005. This represents an increase in \$700 million per annum from 2002; the increase being largely the result of the Backing Australia's Ability (BAA) II, coincidentally, amounting to \$5.3 billion in spending over the next five years.

Does this make it the innovation Government? The \$5.3 billion on science funding is about 2.85 per cent of outlays. If we compare these new expenditures to those in say, 1995-96 (the last year of Keating), it is a slight reduction over the proportion then of 2.93 per cent.

This was not lost on the footnoter in the budget tables who was at pains to point out that one shouldn't make such comparisons as the Government had moved from a cash to accrual accounting standard. Then again, as these proportions reflect those of the early 1990s, a comparison can safely be made.

Nonetheless, the total dollars spend will be higher today than they were in 1995 but that doesn't appear to reflect a change in innovation priorities but the fact that this Government is a big spender.

What about compared to other initiatives in this budget? In 2004-2005, the total amount to be spent on families is, coincidentally, \$5.3 billion. This includes the family benefits as well as the new maternity

bonus. No issue of accounting standards here; both are 2.85 per cent of outlays. But if we move one year forward, science funding stays the same while family spending rises to \$8 billion! Coincidentally, this amount (for a single year) is the same as the total decade long anticipated BAA I and II expenditures. Now unless the plan is to make more babies in the hope that one of them will be the next Einstein (a la Ted Baxter in the Mary Tyler Moore show), it can hardly be claimed that this government's priority is innovation.

(As an aside, my family is going to be an early recipient of the \$3000 maternity payment in July. When I mentioned to my five-year-old daughter how funny it was that the government was going to give us lots of money for a baby we were going to have anyway, she told me it wasn't funny at all. She didn't think it was a good idea at all – her sibling is worth more than \$3000 and we shouldn't give it away! Suffice it to say, she understands there is no such thing as a free lunch more so than some of us who are supposedly older and wiser.)

When it comes down to it, this Government is the innovation government relative to itself. Research funding will rise by a quarter and as a proportion of outlays from 2.76 per cent (last year with the same accounting standards) and from 2.55 per cent (in the first year of the Howard government with the old standards). No footnote on that comparison but I am the last person who wants to give poor marks for improved performance?

And when you drill down into the details of BAAII, there is some more to like.

Professor Scott Stern (of the Northwestern's Kellogg School of Management) and I conducted a

study last year into Australia's innovative capacity (see www.ipria.org for the report). In that paper, we argued that national innovative performance is driven by three interrelated factors.

First, you need good supply conditions generated through investments in a common research infrastructure. Then, you need demand conditions generated by priority areas or clusters of innovative activity. Finally, you need good linkages to match demand and supply. It is on these criteria that innovative policy needs to be measured.

On this basis, there is a lot to like in BAAII (as opposed to BAAI). There is an explicit direction of funds towards infrastructure programs. There is some focus on research priorities particularly in biotechnology and stem cell research. (Although there we appear to be squandering our dramatic first mover advantage handed to us by the US as they sorted out their own attitude to research using genetic material. As a strategic priority, more is needed.)

And finally, there is more emphasis on collaboration, particularly between universities and industries but even here the project-by-project micromanagement of opportunities rather than real incentives (along the lines of a targeted R&D tax credit) means that there is little in the way of a long-term commitment. Again, marks for improvement.

But what really worries me about the direction of science and technology funding is the ever-increasing emphasis on commercial opportunities as the goal of public expenditure in this area. The evidence we have (again from another IPRIA study by myself and Stern) is that entrepreneurial



innovation is constrained by difficulties in appropriating returns in commercialisation rather than capital market issues in getting funding. But the overwhelming level of funding in this area is on grants and subsidies to start-up firms rather than assistance in commercialisation (there is some but not much). So the government is targeting the least rather than the most binding constraint.

However, what is more offensive to me, as an economist, is that the projects selected for subsidies are those that have high commercial prospects over those that don't.

When one considers the notion that governments should produce public rather than private goods, it is precisely those areas of research that a

commercially unviable but socially valuable that should be the focus of government attention, not the other way around. The current plan is a recipe for neglect and even crowding out of private sector activities we want to encourage.

As far as I am concerned, removing rather than raising commercial values is at the heart of research funding and this government is openly moving away from those core values.

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CSIRO a winner, but not completely

SCIENCE | MICHAEL BORGAS

CSIRO has been heralded as a winner in the 2004/5 Science budget and as a new part of Backing Australian Ability (BAA). The facts are a \$305 million funding increment over seven years to fund targeted research programs called Flagships and extra funds for slight indexation of Government appropriation over the next three years.

The impact next financial year is an increase from \$568.1 million to \$576.5 million, up just 1.5 per cent, but this reflects the movement of \$12 million out of CSIRO with a group of public good Government scientists to the new National Measurement Institute. Subsequent increases depend on variable indexation, but are in the ballpark of 5 per cent per annum over the three-year deal.

The real headlines for CSIRO are for the first time being recognised as part of BAA and the national innovation system, and the retention of CSIRO block funding.

The management and board have achieved this feat against a concerted effort to reduce CSIRO's role in national innovation. CSIRO as a Government laboratory is now locked in with a long term agenda with an outlook less on survival and more on growth of the contribution it makes.

The renewed focus of CSIRO is on Flagship programs and commercialisation of current IP. Flagships are research management programs that partner with science projects through-out CSIRO and other providers to develop measurable economic, social or environmental outcomes. Flagship success translates to major nation building effort for all Australians. Partnership opportunities with universities alone are illustrated by the recent announcement of three Flagship fellowships to academics.

Flagships currently represent 9 per cent of activity in CSIRO. With the injection of funding they will grow to 30 to 40 per cent of CSIRO. In current dollars this represents almost \$350 million dollars in six

programs, which represents a scale beyond typical CRC investment. Flagships are also not science-support initiatives, and any project may be 'fast failed' when research managers decide a better course is available to achieve socio-economic goals. The emphasis is on utilising current capacity in basic science and technology. To a lesser extent Flagships target gaps in underpinning basic research.

CSIRO's focused renewal also targets research management, commercialisation and social science activity. The stock of traditional basic sciences is a resource to be used, with slight renewal in some emerging areas. This is not the same as renewing the basic sciences and ensuring a broad disciplinary coverage of the growing frontier of science. Eventually, the declining basic research capacity will limit the nation's ability to respond to new challenges.

The future integration of CSIRO with Universities through BAA heralds an era where we must cooperate, both to exploit science in

the service of society and business and also to renew and sustain our science base.

However, the budget fails to provide ongoing growth funding to the sector overall. This means that gaps will increasingly grow in basic science capacity. Unless higher levels of R&D funding occur, major risks loom for Australia. We will be unable to exploit new science and even be unable to broadly understand what is happening in the world. The general OECD move to higher levels of R&D intensity is not just a case of the dog chasing its tail, but represents the reality of the unlimited frontier of science and the relentless growth of knowledge. As Australia slips in its R&D intensity out to 2011, the gaps become increasingly large. Flagships in CSIRO address some national challenges of 2003, but our ability to respond in 2011 is at risk.

We are already seeing problems looming in environmental R&D with the closure of public good CRCs and the limited scope of Flagships. CSIRO as a traditional major performer of public good basic research now has less capacity to cover gaps. This reflects the fact that public sector science in Australia has

shifted over the last two decades.

In 1985 46 per cent of all workers were in mission orientated Government labs but the proportion is now just 28.5 per cent. This fraction is likely to decrease further. Covering gaps in basic science will require cooperation over the entire sector and new funding. CSIRO plans to increasingly locate laboratories near Universities, but the key to collaboration and cooperation is joint funding opportunities. Flagships represent a small avenue for such cooperation, with perhaps \$40 million of the \$305 million flagship boost earmarked for partnership. A healthy system of public sector science will continually require growth funding to work. BAA is a platform to work from, and with CSIRO involved for the long term, a cooperative approach to solve national problems and support a broad frontier of basic research in Australia is in all of our interests.

CSIRO has had good recognition in the Government's budget, but the practicalities for science at the bench are that it remains under resourced and potentially in decline.

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