

# **Competition and Cooperation in Australian Higher Education Research**

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## **Introduction'**

The discussion opens with an overview of the structure and function of the Australian research enterprise in general, followed by a more detailed analysis of the academic research enterprise. This is followed by a brief overview of the development of the Australian higher education sector, leading to an overview of the development of the higher education research policy context. As the discussion demonstrates, market discipline and the principles of competition, concentration and selectivity have significantly shaped the Australian academic enterprise in recent decades. The concluding section analyses the possible consequences of the various policies shaping academic research in Australia.

## **Overview of the structure and functions of the Australian research enterprise**

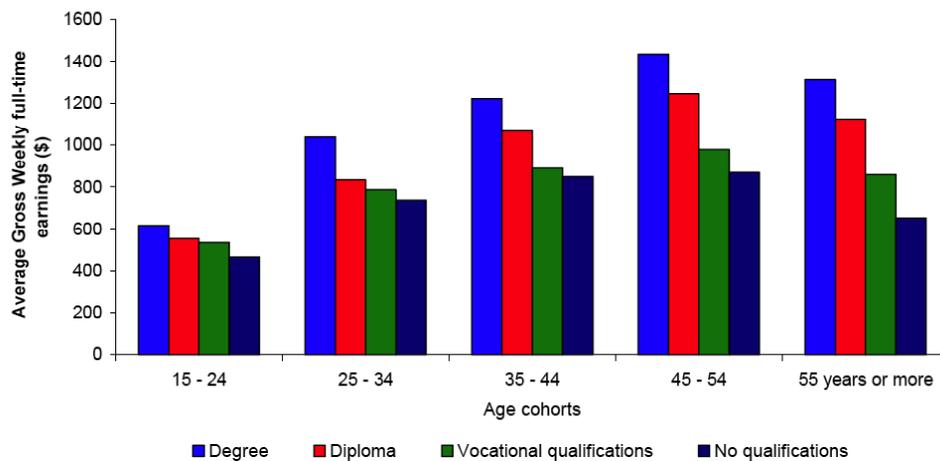
### ***The Australian Context***

Australia is a constitutional democracy consisting of a federation of six states and two territories. In the Australian federal systems, the powers of the Commonwealth are limited to areas deemed to be of national importance. As discussed in more detail below, just how far those areas extend is presently the subject of considerable debate.

Whereas in terms of landmass Australia is the sixth largest country in the world – approximately the same size as the Continental United States – it has a population only slightly larger than the Netherlands. Most of the nation's population of some 20 million people (0.3 per cent of world population) is highly urbanised. The Annual population growth rate is 1.2%. It is an aging population, with 20.8% in aged bracket 0-14 years, 16.6% 15-24 years, 53.1% 25- 64 years, and 12.5% of the population 65 years or older. Nearly 22% of the population is foreign born or of foreign nationality (Australian Bureau of Statistics 2001-2006). The average Australian lives in an urbanised setting, is of working age, born in Australia, unlikely to immigrate, English speaking, Caucasian and Christian.

In recent years the growth rate of the Australian economy has exceeded that of most other OECD countries, while maintaining low inflation and high employment. In 2006, unemployment was approximately 5% of the workforce. In terms of average weekly earnings, holding a degree or diploma is clearly an advantage, as depicted in Figure 1. Australia has relatively high graduate employment with 81% of graduates finding work within four months of their date of graduation. The Australian GDP has steadily increased over the last 15 years, from 485.04 \$b in 1990 to 734.21 \$b in 2003.

**Figure 1: Relative earnings of the population with income from employment by level of educational attainment**



Source: Australian Bureau of Statistics Income survey data

Australia’s “economy is 1.9 per cent of the Gross Domestic Product (GDP) of the OECD, and accounts for about 1 per cent of world trade” (DEST 2003b: 3). Historically, the nation’s wealth was based on primary products – mineral and agricultural. But in recent decades there has been a deliberate attempt by Government and industry to switch the basis of the Australian economy from primary products to knowledge – to create what one Prime Minister termed in the 1980s as the Clever Country. While in the early 1970s, about 21 per cent of Australia’s GDP was based on manufacturing and 5.4 per cent on agriculture, presently those figures are 12 per cent and 3.6 per cent respectively. As the Chief Economist of one of the country’s largest banks put it: “Australia’s economic growth will increasingly be linked to the mortarboard not the sheep’s back ...” (Doherty 2004: 3). Much of Australia’s wealth still comes from minerals and in recent years, Australia has enjoyed strong economic growth based largely on mineral exports, particularly to countries such as China and Japan. However, the mining industry itself, like other sectors of the economy, is more knowledge dependent and research based than in the past. Nonetheless, the debate rages in Australian over investment in research for short-term economic gain and longer-term financial commitment to growing a ‘truly’ knowledge society and economy.

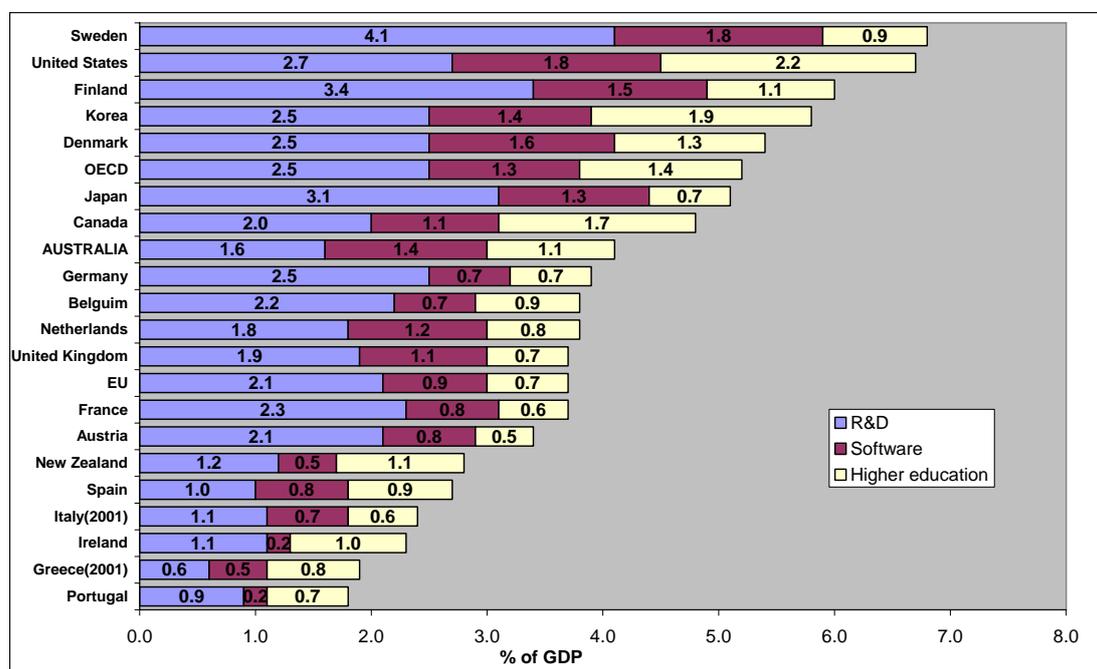
Since, 1997, Australia has been a net exporter of education in general and of R&D services in particular (ARC 2006a: 4) Australia has a well-developed but comparatively small science base, with the majority of its R&D effort concentrated in the public sector. Taking into account the size of the nation, Australia’s contribution to world science is impressive, particularly with respect to medical and health disciplines and biological sciences and astronomy. Australia’s scientific output has steadily increased:

- in 2004, Australia accounted for 2.89 per cent of world research (2006a: 27);
- it ranked ninth out of 21 countries behind Canada, France, Germany, Italy, Japan, Spain, the United Kingdom (UK) and the United States of America (USA) in the total number of research publications and ahead of countries such as Korea, the Netherlands, Sweden and Switzerland (DEST 2003b: 6);
- it ranked eighth out of 21 countries in the number of research publications on a

*per capita* basis, ahead of Canada, France, Germany, Japan and the USA and behind Denmark, Finland, Israel, Netherlands Switzerland and the UK (DEST 2003b: 6).

Over the last decade or so, Australia's investment in knowledge (defined by the OECD as including R&D, education and training, and software) as a percentage of GDP has varied from a low of 3.7% in 1993 to a high of 4.12% in 2002 (ARC 2006a: 9). This places Australia amongst the top 50 per cent of OECD countries, but below the OECD average of 5.2% (see Figure 2). In the last three decades, total expenditure on R&D has quadrupled, from \$3.1 billion in 1976-77 to \$12.2 billion in 2002-3, with an average growth rate of 5.2 per cent (Shanks & Zheng 2006: 28).

**Figure 2: Investment in knowledge as percentage of GDP by key element – by OECD country, 2002**



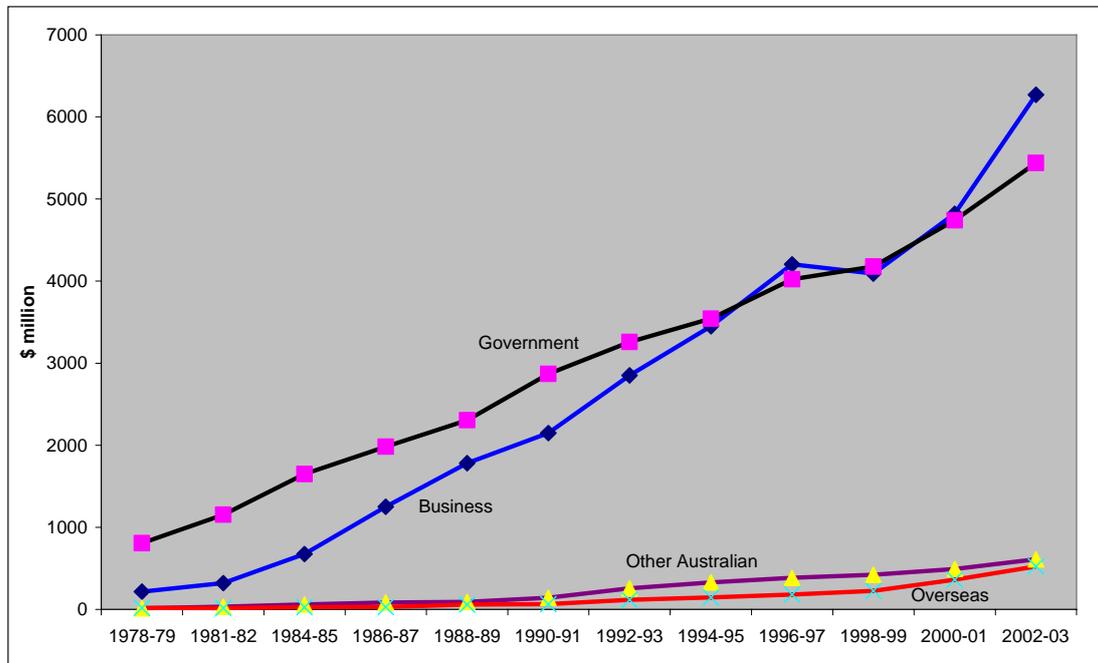
Source: Australian Research Council (2006a: 10)

For a number of historical and geographical reasons, the funding of Australian R&D is more highly dependent upon the public purse than is the case in most other developed countries. In 2000, government-financed expenditure on R&D was 0.71 per cent of GDP, compared to an OECD average of 0.64 per cent (DEST 2003b: 18).

In contrast, Business Expenditure on Research and Development (BERD) has traditionally been low compared to other OECD countries. This is largely due to the fact that most of the large multinational corporations in Australia have their headquarters elsewhere and historically conducted little of their R&D in this country. Unlike the USA and UK, there are very few private foundations for Australians to look to for research support (Wills 2001), and there is nowhere the level of endowment support that some of the major USA universities enjoy. The Australian government has instituted a number of policies and programmes, such as tax concessions, in an attempt to boost business investment in research.

However, the historically low profile of business R&D in Australia appears to be moderating. From about the mid-1990s, business expenditure on R&D commenced to exceed that of government (see Figure 3).

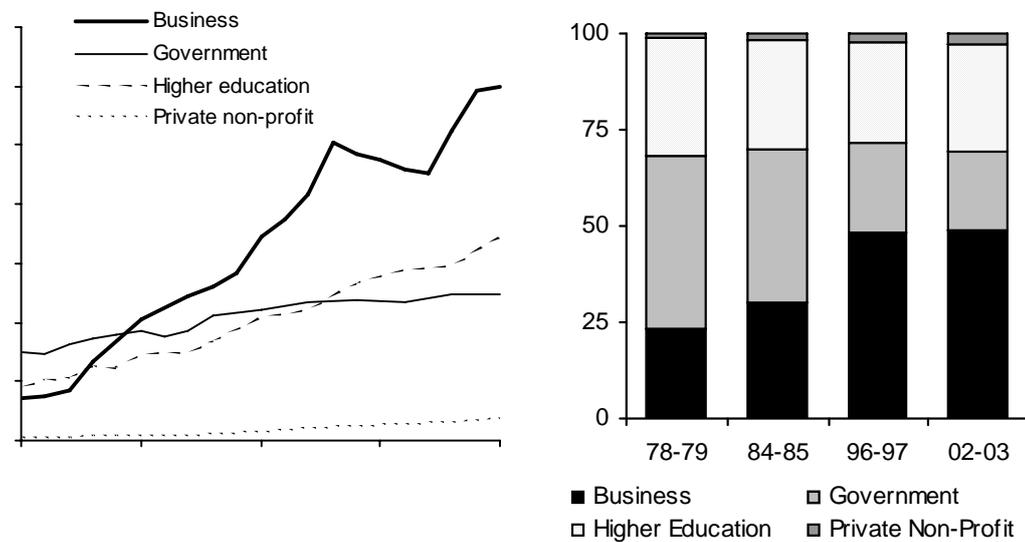
**Figure 3: Australia's gross domestic expenditure on research and development, by source of funds, 1978-79 to 2002-03**



Source: Australian Research Council (2006a: 15)

If we separate out university expenditure on R&D from that of other government agencies, then the increase in business expenditure is shown to be even more prominent in recent years (see Figure 4). According to Shanks and Zheng (2006: 29), “R&D activity in government agencies has increased, with expenditure growing in real terms at a rate of 2.0 per cent a year since the 1970s. But, because that rate was slower than BERD, the government-agency share of GERD [excluding universities] declined from 48% per cent to 20 per cent”. Of course, such historical comparisons are devilishly complex, particularly when we take into account the fact the business R&D may be subsidised by public funds and research in universities and other government agencies may be supported by the private sector.

**Figure 4: Real R&D expenditure at 2002-3 prices and shares in total expenditure, by institutional sector, 1976-77 to 2002-0**



Source: Shanks and Zheng (2006: 30)

Australia lags behind many other OECD countries in terms of Gross Domestic Expenditure on R&D (GERD) as a proportion of Gross Domestic Product. Australia's total expenditure is 1.6 per cent of GDP compared to an OECD average of 2.5 per cent (see Figure 2 above). There have been calls from such bodies as the AVCC that Australia should increase its investment in research to 2 per cent of GDP by 2010 and 3 per cent by 2020.

**Table 1: Gross Australian Expenditure on R&D by Sector, 1988/89-2002/03**

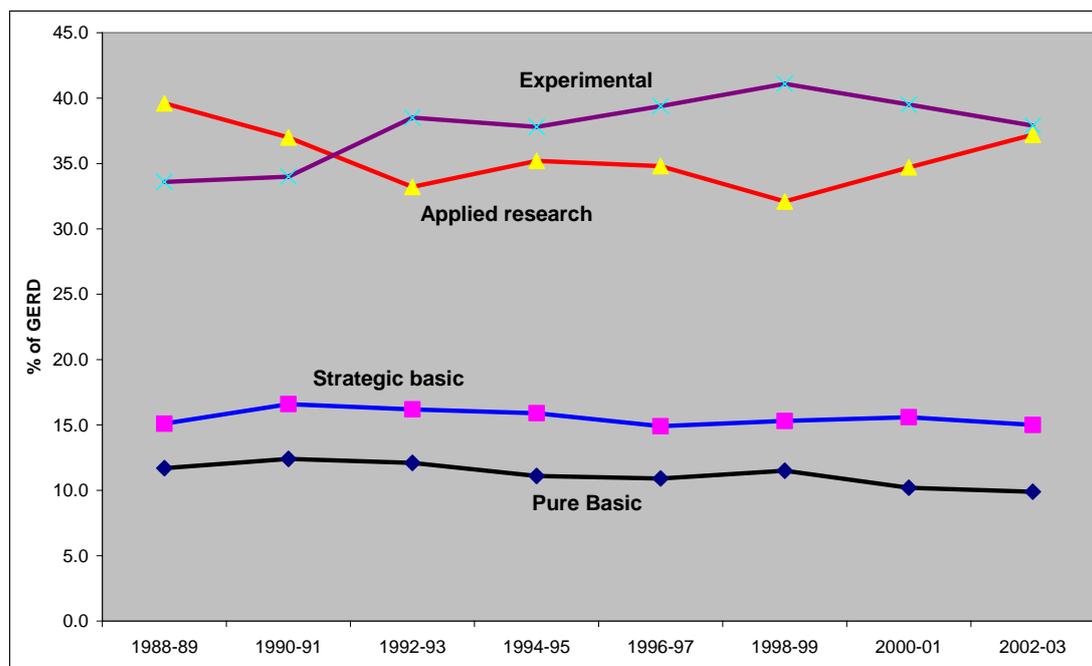
Sector	88/89	90/91	92/93	94/95	96/97	98/99	00/01	02/03
Business	42%	40%	44%	47%	48%	46%	48%	49%
General Gov - Commonwealth	20%	20%	18%	16%	14%	14%	13%	13%
General Gov - State	11%	13%	10%	11%	9%	10%	9%	8%
Higher Education	25%	26%	26%	25%	26%	29%	27%	28%
Private Non-Profit	1%	2%	2%	2%	2%	2%	3%	3%
<b>Total (\$m)</b>	<b>4,281</b>	<b>5,222</b>	<b>6,483</b>	<b>7,467</b>	<b>8,792</b>	<b>8,936</b>	<b>10,417</b>	<b>12,250</b>

Source: Australian Vice-Chancellors' Committee (2005)

The traditionally relatively low level of investment in R&D from the private sector has meant that historically government has had to play a leading role in funding Australian science and innovation. The federal government channels its support for R&D through a variety of schemes and organisations, the two major being the Commonwealth Scientific and Industrial Research Organisation (CSIRO) and the nation's universities, the former receiving about AU\$612 million direct from government and the latter AU\$6652 million. Of course, Commonwealth support for universities is for teaching as well as research. About 27 per cent of GERD is performed by the higher education sector, which is a fairly large proportion relative to many other OECD countries (see Table 1). A greater proportion of Australia's R&D workforce is located in higher education than is the case for most OECD countries.

In terms of type of activity, experimental and applied research consume the largest proportions of gross domestic expenditure on research and development, followed by strategic basic and basic research, both of which as a proportion of GERD have declined since 1990 (see Figure 5).

**Figure 5: Gross domestic expenditure on research and development, by type of activity, 1988-89 to 2002-03**



Source: Australian Research Council (2006a: 11)

As might be expected, the largest proportion of pure basic and, to a lesser extent, strategic basic research takes place in the universities, while most of the experimental development takes place in the business sector. About one-third of applied research takes place in universities, one-third in other government agencies (particularly the CISRO) and on-third in the business sector (see Table 2).

**Table 2: Gross Australian Expenditure on R&D by Type of Activity, 2003**

Sector	Pure Basic Research	Strategic Basic Research	Applied Research	Experimental Development
Business	4%	18%	35%	85%
General Government - Commonwealth	8%	25%	16%	6%
General Government - State	4%	7%	15%	2%
Higher Education	79%	42%	32%	6%
Private Non-Profit	5%	8%	3%	1%
<b>Total (\$m)</b>	<b>1,240</b>	<b>1,904</b>	<b>4,379</b>	<b>4,727</b>

Source: AVCC 2005

Illustrative of the debate that currently runs across government, industry and higher

education on the level of public and private expenditure on R&D is the way in which each presents the data in such a way as to support particular points of view. The AVCC (now named Universities Australia) tries to emphasise the relative low levels of government and business expenditure and does this through continuous reference to comparative data. Government basically on a day-to-day basis refers to the budgeted expenditure under the *Backing Australia's Ability* agenda (see below), whilst not providing much accessible data on actual expenditures. And the business sector argues the increase-as-a-fact strategy in combination with the need for practical and strategic relevance of public research. These points will be revisited in the next sections of this contribution.

## The Australian higher education sector

An exceptional feature of the Australian higher education sector is that the states have legislative control of higher education institutions, whilst financial responsibility rests with the Commonwealth. Appropriate and politically acceptable roles for both State and Federal governments in the funding and coordination of Australian higher education have challenged policy makers for several decades. Historically and constitutionally, all forms of education in Australia have been primarily a matter for the States. But in the years following the second world war, there has been substantial and increasing Federal intervention in higher education. In 1974 the Whitlam Labor government assumed responsibility for providing all regular recurrent and capital funds for universities and colleges of advanced education and abolished tuition fees in universities and colleges. These decisions significantly changed the Australian higher education landscape and ensured that the Federal government would dominate planning and funding of this sector (Meek et al 2003).

Yet the States retain many responsibilities for higher education, including legislative control, ownership of land and capital assets, controls on the use of terms such as 'university' and 'degree', and statutory requirements relating to industrial matters and the governance of individual institutions. The decision for the Commonwealth to assume nearly full responsibility for the public funding of higher education did not go entirely uncontested at the time. Also, the States have responded differently to this Federal government intervention. Some States, for example, have maintained a higher degree of financial commitment to higher education than other States, coupled with a more prominent leadership role.

Commencing in 2005 and up to the present, successive federal education ministers have called for the Commonwealth to assume full legislative as well as financial control of higher education. This has been motivated, in part, by the desire of the federal government to introduce more fee-for-service private higher education providers. In July 2006, the Minister announced under the banner of enhancing diversity that she had achieved agreement with her State and Territory counter parts to "provide greater choice for students to study at a variety of high quality higher education institutions". As indicated by the Minister, the new set of *National Protocols for Higher Education Approval Processes* "will allow ... higher education providers to accredit their own courses, bypassing costly and time consuming reaccreditation processes run by State Governments". Up to now, only universities could accredit their own courses. The agreement also included "specialist institutions having access to a university title" and the reduction of "research and higher degree

teaching requirements for new universities in their first five years of establishment” (Bishop 2006: online). This decision has the potential of transforming the Australian higher education landscape more than any other decision in the last decade. But Australia is no stranger to higher education reform.

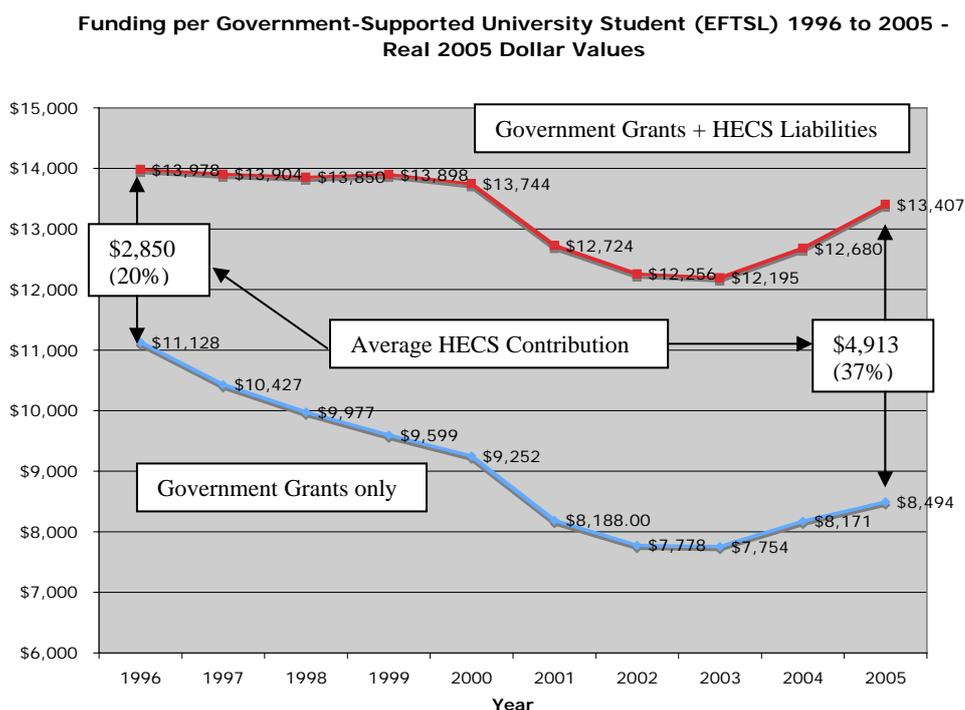
As of 2007, The nation’s higher education sector consists of 37 public universities, some of which are quite large with enrolments in excess of 45,000 students, two small private universities and a number of small specialist institutions both public and private. In 2005 an Australian branch of a USA university was established in Adelaide (Carnegie-Melon). Up to mid-2006 there were more than 150 non self-accrediting higher education providers registered by the States and Territories. In 2007, Australia had nearly one million students enrolled in higher education courses, about one-quarter of whom were overseas students. Up to now, the defining characteristics of an Australian university strongly endorse the principles of unity of teaching and research and a broad, comprehensive curriculum.

### *The evolving higher education policy context*

Since the early 1990s, the Australian higher education sector has experienced profound change. This change has been driven by, amongst other things, massification – the rapid increase in student numbers that accelerated throughout the 1980s and 1990s. One of governments key strategies to cope with the rapid expansion of higher education is to encourage institutions to diversify their funding base and to adopt market-like behaviour. Australia is possibly the quintessential example of maketisation and internationalisation of higher education, which has had a profound impact on how its universities are governed and managed. Presently, the government provides only about 40% of the cost of higher education, and says itself that it no longer funds but subsidizes higher education. The other main sources of funding are domestic and internal student fees, followed by research grants, consultancies, investments, etc.

In most all OECD countries, while private expenditure on higher education has risen more rapidly than public expenditure, public expenditure has expanded as well. Australia appears to be the exception (OECD 2006). Funding of Australian higher education increased during the period 1996-2005 (1996 being the year the present Liberal coalition government gained power) with respect to all sources of revenue. However, direct public funding from the Commonwealth Government declined, as is illustrated in Figure 6. HECS in Figure 6 refers to the Higher Education Contribution Scheme – tuition fees for Australian students collected through the tax system – introduced in 1990.

**Figure 6: Funding per government-supported university student**



Source: NTEU 2007

In the late 1980s, the then Labor government which initiated the reforms explicitly stated that it was not prepared to fund growth entirely from the public purse and the current liberal government has gone even further in demanding that an increasing proportion of the financing of higher education comes from sources other than the public weal. In Australia, as elsewhere, the last two decades have seen the development of a quite different approach to higher education steering from what prevailed previously, an approach characterized by:

- reductions in public expenditure;
- increased emphasis on efficiency of resource utilisation;
- increased emphasis on performance measurement, particularly in terms of outcomes;
- increased emphasis on demonstrable contribution to the economy of the nation; and
- the strengthening of institutional management and of the policy and planning role of individual institutions.

There has been considerable pressure placed on Australian academic staff to be more competitive, productive and accountable, while simultaneously being more entrepreneurial and innovative. While many if not most have risen to the challenge, their status in society has declined. As Melleuish (2004) comments, “What’s happened over the last 20 years or so is that comparatively academic salaries have dropped, people no longer listen to academics or have as much respect for them perhaps as they once had in the past”.

Competitive market steering of higher education supposedly requires strong corporate style management at the institutional level. And in Australia, as elsewhere, in recent

years there has been a substantial shift towards a more managerial approach to running universities, deliberately encouraged by government policy. The push to diversify the funding base and the emphasis placed on raising revenue from competitive private sources has been one of the primary factors making university management so difficult and complex (Gallagher 2000).

Within the changed policy context, many responsibilities have been devolved to individual universities. But, at the same time, institutions are held more directly accountable for the effective and efficient use of the funding and other freedoms they enjoy. Moreover, institutions are now placed in a much more highly competitive environment, and considerable pressure has been placed on universities to strengthen management, to become more entrepreneurial and corporate like. The large universities with more than 40,000 students and annual budgets that run to billions of dollars, rival in size and complexity many private corporations. Institutions must respond quickly and decisively in order to take advantage of market opportunities. There can be little doubt that the sheer size and complexity of Australian higher education demands strong and expert administration at the institutional level. Nonetheless, changes in the governance and management of Australian higher education directly concern the re-norming of the academic profession and possibly fundamental transformation of the idea of knowledge and of the university itself (Meek 2003).

## ***Competitive allocation of research funding***

Australia has adopted a policy of selectivity and concentration with respect to research funding and, though the bulk of the financial resources for research are assumed to be part of the general operating grants, a proportion of research infrastructure is differentially funded on the basis of performance. Overall, the amount of general university expenditure on R&D as a proportion of total expenditure declined from 65% in 1996 to 59% in 2002.

### ***Background to the competitive allocation processes***

Most operating resources provided by the Commonwealth to the higher education sector are allocated by the Department of Education, Science and Training (DEST) as block operating grants based on student enrolments. For well over a decade, however, federal governments have encouraged competition amongst institutions, particularly with respect to research funding. The 1988 White Paper stated that “concentration and selectivity in research are needed if funding is to be fully effective” (Dawkins 1988: 90). The then Labor government’s policies were put into effect in a number of ways. First, at the system level, an increasing proportion of recurrent grants was ‘clawed back’ from institutions and given to the Australian Research Council (ARC) for competitive re-allocation. This included the ARC Large Grant scheme funded directly by the ARC and the ARC Small Grant scheme funded in proportion to the institutions’ success in winning ARC Large Grants and administered by the institutions themselves. Second, individual institutions were compelled to formulate research management plans for the competitive allocation to academic staff of research funds available within the institution. Third, institutional research

performance was competitively assessed for funding purposes through the so-called Research Quantum (RQ). The RQ, representing about 6% of total operating grants, was based on quantitative performance indicators: number of competitive research grants attracted (80%), publications (10%) and postgraduate completion rates (10%). Fourth, institutions were provided with Research Infrastructure Block Grants (RIBG) on the basis of a formula with allocations reflecting the relative success of each institution in attracting competitive research funds.

### ***The modern research funding regime***

With the intention of increasing competition over research funding even further, in June 1999 the Liberal coalition federal government released a discussion paper on research and research training entitled *New Knowledge, New Opportunities*. The paper identified several deficiencies in the existing framework which were considered to limit institutional capacity to respond to the challenges of the emerging knowledge economy. These included: 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 government released its policy statement on research and research training, *Knowledge and Innovation: A Policy Statement on Research and Research Training* in December 1999. Major changes to the policy and funding framework for higher education research in Australia were identified in the policy statement. The principal ones were:

- a strengthened Australian Research Council 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.

The policy statement re-introduced the requirement for formal submission to DEST of Research and Research Training Management Plans. Core elements that institutions were expected to report on annually include: research strengths and activities; details of research active staff; graduate outcomes both in terms of attributes and employment; linkages to industry and other bodies; and policies on commercialisation (Wood & Meek 2002).

These changes have been put into effect 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) supports the general fabric

of institutions' research and research training activities. The scheme absorbs the funding previously allocated for the Research Quantum and the ARC Small Grants Scheme.

Funding under the IGS is allocated on the basis of a formula. The components and weightings are as follows: success in attracting research income from a diversity of sources (60%); success in attracting research students (30%); and the quality and output of its research publications (10%). 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 pre-2002 arrangements which gave greater weight to Commonwealth competitive research grants schemes.

Funding for research training is allocated on a performance-based formula through the Research Training Scheme (RTS). Institutions attract a number of funded Higher Degree Research (HDR) places based on their performance through a formula comprising three elements: numbers of all research students completing their degree (50%); research income (40%); and the revised publications measure (10%). The values for each element will be the average of the latest two years' data. The key aspect of the RTS is that it is essentially based on *quantitative criteria* (Wood and Meek 2002b).

At the time of the introduction of the RTS, it was argued that it would be an effective mechanism for freezing out weaker institutions from graduate research training. But the scheme has had several unintended consequences, such as some of the strongest research universities actually losing HDR revenue under the application of the original funding formula (subsequently modified). Also, the restrictions mentioned above on how much research income can be won or lost in any one year, has slowed the process. Nonetheless, the government remains adamant that there is room in Australia for only a few comprehensive research universities.

The three schemes outlined above combined accounted for well over AUD\$1 billion in total university funding or about 11 per cent of total funding (DEST 2005a). Mainly for political reasons, a regional protection scheme was introduced to buffer regional universities from the most severe effects of research funding competition. Also, there is another governor on funding redistribution in the sense that in anyone year no institution can decrease or increase funding over the previous year by 5 per cent.

Commonwealth changes to research funding has required Australian universities to rethink much of their approach to the management of research and research training. High on the agenda has been the need to identify priorities, concentrate research effort, and develop a set of performance indicators and sophisticated research management information systems (Wood and Meek 2002b). Government's intention to introduce a UK style Research Assessment Exercise (see below) has further exacerbated the situation.

Coupled with the introduction of new research funding mechanisms has been government intervention in the setting of research priorities. In May 2002, the government instituted a review process to further set national research priorities for government-funded research in the areas of science and engineering. According to

government, the priorities “will highlight research areas of particular importance to Australia’s economy and society, where a whole-of-Government focus has the potential to improve research, and broaden policy outcomes” (DEST 2002c: 1). The priorities announced at the end of 2002 and which are still in effect are:

- (1) An environmentally sustainable Australia.
- (2) Promoting and maintaining good health.
- (3) Frontier technologies for building and transforming Australian industries.
- (4) Safeguarding Australia.

When the priority review process was first initiated, the intention was to follow the research priority setting exercise in the sciences and engineering with one in the social sciences and humanities. But that did not happen. Rather, sub-goals for each priority area were written in such a way that the social sciences and humanities could be incorporated. Nonetheless, while broad in scope, the priorities are ‘hard-science’ oriented and mainly emphasise areas of immediate economic relevance. The research priorities are applicable across all Commonwealth research agencies and funding bodies. ARC grant applications, for example, ask applicants to explain how their research meets national priorities and is of national benefit.

Sector-wide funding principles have also been translated into those of individual institutions. Universities are going through a process of identifying and rewarding research active staff, identifying their research priorities and areas of strength, recruiting staff who can bring with them external research funding, and channelling funding to areas where it is hoped there will be significant growth in research. These processes have accelerated with the planned introduction of the Research Quality Framework (RQF).

### ***The Research Quality Framework (RQF)***

As part of the *Backing Australia’s Ability* package, the notion of a new quality assessment system for research was introduced in 2004. This followed on from recommendations made in the *Review of Closer Collaboration Between Universities and Publicly Funded Research Agencies* (DEST 2004d) and the *Evaluation of Knowledge and Innovation Reforms* (DEST 2004a) for a mechanism to more adequately measure both the quality and the impact of publicly funded research. As such, it clearly fits the more general public sector reform agenda of ‘value for money’ and the further introduction of competition in the higher education sector. Whilst at the time of launching the idea the actual scope and mechanisms were unclear, the Government was adamant that the RQF should:

- be transparent to government and taxpayers so that they are better informed about the results of the public investment in research;
- ensure that all publicly funded research agencies and research providers are encouraged to focus on the quality and relevance of their research;
- and avoid a high cost of implementation and imposing a high administration burden on research providers. (DEST 2004c: 1)

An Expert Advisory Group (EAG) was established, chaired by Sir Gareth Roberts from the Higher Education Funding Council for England (HEFCE) and Chair of the UK Review of the Research Assessment Exercise (RAE). Thus, not surprisingly, the

RQF is taking on some of the characteristics of the RAE in the UK, particularly in the sense that it is an outputs driven model. It is somewhat ironic that Australia is introducing an RAE style assessment exercise at the same time the UK is considering drastically modifying or abandoning the RAE. But the UK too continues to emphasise economic impact of research: “Ian Pearson, the Science Minister, told *The Times Higher* ... that he expected the seven research councils to continue the drive to improve the ‘economic impact’ of the research projects that they fund” (THES 10/8/2007).

The model which the ARF will adopt has gone through several iterations. The accepted model in essence consists of universities proposing groups of researchers for assessment by external panels on the basis of portfolios provided, resulting in a system of star ratings which would then form the basis for the allocation of lump sum budgets to the participating organisations. Research will be assessed both in terms of quality and impact. The first assessments are planned for 2008. However, 2007 is an election year and the opposition Labor government has pledged to abolish the RQF if elected.

Given the comprehensive consultation process and the political prestige involved, should this occur it would be a costly failure in all respects. But as a mechanism for the competitive allocation of research funds, one can ask the question whether it is worth the effort and expense. The vast majority of research funding already flows to a strictly limited group of institutions (see Table 3 and Table 4); the RQF probably would reinforce the Mathew effect, but it would be very unlikely that profound redistributive effects would occur. The older, more prestigious research universities, known as the Group of Eight (Go8) are highly likely to dominate the outcomes of any competition over research funding. Even so, they too continue to cry poor and recent any loss of research support to their less prestigious brethren (Chubb 2007).

**Table 3: Summary of 2006 Research Block Grant and HDR Scholarship Allocations**

Go8 Universities	RTS Grant	IGS Grant	RIBG	APA Grant		RPS	TOTAL
				Amount	Places		
Melbourne	59,906,570	33,985,085	26,050,735	10,560,034	178	0	130,502,424
Sydney	56,985,729	30,523,273	23,727,428	8,901,571	150	0	120,138,001
Queensland	53,922,836	28,731,438	19,709,820	8,528,635	142	0	110,892,729
NSW	42,568,321	23,022,144	17,028,054	6,937,380	112	0	89,555,899
Monash	40,211,886	21,370,274	14,184,850	6,810,756	113	0	82,577,766
ANU	27,393,976	17,664,169	17,248,705	4,901,640	85	0	67,208,490
WA	29,579,096	16,821,078	14,806,590	4,737,369	80	0	65,944,133
Adelaide	29,757,358	16,371,441	14,247,813	4,381,363	73	0	64,757,975
<b>SUB TOTAL</b>	<b>340,325,772</b>	<b>188,488,902</b>	<b>147,003,995</b>	<b>55,758,748</b>	<b>933</b>	<b>0</b>	<b>731,577,417</b>
<b>PERCENTAGE</b>	<b>60.49</b>	<b>63.65</b>	<b>73.54</b>	<b>59.88</b>	<b>59.77</b>	<b>0.00</b>	<b>63.35</b>
<b>All other institutions</b>	<b>222,318,228</b>	<b>107,624,098</b>	<b>52,904,005</b>	<b>37,362,252</b>	<b>628</b>	<b>3,086,000</b>	<b>423,294,583</b>
<b>GRAND TOTAL</b>	<b>562,644,000</b>	<b>296,113,000</b>	<b>199,908,000</b>	<b>93,121,000</b>	<b>1,561</b>	<b>3,086,000</b>	<b>1,154,873,561</b>

Source: Department of Education Science and Training (2006b: online)

Allocation of other research income, such as ARC grants, demonstrates a similar degree of concentration of funding in the same select institutions (see Table 4).

Other concerns with the RQF include lack or recognition of some aspects of research, particularly in the social sciences and humanities, lack of financial sustainability of some disciplines, high administrative costs to institutions, encouragement of inequitable institutional behaviour with respect to poaching star research teams, and its incompatibility with some basic principles of QA good practice, particularly with respect to closely tying funding to quality assurance.

**Table 4: Summary of ARC Discovery Grant and Linkage Grant allocations commencing 2007**

<b>Go8 Universities</b>	<b>ARC Discovery funding commencing 2007</b>	<b>ARC Linkage funding commencing 2007</b>	<b>Total ARC funding commencing 2007</b>
Melbourne	28,622,377	3,213,812	31,836,189
Sydney	40,538,623	6,246,008	46,784,631
Queensland	34,967,568	10,588,779	45,556,347
NSW	24,377,920	6,920,139	31,298,059
Monash	17,637,495	4,685,524	22,323,019
ANU	35,099,611	3,744,168	38,843,779
WA	13,215,813	1,909,052	15,124,865
Adelaide	9,545,642	2,089,641	11,635,283
<b>SUB TOTAL</b>	<b>204,005,049</b>	<b>39,397,123</b>	<b>243,402,172</b>
<b>PERCENTAGE</b>	<b>74.58</b>	<b>66.29</b>	<b>70.43</b>
<b>All other institutions</b>	69,526,267	20,037,821	89,564,088
<b>GRAND TOTAL</b>	<b>273,531,316</b>	<b>59,434,944</b>	<b>332,966,260</b>

Adapted from: Australian Research Council (2006b; 2006c: online)

## Discussion and Conclusions

Concentration, competition and selectivity are the fundamental issues in research. This means that universities have to identify strengths and make hard decisions about allocating resources to some areas and not to others. It is fairly obvious that those areas best able to commodify their intellectual wares are the ones that stand to gain the most from the new funding regime. It is also fairly obvious that these areas are not randomly distributed across the academy. And it is just not science and technology who are the winners, but those sub-fields that can lay claim to short- to medium-term economic return on their efforts. There is a danger that basic science will be further ignored, and in particular those disciplines traditionally associated with basic research, such as chemistry and physics, will go into further decline.

Under the new research funding formula for research students, universities earn income not only through student load but also through rates of completion. This presents particular difficulty for faculties in the humanities and social sciences that often have a large number of research students who traditionally study part-time, take considerable time to complete their degrees and have low completion rates compared to other disciplines. While absorbing a large amount of initial RTS load allocation, such areas may lose their student load in the future if completion rates are outside the formula guidelines. In protecting its overall share of the national research student quota, a university may decide that some subjects in the arts, humanities and social sciences are ones that it can ill afford (Wood and Meek 2002b).

Either wittingly or unwittingly, management within universities is playing the research concentration and priority setting game with the potential result of segmenting academic staff into research haves and teaching staff have-nots. The intention is not merely to decouple research from teaching, but to simultaneously tie research more closely to the needs of industry and the economy while reducing unit cost. In Australian universities, management in many institutions strongly promotes those areas of the enterprise that appear to turn a profit, while shedding investment in less lucrative activities, such as the humanities, ancient and some modern languages, etc. Given the decline of public funding and rising student numbers in a highly competitive and volatile market, institutional leaders may well indeed argue that they have no other choice.

The single most fundamental issue facing Australian higher education in general and research specifically remains, not surprisingly, funding. But more is at issue than just money. At the heart of the problem is the question of whether Australia is to have a publicly-supported, publicly- subsidised or fully private higher education system. Some have argued that little will be achieved with respect to funding until government agrees to restore full supplementation of operating grants for academic salary increases. While the government in the present round of reforms has committed some new money to the sector, most of it will be absorbed by the present round of salary increases as a result of enterprise bargaining. Moreover, as indicated above, the government's main funding reform has been to shift even more of the burden to the student consumer. But student fees will not support an increased research effort. In fact, with an ever worsening staff/student ratio, in some universities money earned through research effort is actually subsidising teaching through payment of staff salaries.

Australian higher education faces fundamental structural and long-term funding issues. The longer research infrastructure is allowed to decline, the more difficult it becomes for the nation to recover its R&D standing relative to the rest of the world. For a number of historical and structural reasons, the Australian research effort is more dependent on public support than most OECD nations. However, the ideological commitment of the government has been to market competition and privatisation. The change in higher education protocols mentioned above are directly intended to increase the number of private providers in the sector, further enhancing competition. Few if any of these private providers are likely to be interested in research. However, they are likely to attract students interested in less expensive courses, such as business and technology, away from the public universities – enrolments which in the past public universities have used to help cross-subsidise research.

A deep issue in Australian higher education research is the connection between teaching and research. On the one hand no country can afford to fund all of its universities as if they were world-class research intensive institutions. On the other hand, there are those who argue that all university teaching must be informed by research. Moreover, each institution has its own special arguments why it should be recognised as a leading research university (whether or not the facts support such arguments). The collapse of the binary system of higher education in the early 1990s has exacerbated this problem. The introduction of new research performance based funding measures (RTS and IGS) and the Research Quality Framework are designed to concentrate research funding on the research performers. It is too early to tell whether the policies will have the desired effect since a cap has been placed on how much funding individual universities can lose or gain through the application of the policies and the RQF is yet to be implemented.

Paradoxically, despite the intense focus on competition and selectivity in research, diversity remains an important issue for Australian higher education. The revision of the higher education protocols just mentioned is one means of promoting diversity through encouraging the introduction of private providers, particularly at the teaching end of the scale. With respect to comprehensive research universities, the current Minister has gone on record to say that Australia only needs about 12 such institutions. In recent years, there has also been talk that Australia requires one or two so-called ‘world class’ universities, with various members of the Go8 putting up their hand to take on the task.

But so far, the Australian policy environment has been poor with respect to promoting substantial institutional diversity and encouraging institutions to create niche markets. While various research policies, including the RQF (if it ever becomes operational), have been designed to promote competition for research funding, a result of that competition has not been differentiation despite the obvious concentration of research funding in a few universities. The evidence suggest that the competitive research funding environment tends to lead institutions to imitate one another rather than to consciously diversify and seek niche markets (Meek et al 1996). Clearly, some institutions win much more than others in the competition. Nonetheless, all universities see the necessity to play the research funding game, not only to win money but also prestige.

Appropriately, government has instituted a number of policies to boost business investment in R&D. *Mapping Australian Science and Innovation* (DEST 2003a: 367) pointed out that “Australia is the only country in which business funding of research and development as a percentage of GDP is lower than Government funding of research and development as a percentage of GDP”. The Review in a background paper also observed that a key OECD finding is that “rapid growth in research and development is largely driven by increases in business-performed research and development” (AVCC 2003: 10). Given the country’s history of investment in R&D, it is probably necessary to attempt to increase the share coming from business and industry. But this should complement, not diminish, the investment from other sectors, particularly government.

With research policy strongly based on principles of competition, concentration and selectivity, it is hardly surprising that the government would wish to set national research priority areas. The danger here, however, is if funding becomes progressively concentrated in priority areas, innovation may be 'straight jacketed'. This is one of the dilemmas a small country with a limited science base faces. While the nation cannot adequately fund all kinds and aspects of modern research, it must maintain a broad enough science base to participate in advances in knowledge globally. According to the AVCC (2003: 22), "The key issue is plurality: as a nation we need to support a range of research, and do so by a number of different means. Allowing any single approach to dominate would inevitably result in a diminished overall research capacity and a weaker national innovation system. The impact of research prioritisation should be restructured to recognise this fact".

Another aspect of priority setting is the prominence given to science and engineering at the expense of the social sciences and humanities. The present round of priorities gives little more than lip service to the social sciences. Much of the present thinking is based on the assumption that worthwhile research means commercialisation and commercialisation means science and technology. Again, a more balanced approach is necessary. The social sciences have much to add, particularly to the nation's social and cultural prosperity. They also have an important role to play as critic of the environmental and social consequences of scientific and technologically driven development. But with an increasing emphasis on commercialisation, the role of the university of 'speaking truth to power' may be lost sight of. There is some evidence to suggest that this is a significant problem in the USA higher education sector (Newman, et al 2004).

Related to the issue of priority setting is the emphases placed on pure basic research relative to applied and developmental research. Both government and institutional management alike have been very interested in the commercialisation of research outcomes. This has resulted in a shift of funding over the years from pure-basic to applied research. If basic, 'blue-sky' research is progressively diminished, the fountain of ideas and advances in knowledge that feeds other forms of research and technological innovation may dry up as well (AVCC 2003: 7). The emphasis on applied research reflects the concern by both government and institutional leaders that research outcomes are commercialised, which in turn leads to the funding of the type of research most likely to achieve this result. Noting the decline in basic research, the AVCC (2003: 19) warns that "without a strong footing in pure basic research the national innovation system will run out of ideas – or have to import them, at increasing expense, from elsewhere. Secure and substantial investment in basic research is decidedly in the national interest".

Towards the end of 2007, Australians will go to the polls to elect a new Federal government. There are signs that higher education in general and research in particular are receiving a degree of political attention that they have not enjoyed for several years. Adequate funding of higher education along with a more robust debate about the public good purposes of the sector are receiving public scrutiny. Whether this will continue after the election remains to be seen. But hopefully, the full potential of what it means to be a knowledge society will become better appreciated by politicians and the average citizen alike.

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