

# **Over-reviewed and under-funded? The evolving policy context of Australian higher education research and development**

FIONA WOOD AND LYNN MEEK *University of New England, Australia*

**ABSTRACT** Major restructuring to the Australian higher education sector was initiated in 1988 with the dismantling of the previous binary system and the introduction of the unified national system. Since this time the sector has been the subject of continuous review by government and the policy and funding framework for higher education research in particular has undergone a number of changes. After providing contextual information regarding Australia and its R&D effort, this paper examines a number of major reviews which have impacted on the higher education sector. Particular attention is directed to identifying changes in both the policy and funding environment. It is argued that the crisis facing Australian universities is the result of not only inadequate funding but an over reliance by government on the 'market steering' of the sector.

## **Background**

Although Australia is a large landmass - being the 6<sup>th</sup> largest country in the world - it is geographically isolated and has a relatively small but highly urbanised population of around 19 million people. Australia therefore constitutes only a small market for the world's major producers and as the AV-CC recently observed: 'there is no natural reason for Australia to be a significant part of dynamic international groupings' (Chubb 2000: 6). Also as Gallagher (2000: 33) has commented: 'Australia's economic structure differs from those of the United States and the advanced nations of Europe, not only in terms of scale and industrial activity, but also in that multinational corporations are rarely headquartered and conduct little of their R&D in Australia'.

The exchange rate is at present more favourable to those visiting Australia than for those travelling overseas. This makes international travel for research purposes expensive and similarly the purchasing of research equipment from countries with more robust economies. Conversely, of course a weak Australian dollar obviously has potential advantages in terms of exports. However, as Australian universities rely heavily on overseas suppliers for the bulk of teaching and research materials, the decline in the value of the Australian dollar has serious implications for the level of access to the international knowledge store.

Australia is also out of synch with the northern hemisphere in terms of commencement of the academic year (February/March) and the months for the major vacation period (December/January). However, probably in part due to Australia's geographic position, its nationals have tended to be outward looking.

In relation to research effort, Australia has a well- developed but comparatively small science base, with a great deal of its R&D effort concentrated in the public sector, particularly the universities. Over the period 1996-2000, Australia accounted for approximately 2.83% of the world's scientific and social science publications (Institute for Scientific Information 2001).

### **Policy and financing framework for higher education**

Australia is a federation of six states and two territories. A striking anomaly in relation to the higher education sector is that for the most part, the States have the legislative responsibility for higher education, while financial responsibility (at least since 1974) lies with the Commonwealth. This situation creates real tension in the dialogue between these two levels of government; between institutions and either level of government; and inevitably between institutions.

Until the release of the landmark federal government Policy Discussion paper on Higher Education in December 1987, Australia had a binary system of higher education similar to that which existed in the UK. This Discussion Paper canvassed a number of policy options, including substantial growth in higher education and related

issues of funding (Dawkins 1987). It also placed the need for selectivity and concentration of research squarely on the agenda.

In July 1988 the White Paper on higher education was adopted by the federal government and set in train a period characterized by the dismantling of the binary system; a challenging of the view that teaching and research are inextricably linked; the emergence of new systems of funding and emphasis for higher education institutions to diversify their funding sources; a sharper sense of the real importance of research to economic well-being; a growing appreciation that for relatively small countries such as Australia, concentration and selectivity are essentials in any national research policy; and a much greater emphasis on institutional management (Dawkins 1988).

The major policy shifts can be summarised as follows:

- A shift in some of the cost of higher education from the State to the individual by the introduction of e.g. the Higher Education Contribution Scheme (HECS)
- Enhanced national and international competition for students and research income
- Greater emphasis on accountability for the government dollar
- Greater deregulation within the higher education sector
- Diversification of funding base

Diversity, quality and coordination of the higher education sector were key policy intentions of the White Paper and have continued to be so despite the change of government. The White Paper is quite clear regarding the UNS not being a uniform system by stressing that:

- The new arrangements will promote greater diversity in higher education rather than any artificial equalisation of institutional roles
- The ultimate goal is a balanced system of high quality institutions, each with its particular areas of strength and specialisation but co-ordinated in such a way as to provide a comprehensive range of higher education offerings
- Diversity and quality are paramount; the unified system will not be a uniform system

However, the sector's responses to these policy initiatives have not necessarily been in accord with the initial intentions. In particular there have been numerous unintended consequences resulting from the changed policy framework - this is especially true in the areas of research management, funding and training. At the national level degrees of concentration and selectivity have not occurred to the extent expected from the

policies. However, a more informal defacto concentration and grouping of research universities has occurred. A relatively new and interesting phenomenon resulting from competition is the creation of alliances and networks of various types such as Universitas 21; Group of 8; and the Australian Technology Network.

In 1996 the Liberal-Coalition government introduced a number of quite profound changes to its funding policies for higher education and these are summarised below:

- Reduction of operating grants by 5% over 3 years
- Lowering of the HECS payment threshold; an increase in level of HECS payments
- No Commonwealth supplementation of academic salary increases
- A phasing out of postgraduate coursework enrolments from Commonwealth funded load

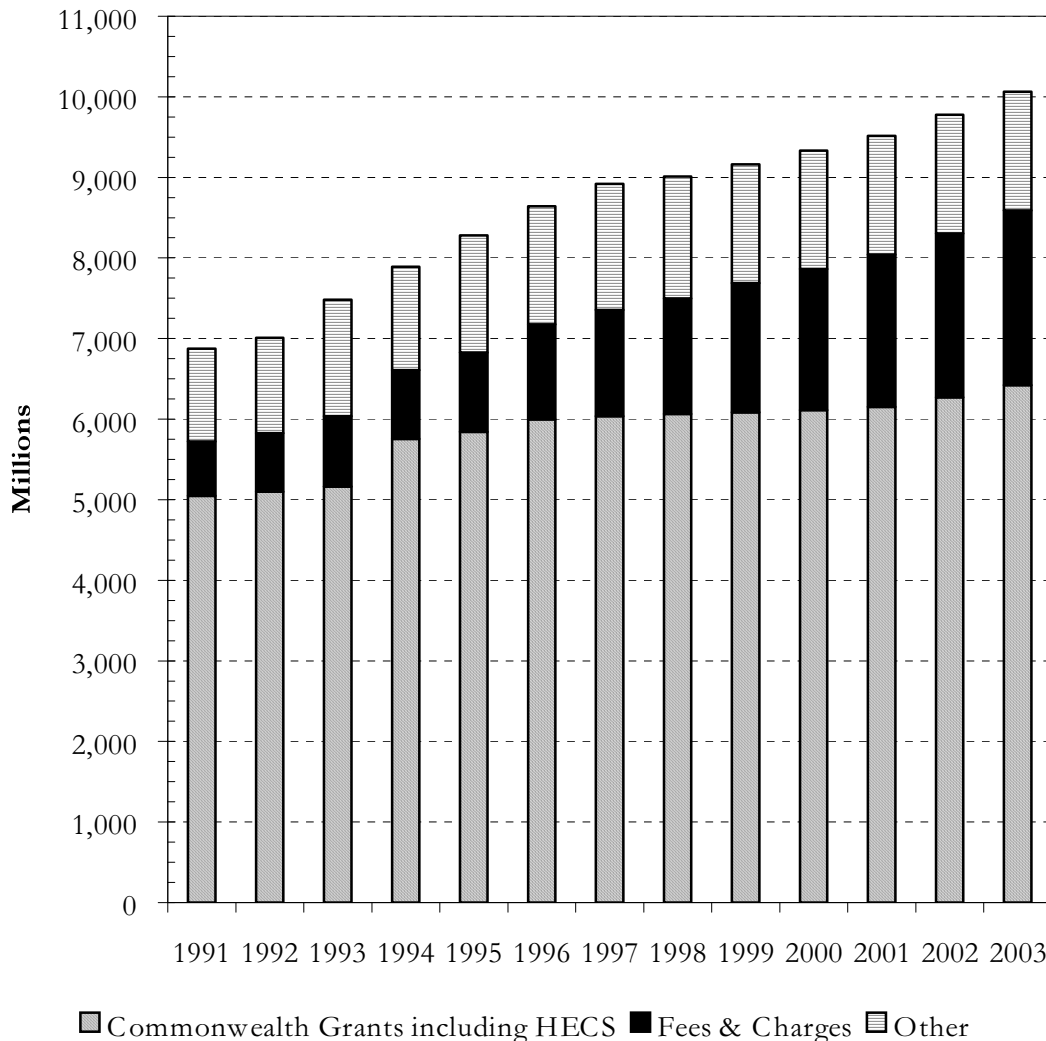
These funding changes have had a profound and largely negative effect on higher education from which the sector is still to recover. In relation to staff salary increases Gallagher (2000: 18) warns that 'Pressures are now building for some universities as a result of enterprise bargaining deals that conceded salary increases beyond the affordability limits of their operating accounts.'

Generally, the funding cuts to higher education initiated in 1996, only really started to bite in 1999, and are now culminating in what some have termed a funding crisis. According to the AVCC, in total funding terms, public investment in Australian universities peaked in the mid-1990s and then decreased through to 2001. The AVCC argues that to ensure internationally competitive quality in teaching and research, the government component of university operating grants needs to return to the peak reached in the mid-1990s, and then needs to be progressively increased over the next few years (AVCC 2001). The so-called higher education funding crisis is discussed in more detail below.

### **The sector in 2000**

The number of students enrolled in 2000 totalled 695,485 and of these 37,158 were higher degree research students (DETYA 2001b). Academic staff numbered 29 904 (DETYA 2001a). Around \$9 billion of revenue was available to the 37 public universities. Federal Government Operating Grants were the largest component of this revenue, accounting for just over \$5 billion (DETYA 2001d). However, the proportion

of non-government funding has been increasing over the decade (Figure 1) and is in line with government expectations regarding diversification of funding sources and ‘user pays’ regarding tertiary enrolments. In 1999 ‘earned income’ for universities averaged 33%. This figure is expected to continue to increase, although with variations amongst individual institutions.



(a) Fees and charges does not include estimates for the new postgraduate education loans scheme announced in the innovations package *Backing Australia's Ability*.  
 (b) Includes additional funding the Commonwealth will give to institutions to provide supplementary places for HECS-liable undergraduate students for 2000-2003 and estimates of the HECS payments for these students 2002 and 2003 include funding provided under innovation action plan package *Backing Australia's Ability*. Revenue for 1991 to 1999 based on institutions' financial statements (excluding deferred income for superannuation and VET funding in dual sector institutions). Projected fee paying revenue is based on institutions' profiles plans for the triennium.

For comparison purposes all amounts have been expressed in estimated 2001 prices.

FIG 1. Higher Education Revenue 1991–2003, 1991–1999 actual, 2000–2003 estimated (Source: Department of Education, Training and Youth Affairs 2001c Figure 9)

Figure 2 also shows the ongoing decline in government commitment to funding of higher education since 1996. In this regard, it is important to note that unlike the US, that there are very few private foundations for Australians to look to for research support (cf. Wills 2001). There is also nothing like the level of endowment funds that some of the major US universities enjoy.

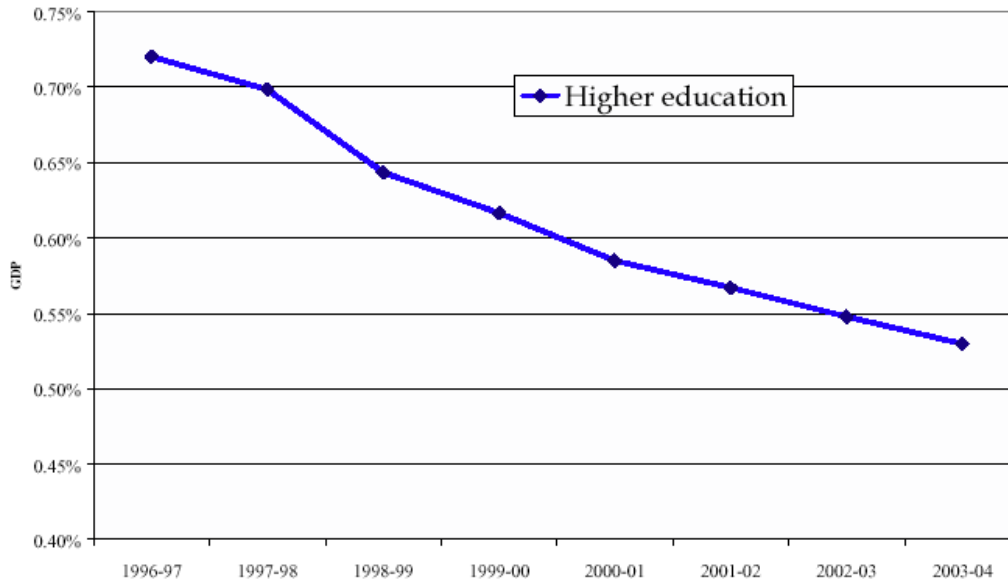


FIG 2. Federal Higher Education expenditure as percentage of GDP  
(Source: AV-CC 2000)

In terms of type of research activity, Figure 3 shows where expenditure has been directed in 1998 (the most recent year for which statistics are available). Pure basic and applied research accounted for about two-thirds of expenditure.

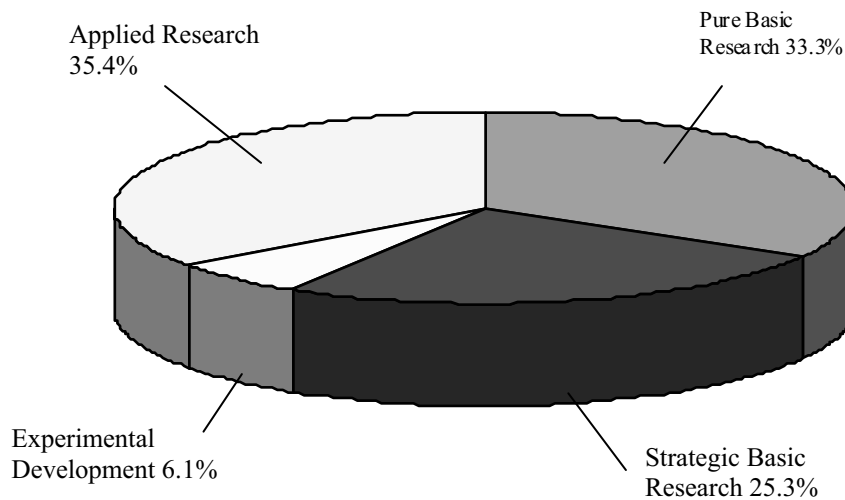


FIG 3. Expenditure on research and experimental development by type of research activity, 1998  
(Adapted from DETYA 2000b)

In terms of basic research, universities performed 60% of this research during 1996-97. The higher education sector also accounted for 27% of Australia's R&D activity during 1996-97 (0.46% of GDP).

In terms of Gross expenditure on R&D, Figure 4 shows that Australia is well behind the major industrial countries in its commitment to R&D. In the two year period from 1996-97 to 1998-99 expenditure had fallen 10% against GDP. These were the worst results in an international comparison of 17 OECD countries. Gross Expenditure on R&D is now back to the levels last experienced in Australia in the early 1990s.

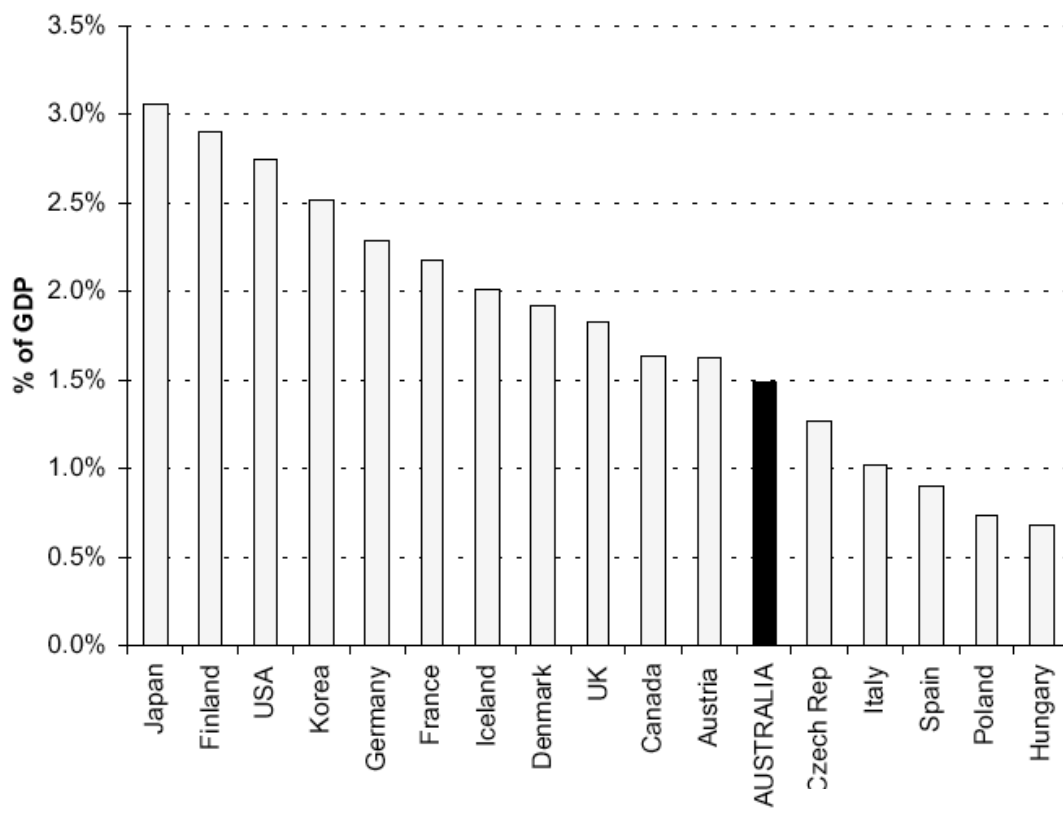


FIG 4. Gross expenditure on R&D (GERD), 1998-99  
Source ABS 2001.

Whilst government interprets the diversification of funding sources by universities as a reflection of the success of its policies, the President of the Australian Vice-Chancellor's Committee, observed in a discussion paper last year that 'the pace of change in public investment in universities is such that if our universities get too far

behind those in other countries we will not catch up' (Chubb 2000: 3). Concern was also raised that 'Australia will become an importer of knowledge and an exporter of talent and that we will have too few educated personnel locally to add value to the efforts of others let alone enough to produce from our own' (cf. Wood and Boardman 1999).

### Private Sector R&D investment

By OECD standards Australia has a comparatively low level of investment by the private sector in R&D. In 1997, 47% of all R&D expenditure in Australia was contributed by business, compared with an OECD mean of 63%. The substantial decline in BERD from 1996 is shown in Figure 5, reflecting to a large extent the impact of the government's change to the R&D tax concession from 150% to 125%.



FIG 5. BERD as a percentage of GDP  
(Source ABS 2001)

Australia's BERD as a percentage of GDP fell to 0.64% in 1999-2000 (See Table 1) putting it well behind countries such as the United States (2%); Finland (2.18%), the Netherlands (1.27%).

TABLE 1 BERD/GDP ratios of OECD countries

	1997-98	1998-99	1999-2000
	(%)	(%)	(%)
Finland	1.79	1.94	2.18
Japan	2.09	2.17	2.15
USA	1.91	1.94	2.00
Korea	1.95	1.79	1.76
Germany	1.54	1.57	1.69
France	1.39	1.36	1.37



UK	1.20	1.20	1.27
Denmark	1.19	1.32	1.25
Netherlands	1.11	1.06	1.13
Iceland	0.75	0.75	1.08
Canada	1.01	1.03	0.99
Czech Republic	0.73	0.82	0.81
<b>Australia</b>	<b>0.75</b>	<b>0.68</b>	<b>0.64</b>
Italy	0.52	0.55	0.56
Spain	0.40	0.47	0.46
Poland	0.28	0.30	0.31
Hungary	0.30	0.26	0.28

Source: Adapted from ABS 2001

The relatively high proportion of Commonwealth funding for R&D activity can be seen from Table 2.

TABLE 2. Expenditure on research and experimental development by source of funds

Source of Funds	Research Expenditure	
	(\$'000)	(%)
General University Funds	1,661,153	63.8
Commonwealth Schemes	413,548	15.9
Other Commonwealth Government	191,324	7.4
Business Enterprise	135,778	5.2
Other Australian	74,444	2.9
State and Local Government	68,802	2.6
Overseas	41,220	1.6
Non-Commonwealth Schemes	16,463	0.6
<b>Total</b>	<b>2,602,733</b>	<b>100.0</b>

Source: DETYA 2000b Table 2.2

In 1999-2000 the leading States in terms of R&D expenditure were Victoria with \$1,474m and New South Wales with \$1,414m, accounting for 36% and 35% of total R&D expenditure respectively. Queensland recorded \$438m (11%).

An idea of the organisations and schemes through which the federal government disburses its funds for R&D can be obtained from Table 3. Responsibility for R&D is

shared amongst several ministerial portfolios and this not surprisingly can cause confusion in the sector as well as create obvious problems for planning and coordination.

TABLE 3. Commonwealth support for Australian research and innovation

Area of R&D support	\$ <sup>(a)(b)</sup> (millions)
Targeted higher education research funding	437.6
Estimated research and research training component sourced from operating grants	1197.3
Commonwealth science agencies, including CSIRO, the DSTO, the AIMS and ANSTO	1153.3
Industry Research and Development Tax Concession	406.0
R&D START Programme and other Innovation Support	258.2
Cooperative Research Centres Programme	139.7
Health and medical grants, including funding allocated by the NH&MRC	195.3
A range of other Commonwealth portfolio grants	165.2
Total	3953

a) 1999–2000 prices    b) accrual terms

Source: DETYA 2001d Table 3.1

Many of the recent international reports which provide country comparisons regarding investment in higher education have used data for Australia that record its position before the full impact of reductions in public investment announced in 1996 and the contrasting climate since then of investment by many countries in their university systems. In 1997 Australia's direct public investment in higher education as a percentage of GDP was on the average for OECD countries. Our private investment, mostly student HECS and fees, was above the average, exceeded only by the US, Korea and Japan. Over the period 1990 to 1996 Australia experienced a much stronger growth in private investment than many countries - indicating the push by government to substitute public investment with fees during this period. After 1997, the full impact of the most recent substitution took effect. This is likely to mean that later OECD Tables will show that Australia is even worse than the average in terms of percentage of GDP spent by government on universities.

## **The Government Inquiry and Review Overload**

A number of peak bodies have argued for the need for a policy environment regarding universities and research and development that is stable and predictable. However, the sector has been, and continues to be, the subject of a number of wide-ranging government inquiries and reviews - the outcomes of which have been variable. The range of these inquiries can be illustrated by some of the following reports which were released in the two-year period 1997-98.

- Priority Matters (Stocker Report 1997)
- Learning for Life: Review of Higher Education Financing & Policy 1998 (West)
- Review of the Cooperative Research Centres 1998 (Mercer & Stocker)

Apart from inquiries and reviews that have directly involved the higher education sector, other initiatives also have the potential to impact on the way in which the sector operates. This can be illustrated by the following reports:

- Going for Growth: Business Programs for Investment, Innovation & Export (Mortimer Report 1997)
- The Global Information Economy – The Way Ahead (Goldsworthy/IIFC Report 1997)
- Investing for Growth 1997 (Government responses to Mortimer & Goldsworthy reports)
- A Platform for Consultation 1999 (Ralph Review of the Australian Business Taxation System)

Substantial resources are involved in the sector participating in and responding to the terms of references of such government inquiries and reviews. However, where there has been little in the way of policy direction or funding commitment resulting from some of these initiatives, their value to the sector must be challenged.

A particular theme of more recent government reviews and discussion and policy papers has been the role of universities in innovation. These include:

- The Virtuous Cycle: Working Together for Health and Medical Research 1999 (Wills Chair)
- New Knowledge, New Opportunities - June 1999 A Discussion Paper on Higher Education Research & Research Training

- Knowledge and Innovation - A Policy Statement on Research and Research Training December 1999
- Innovation Summit January 2000/Australian Science Capability Review - The Chance to Change November 2000
- Backing Australia's Ability - Government Response to the Batterham reports
- The capacity of public universities to meet Australia's higher education needs – Senate Review 2001

An overview of the key issues and recommendations of these reports and papers is provided below:

*The Virtuous Cycle, the Final Report of the Strategic Review of Health and Medical Research (The Wills Review)*

This report was released on 12 May 1999. This report made major recommendations about the level and manner of funding available to universities, hospitals and other research organisations for medical and medical biotechnology research. Among the issues identified were increasing the level of public investment; better management of research; greater involvement with industry; development of priority-driven research that contributes directly to population health and evidence-based health care; and the education and training of health and medical researchers.

*New Knowledge, New Opportunities*

In June 1999, a discussion paper on research and research training, *New Knowledge, New Opportunities* was released, which provided the basis for extensive community debate about the policy and funding framework for university research and research training (Kemp 1999a).

The paper identified several deficiencies in the current framework which limit institutions' capacity to respond to the challenges of the emerging knowledge economy: funding incentives that do not sufficiently encourage diversity and excellence; poor connections between university research and the national innovation system; too little concentration by institutions on areas of relative strength; inadequate preparation of research graduates for employment; and unacceptable wastage of

resources associated with low completion rates and long completion times of research graduates. A particular concern was with research training and the funding of PhD and research masters students.

The key reforms proposed by the paper included:

- An enhanced role for the Australian Research Council
- Research infrastructure as a component of research grants. The preparation by universities of research & research training management plans
- A new university block funding programme, the Institutional Grants Scheme, to support research and research training and to encourage institutional diversity
- An Australian Postgraduate Research Student Scheme, based on *portable* HECS exempt scholarships for research degree students

In terms of quality assurance of research training, DETYA notes that employers have expressed many concerns about the current standards of research graduates and the limited focus of their studies, with the most significant of these concerns focused on the quality of supervision that the students receive and their limited comprehension of business practices.

Results from the trial Postgraduate Research Experience Questionnaire conducted in 1998 highlighted the areas that students believe institutions need to address in their provision of research training: quality of supervision, intellectual climate, infrastructure, thesis examination, clear goals and the generic skills acquired by graduates.

### *Knowledge and Innovation*

The Government released its policy statement on research and research training, *Knowledge and Innovation* in December 1999. Major changes to the policy and funding framework for higher education research in Australia were identified in the policy statement. These included:

- a strengthened Australian Research Council (ARC) and an invigorated national competitive grants system;

- performance-based funding for research student places and research activity in universities, with transitional arrangements for regional institutions;
- the establishment of a broad quality verification framework supported by Research and Research Training Management Plans; and
- a collaborative research program to address the needs of rural and regional communities (Kemp 1999b).

The most important recommendation of the White Paper for research management within universities concerns increased competition over research funding, particularly with respect to funding for PhD and research masters students.

Universities will be affected by two new performance-based block funding schemes. The approaches are intended to reward ‘those institutions that provide high quality research training environments and support excellent and diverse research activities. The Institutional Grants Scheme (IGS) will support the general fabric of institutions’ research and research training activities, and assist institutions in responding flexibly to their environment in accordance with their own strategic judgements’ (Gallagher 2000). The Scheme absorbs the funding previously allocated for the Research Quantum and the Small Grants Scheme. Infrastructure funding through the Research Infrastructure Block Grants (RIBG) scheme will be retained.

Funding under the IGS will be allocated on the basis of a formula that reflects success in attracting research income from a diversity of sources (60 per cent), attracting research students (30 per cent), and the quality and output of its research publications, through a revised publications measure (10 per cent). The Government considers that institutions are likely to be more outwardly focused in their research when research income from all sources is equally weighted, unlike current arrangements which give lesser weight to income received from industry (Gallagher 2000).

Funding for research training will also be allocated through a performance-based formula. Institutions will attract a number of scholarship places based on their

performance through a formula comprising three elements: numbers of all research students completing their degree (50 per cent), research income (40 per cent) and the revised publications measure (10 per cent). The values for each element will be the average of the latest two years data.

Gallagher (2000: 12) notes that:

For many institutions the crucial matter has been the determination of their starting base in 2001 for the application of the performance-based funding formulae in subsequent years. Most recognised how exacting the formulae would be in rewarding shares of the composition of national performance and the rapidly spiralling character of the rewards. If an institution starts in a position it cannot sustain, by exposing to contestability a level of resources above which it is unlikely to win (unless having some transitional protections) and subsequently declines in its performance, then the outcomes will be harsh for it: relative under-performers will contribute more to the national pool and gain less from its redistribution. A higher ratio of student separations to completions flows through the formula into fewer commencers; and a relative decline in the national share of research income similarly reduces commencing student allocations which, in turn, dilutes research strength and reduces attractiveness for investment.

In line with the government's overall renewed efforts in the area of quality assurance, the White paper envisaged the introduction of an external quality verification framework and the publication of Research and Research Training Management Plans. Core elements that institutions would be expected to report on include: research strengths and activities; graduate outcomes both in terms of attributes and employment; linkages to industry and other bodies; and policies on commercialisation. In addition, as a monitor of quality, it has been suggested that details of research active staff, including outputs per research staff member, form part of these Plans. Further discussion on the form of the Plans will be held with institutions before details are finalised.

Under this framework, the recently announced Australian University Quality Agency will review claims made by universities concerning their teaching and research performance. Where an institution's claims are not able to be substantiated, a more in-

depth assessment of its research and research training activity will be conducted by a broadly based independent expert panels. The results of the verification process will be published to aid transparency and accountability.

#### *Innovation Summit/Australian Science Capability Review*

Further development of a framework for higher education research has been assisted by the Chief Scientist's Review of the Science Base and the National Innovation Summit, announced by the Minister for Industry, Science and Resources. The Summit was held in early 2000, and organised by the Business Council of Australia and the Department of Industry, Science and Resources. The Summit aimed to identify and develop a consensus on clear strategies for Government, industry and the research community to encourage future economic growth and improve Australia's competitiveness and innovation capacities. The Summit was supported by six Working Groups which focused on particular critical innovation issues. The Working Groups examined such areas as industrial innovation; intellectual property management; the human dimension of innovation; institutional structures and interfaces; innovation and incentives; and resource and infrastructure consolidation and cooperation.

Based on the Australian Science Capability Review the Chief Scientist presented a Discussion Paper in August 2000 entitled *The Chance to Change* (DISR 2000a). The recommendations from this Paper and the resulting Final Report released in November 2000 centred around three themes of investment: Culture; Ideas and Commercialisation. The principal recommendations included: doubling the number of Australian Postdoctoral Fellows; providing 200 HECS scholarships for students undertaking science/education qualifications and 300 for students in maths/physics/chemistry; increased funding for the ARC and for university research infrastructure; testing a national site licence concept between HEIs and publishers to try and keep prices down; expansion of the CRC program; and more strategic approaches by universities and government-funded research agencies to the management of intellectual property. To ensure that the recommendations of the Review accorded with government and community objectives, an Implementation Committee was proposed.



### *Backing Australia's Ability*

At the beginning of 2001, the federal government announced its \$2.9 billion five-year strategy to boost innovation. The strategy builds on a number of other government initiatives mentioned above. The main measures of the innovation plan can be summarised as follows:

- \$995m HECS-style loan scheme for 240,000 postgraduate students (which Kemp has indicated could be capped)
- 25 Federation Fellowships for top researchers, worth \$225,000 a year for five years
- New 175% tax concession for additional R&D - \$460m (All spending figures are total over 5 years).
- Existing 125% tax concession tightened to save \$345m
- New 37.5 cents in the dollar R&D tax rebate for small companies - \$13m
- Australian Research Council grants funding doubled - \$736m
- Boost for research equipment, libraries and laboratories - \$583m
- R&D Start Program continued for small and medium businesses - \$535m
- Co-operative Research Centres program expanded - \$227m
- Centres of excellence in biotechnology and information technology - \$176m
- Major national research facilities - \$155m
- 21,000 new full-time university places over 5 years in maths, science and IT - \$151m
- Foster science, maths and technical skills in government schools - \$130m

The plan is built around three concepts - strengthening Australia's ability to generate ideas and undertake research, accelerating the commercial application of these ideas, and developing and retaining Australian skills.

In addition to government commitment, The *Backing Australia's Ability* plan also requires the States and business and research institutions to spend \$6 billion over the same period to attract its grants and incentives.

Whilst the Innovation Strategy has been welcomed by many in the public and private sector, there is the question of whether the financial commitment to be made will be sufficient to offset the substantial funding cut-backs made to the higher education sector since 1996. Indeed, despite this being 'the largest commitment to innovation ever made by an Australian Government', it will only spend \$159.4 million in its first

year of 2001-2. Much of the funding announced will not begin to flow for 2-3 years - with \$946.6 million to be outlaid in 2005-6. (See Table 4 below:).

TABLE 4. Government expenditure on programs of the Innovation Action Plan (\$ million)

Initiative	2001-02	2002-03	2003-04	2004-05	2005-06	TOTAL
ARC Competitive Grants	19.2	92.5	142.8	205.4	276.5	736.4
Project Infrastructure	26.8	47.7	68.7	89.3	104.5	337.0
University Infrastructure	26.3	53.2	54.4	55.5	56.6	246.0
World Class Cents of Exc	6.0	12.6	17.0	23.9	31.5	91.0
Major National Research Fac	5.0	20.0	30.0	50.0	50.0	155.0
R&D Start	0	41.9	117.6	174.7	200.7	534.9
Premium Rate Tax Concession	30.0	90.0	105.0	110.0	125.0	460.0
Streamlining R&D Tax Conc.	-5.0	-45.0	-85.0	-115.0	-95.0	-345.0
Rebate for Small Companies	0	6.0	3.0	2.0	2.0	13.0
Expand CRCs	0	0	55.0	57.0	115.0	227.0
Expand COMET	10.0	10.0	10.0	10.0	0	40.0
Innovation Access Program	1.0	22.0	24.0	26.0	27.0	100.0
Pre-Seed Fund	6.4	16.9	21.8	21.8	11.8	78.7
Biotechnology Innovation Fund	5.0	5.0	10.0	0	0	20.0
New Industries Devt Prog	5.1	5.2	5.2	5.2	1.0	21.7
Additional 2000 Uni places	13.9	24.7	33.0	39.5	39.9	151.0
Attracting IT&T Workers	-0.5	-0.6	-0.6	-0.6	-0.7	-3.0
Postgrad Education Loans	0.7	-2.0	-7.7	-11.7	-15.9	-36.6
Online Curriculum Content	4.5	7.2	7.4	7.5	7.7	34.1
Nat Innov Awareness Strategy	5.0	7.0	7.0	7.0	9.0	35.0
<b>TOTAL</b>	<b>159.4</b>	<b>414.3</b>	<b>618.6</b>	<b>757.5</b>	<b>946.6</b>	<b>2,896.2</b>

Source: Stirling 2001 p. 5

Also it must be questioned to what extent the proposed expenditures represent new funding for the sector rather than simply being a restoration of resources withheld from the sector since 1996. Significantly, while Australia's competitors have been accelerating investment in R&D, Australian business has actually cut back. Also whilst other countries have been offering major incentives to attract specialists from around the world, salary issues are still a major problem in Australian universities.

The new R&D tax concessions are relatively modest. Business and tax experts cast doubt on whether the 175% R&D tax break would entice businesses to lift their

innovation efforts. Concessions for plant and equipment used in R&D will be more restrictive - instead of writing machinery off over three years, businesses will now have to write it off over the effective life of the equipment. In addition the definition of R&D eligible for the concessions will be restricted.

In an election year, the innovation strategy has certainly raised the profile of the government. However, as one journalist has observed it is unfortunate that the acronym for 'Backing Australia's Abilities' so easily turns into *BAA*. Also there is the view by some that the innovation statement is still a very old-fashioned way of looking at the world and that it is still to address major problems in the commercialisation of university research - particularly in terms of the linkage between the venture capital industry and academic research.

It should also be noted that the Federal Opposition launched its *Knowledge Nation* blueprint in June this year. However, the report received wide spread criticism not the least for what one political commentator described as the 'incomprehensible bird's nest sketch of 23 circles and 40 train lines' which was meant to depict the complex interactions of the various elements of the Knowledge Nation (Ramsey, 2001). Principal recommendations contained in the report included: doubling Australia's research and development by 2010; providing a significant increase in public funding of universities; and creating at least 1,000 commercial and university research positions to encourage Australian scientists and researchers to return 'home'. In the absence of costing details or information on how the proposals would be financed the Knowledge Nation is essentially seen as a 'wish list' rather than a serious basis for policy development should the Labor Opposition be successful at the election.

*The capacity of public universities to meet Australia's higher education needs – Senate Review 2001*

This review of higher education was announced at the end of 2000. The terms of reference are extremely broad and include addressing: a) the adequacy of current funding arrangements with respect to: the capacity of universities to manage and serve increasing demand, institutional autonomy and flexibility, and the quality and diversity of teaching and research. (b) the effect of increasing reliance on private funding and

market behaviour on the sector's ability to meet Australia's education, training and research needs, the quality and diversity of education; (f) the capacity of public universities to contribute to economic growth; and (g) the regulation of the higher education sector in the global environment.

The review has received more than 300 submissions and collected evidence at a number of public hearings. Recommendation one of the report states that ‘the Government end the funding crisis in higher education by adopting designated Commonwealth programs involving significant expansion in public investment in the higher education system over a ten year period’. However, the receptiveness of the government to arguments that the sector needs additional funding is likely to be minimal. Indeed, The Minister for Education, Training and Youth Affairs recently publicly criticised the President of the AVCC regarding comments he made at the Inquiry that the university system was ‘in crisis’ (Haslem 2001).

## **Discussion**

The weariness of the Australian higher education sector in responding to the numerous reviews and accountability requirements is well illustrated in the following comment by the President of the AV-CC, Professor Ian Chubb:

While the principle of accountability is understood by those using public funds, too many people in universities already spend too much time responding to changed rules, supplying endless statistics, coping with tinkering, applying endlessly for basic funds we need simply to do our jobs or responding to frequent reviews. All the time, more and more funds are tied or project-driven or supplied in packets - all in the name of that accountability. We are slowly being made average. (AVCC 2000).

Despite the many reviews of the sector and writing of research management plans, quality reviews and audits, etc., the substantial financial problems faced by public universities remain. Little has been done to solve the basic infrastructure and other financial challenges.

Australian universities over the last decade have mainly been able to offset the decline in Commonwealth funding through substantial increases in student fee income of various types. On average, Australian student tuition fees are amongst the highest in

the world and there is little room for further increases. In comparison, revenue flowing to higher education from return on research results and investment by business and industry has been less substantial. As mentioned, the states have recently showed renewed interest in higher education through increased investment in research. But state-based support has mainly been in the areas of biotechnology and information and communications technologies, and while welcomed by the sector, has made little impact on the overall financial difficulties.

As stated above, there has been much debate about whether or not Australian higher education is in crisis. The Senate inquiry referred to above reported at the end of September 2001, entitling its report '*Universities in Crisis*'. The report stated that:

Many of the problems and pressures that universities are experiencing are symptoms of the Government's inadequate funding and the parlous state of many universities' finances. The crude funding cuts to universities, supposedly in an effort to make them more efficient, have continued to the point where they are causing long-term damage to the fabric of the higher education sector.

It is extremely unlikely that Australia will ever return to the days when government provided nearly all of the funds for higher education. Moreover, there are a number of reasons why the sector desires a diversified funding base, institutional autonomy being one of them. On the other hand, viewed comparatively, Australia is probably approaching the limit to which government can abrogate its responsibility for funding public higher education.

But the basic problem faced by Australian higher education is not merely, and maybe not even mainly, financial. It is more a crisis of confidence over what are the basic objectives of the country's national public system of higher education and how they are to be achieved. Since the second half of the 1990s, there has been little debate about what are or should be the objectives and priorities of the nations universities. Rather, the steering of higher education has been given over to the market and the outcomes of market competition. Moreover, particularly in the area of research policy, up-to-date, reliable and readily accessible data on which to inform debate have become increasingly difficult to obtain.

Until recently, one of the most useful and comprehensive sources for facts and figures regarding Australia's science and technology particularly in an international context was *The Science and Technology Budget Statement* prepared by the Department of Industry, Science and Resources. However, under instructions from the Minister, the statement has been substantially cut back, and provided in electronic form only to the public. It is now far more difficult to assess Australia's international performance in R&D and the inclusion of non-OECD countries (such as Greece and Turkey) distorts the real situation of Australia's performance regarding comparator countries such as Canada. (Australian Science and Technology Organisation 2001b). The movement from cash to accrual accounting in 1999-00 has also complicated any trend analysis.

One of the issues closely associated with Australian university funding levels is that of 'brain drain versus brain gain'. Whilst claims have been increasingly made by peak scientific bodies such as FASTS that talented scientists, technologists and engineers are being induced to work overseas by more competitive salaries and better institutional research infrastructure and funding support, there have been counter-claims that Australia has in fact had a 'brain gain' through the influx of skilled workers (cf. Birrell et al. 2001). However, as Wood and Boardman (1999: 25-26) observe: 'Australian data collection efforts regarding the geographic movement and activities of highly skilled labour are fragmented. They also vary in terms of the purposes for which these data are collected, the level of detail recorded, their comprehensiveness, accuracy and reliability and also their usefulness as a basis for time-series analyses'. Much of the brain drain/gain debate is hampered by the lack of detailed information about the talent/seniority of those departing; their work experience whilst overseas; and whether or not there is a compensatory flow of migrants to replace these professionals at similar levels of performance (cf. Australian Science and Technology Organisation 2001a; Birell et al. 2001: 10-11.)

Market competition and centralised bureaucratic control should not be seen as mutually exclusive, but as at opposite ends of a continuum of higher education steering and management. Clearly, market competition has not been all bad for Australian higher education. It has made the system more responsive and relevant to industry needs, ensuring a direct contribution to the nation's economic well being. The managers of Australian higher education institutions have substantially increased their skill and

capacity to find new markets, and in little over a decade there has been a doubling of student numbers; substantial increase in the number of graduates; the creation of a multi-billion dollars overseas student market; and a substantial reduction of most institutions' financial dependence on the Commonwealth. But the policies have had a number of unintended consequences as well: the high level of institutional competition has decreased the diversity of the system and stifled innovation; the corporate style institutional management encouraged by market-like competition tends to substantially alienate staff; and the decline in Commonwealth financial support threatens the quality of teaching and research in many institutions.

It appears that government steering is reaching the extreme position of 'leave it to the market' for most of all of the basic decisions concerning the future direction of the sector. Moreover, it is an 'excessively short-term market orientation, and over-concentration on teaching and research programs of private benefit, at the expense of longer-term national needs' (*Universities in Crisis* 2001).

Rather than an emphasis on economic efficiency and an immediate return of money invested, what Australian higher education needs now is a very substantial injection of what has been termed as 'patient capital'. However, the sector cannot remain patient for much longer for that to occur, as Professor Chubb, again speaking on behalf of the AVCC, makes clear:

I suggest that we can't afford to wait. Nobody else is waiting for us. ... the risk of playing catch-up relies on a dangerous assumption – the assumption that we can in fact do so. But that will prove increasingly difficult. For example, a group of my colleagues collaborated in a paper, which shows that to re-establish our position within even OECD terms, we would now need an injection of around \$13-14 billion for research funding alone. A big gap. But only part of the story. We must add to it the cost of re-investing in the base of our universities – a base that has also been let slip. Australian governments ... have let the per capita investment from the Commonwealth slide ... – let slip the patient capital - and have allowed it to be wholly or partially replaced by what might be called the impatient capital - of fees, tied (or specific) grants and outside earnings.

Australia must compete increasingly in the global knowledge economy and to due so, it will need to invest heavily in the production of 'knowledge workers'. The amount, type, level and quality of the nations skilled workforce are not something to be left solely to the market. Recognising the imperative of knowledge based economy, many

other governments of OECD countries have recently injected large sums of public money, particularly for research infrastructure, into their higher education systems. Australia seems to be stuck at a stage where increasing private investment in and consumer control of higher education have become goals in themselves rather than means to an end.

Not all of the problems facing Australian higher education arise from the actions of the current government; many are leftovers from the implementation of the 1988 White Paper, the abandonment of the binary system and the creation of the UNS. As previously noted, several of the promises of the White Paper concerning selectivity and concentration of institutional mission, on the one hand, and the creation of a diversified higher education sector on the other, have not been fulfilled. While the White Paper praised institutional diversity, it created a uniform policy environment that stimulates a degree of uniformity in institutional response, as does market competition where institutions are competing for the same clientele, such as full fee paying overseas students. There is a growing body of evidence in Australia and elsewhere to suggest that formally regulated and separate policy environments better serve the principles of diversity than market competition.

It is probably the case that a unitary system of higher education does not in itself necessarily work against institutional diversity. The reward structures that govern institutional behaviour are probably the crucial factor. And where these reward structures are based on principles of competition for the same prize, it appears that institutional emulation rather than diversification is the result. In creating the UNS, the Australian government also put in place a competition framework that did nothing to differentiate amongst institutions. In fact, through the introduction of the relative funding model the federal government deliberately created a 'level playing field'. Thus, for example, the new universities have as much right to compete for limited research funding as the old research universities, and there are strong incentives for them to engage in such competition and in so doing attempt to emulate, at least partially, the research profile of the research universities. But no nation can afford to fund all of its higher education institutions as world-class research universities. Hence emulation results in second-rate imitations.



However, it also must be recognised that it is extremely difficult, if not impossible, for a central government in a democratic society to devise policies that discriminate amongst institutions that are deemed equal due to their membership of the same sector. For example, ever how much the federal government may wish to see the introduction of explicit differential funding policies that might confine some institutions to largely a teaching only function, this would be politically most difficult. If the goal is a differentiated higher education system, then it appears that this is best achieved through the creation of separate sectors of higher education, each with its own policy agenda, goals, objectives and reward structures.

The policy issues facing Australian higher education should be resolved by neither starving the sector financially nor leaving their resolution solely to the market. The relative balance between higher education as a public good and a private benefit, for example, needs resolved through sustained and informed public debate, not left to the vagaries of the market. The same could be said for a number of other policy issues, such as: how best to differentiate between research and other types of universities; how best to protect unprofitable disciplines while simultaneously encouraging innovation; how best to promote the roles of the humanities and social sciences in innovation; how to best enhance private investment in R&D; and how best to meet the challenges of global market opportunities. The market is not a very good arbitrator of public policy, particularly in an area like higher education where the stakes are high indeed, for both present and future generations.

## REFERENCES

*An Agenda For The Knowledge Nation. Report Of The Knowledge Nation Taskforce*  
(2001) Canberra: Chifley Research Centre.

[http://www.alp.org.au/kn/kn\\_report\\_020701.html](http://www.alp.org.au/kn/kn_report_020701.html)

AUSTRALIAN BUREAU OF STATISTICS (2001) *Research and Experimental Development, Businesses, Australia 1999-2000*. Cat: 8104.0

AUSTRALIAN SCIENCE AND TECHNOLOGY ORGANISATION (2001a) Data on brain drain and gains leave controversy *Incites August*

<http://www.asto.com.au/incites.htm>

- AUSTRALIAN SCIENCE AND TECHNOLOGY ORGANISATION (2001b)  
 Government calls a halt to publication of vital data on Australian innovation  
*Incites June* <http://www.asto.com.au/incites.htm>
- AUSTRALIAN VICE-CHANCELLORS' COMMITTEE (2000) *Our Universities Our Future. Support Papers.*
- BIRRELL, B, DOBSON, I, RAPSON, V and SMITH, F (2001) *Skilled Labour: Gains and Losses.* Melbourne, Centre for Population and Urban Research, Monash University.  
<http://www.dima.gov.au/research/publications/skilledlab/index.htm>
- CHUBB, I. (2000) *Our Universities: Our Future.* An AVCC discussion paper. December.
- DAWKINS, JD (1987) *Higher Education: a discussion paper* (Green Paper), Canberra: AGPS.
- DAWKINS, JD (1988) *Higher Education: a policy statement* (White Paper) Canberra: AGPS.
- DEPARTMENT OF EDUCATION, TRAINING AND YOUTH AFFAIRS (1998)  
*Learning for Life: Final Report of the Review of Higher Education Financing and Policy*, (West). Canberra: DETYA.
- DEPARTMENT OF EDUCATION, TRAINING AND YOUTH AFFAIRS (1999)  
*Higher Education Report for the 1999 to 2001 Triennium*, Canberra: DETYA.
- DEPARTMENT OF EDUCATION, TRAINING AND YOUTH AFFAIRS (2000a)  
*Higher Education Report for the 2000 to 2002 Triennium*, Canberra: DETYA.
- DEPARTMENT OF EDUCATION, TRAINING AND YOUTH AFFAIRS (2000b)  
*Research Expenditure 1998: Selected Higher Education Statistics DETYA, 2000.*
- DEPARTMENT OF EDUCATION, TRAINING AND YOUTH AFFAIRS (2001a)  
*Staff 2000. Selected Higher Education Statistics 2000.*
- DEPARTMENT OF EDUCATION, TRAINING AND YOUTH AFFAIRS (2001b)  
*Students 2000. Selected Higher Education Statistics 2000.*
- DEPARTMENT OF EDUCATION, TRAINING AND YOUTH AFFAIRS (2001c)  
*Submission to Senate Employment, Workplace Relations, Small Business and Education Committee Inquiry into the Capacity of Public Universities to Meet Australia's Higher Education Needs.*

- DEPARTMENT OF EDUCATION, TRAINING AND YOUTH AFFAIRS (2001d) *Higher Education: Report for the 2001 to 2003 Triennium*. Canberra: Commonwealth of Australia.
- DEPARTMENT OF INDUSTRY, SCIENCE AND TOURISM (1998) *Review of Greater Commercialisation and Self-Funding in the Cooperative Research Centres Programme*. (Mercer, D. and Stocker, J external steering committee). May. Canberra.
- DEPARTMENT OF INDUSTRY, SCIENCE AND RESOURCES. (2000a) *The Chance to Change: Discussion Paper by the Chief Scientist* (Batterham), Canberra.
- DEPARTMENT OF INDUSTRY, SCIENCE AND RESOURCES (2000b) *Innovation: Unlocking the Future*, Final Report of the Innovation Summit Implementation Group (Miles) August Canberra.
- GALLAGHER, M. (2000) *The Emergence of Entrepreneurial Public Universities in Australia*. DETYA Higher Education Division Occasional Paper Series 00/E.
- HALEM, B. (2001) 'Kemp attacks uni chief's crisis claim', *The Australian* August 22, p. 3.
- HOWARD, J. (2001) *Backing Australia's Ability* Commonwealth of Australia. January.
- INFORMATION INDUSTRIES TASKFORCE (IITF) (1997) *The Global Information Economy - The Way Ahead*. (Goldsworthy Chair).
- INSTITUTE FOR SCIENTIFIC INFORMATION (2001)  
<http://sunweb.isinet.com/isi/index.html>
- KEMP, D. (1999a) *New Knowledge, New Opportunities: A Discussion Paper on Higher Education Research and Research Training*. Canberra: AusInfo.
- KEMP, D. (1999b) *Knowledge and Innovation. A Policy Statement on Research and Research Training*. Canberra: AusInfo.
- MORTIMER D. (1997) *Going for Growth Business Programs for Investment, Innovation and Export*
- RAMSEY, A. (2001) 'Spaghetti and meatballs lands Kim in soup', *Sydney Morning Herald*, July 4.
- Review of Business Taxation, A Tax System Redesigned*, (1999) (Ralph chair) July. Canberra: Treasury.

SENATE EMPLOYMENT, WORKPLACE RELATIONS, SMALL BUSINESS AND  
EDUCATION REFERENCES COMMITTEE (2001) *Universities in Crisis*. 27  
September. Commonwealth of Australia

[http://www.aph.gov.au/senate/committee/eet\\_ctte/public%20uni/report/contents.htm](http://www.aph.gov.au/senate/committee/eet_ctte/public%20uni/report/contents.htm)

STIRLING, R. (2001) *Innovation R&D Review*, February, p5.

STOCKER, J. (1997) *Priority Matters*. A report to the Minister for Science and  
Technology, on Arrangements for Commonwealth Science and Technology, by  
the Chief Scientist, Professor John Stocker. Canberra, AGPS.

WILLS, P (Chair) (1998) *The Virtuous Cycle: Working Together for Health and  
Medical Research*, Health and Medical Research Strategic Review, December.

WILLS, P. (2001) *The National Investment in Science, Research and Education*.  
Address to the National Press Club, Canberra. 21 August.

WOOD, F. and BOARDMAN, K (1999) *International Networks and the  
Competitiveness of Australia's Science and Technology*. Canberra: Australian  
Academy of Science. <http://www.science.org.au/academy/media/intnet.htm>

First published in *Higher Education Policy and Management*, volume 24, issue 1 (2002).

Published by Routledge, Taylor & Francis Group

Copyright © 2002 Association for Tertiary Education Management. This article online at:  
<http://www.informaworld.com/openurl?genre=article&issn=1360-080X&volume=24&issue=1&spage=7>