



**Submission  
to the  
Higher Education Review**

**July 2002**

# HIGHER EDUCATION REVIEW SUBMISSION

## EXECUTIVE SUMMARY

Australia faces a challenge in its efforts to become a knowledge economy. Most if not all other OECD countries are pursuing the same goal. The Australian Government has increased its investment in research and innovation in the past two to three years, but so have most other OECD countries. To ensure that we get the best value from our increased investment and to maintain momentum, Australia needs to increase the commitment in our publicly funded research effort to the following key principles:

- **Excellence and quality** – to invest in research which, through contestability, is determined to be high quality, innovative and internationally competitive.
- **Focus and national priorities** – to provide a critical mass of support for research activities to foster world-class outcomes through a coordinated approach to national priorities.
- **Coordination and partnership** – to coordinate and encourage research and innovation partnerships between universities, research institutions, government, business and the wider community at the local, national and international level.
- **Accountability** – research needs to be carried out within a framework that demonstrates accountability to the government and the community, is transparent, is performance driven and is capable of highlighting the return on investment in research.
- **Efficiency and effectiveness** – funding arrangements need to be as simple as possible to administer and readily intelligible to researchers, institutions, industry and the wider community. Above all else they need to support and promote the highest quality research wherever it is found.

The proposals in this submission address these principles by advocating that Australia increase the share of higher education research funding that is allocated through contestable processes, consistent with the trend in the majority of OECD countries and consistent also with the Government's decision in 1999 to put all health and medical research funding on a contestable basis, by directing block funding for medical research institutes through the contestable processes of the National Health and Medical Research Council (NHMRC).

The overall objective of more contestable funding is to increase the excellence and the quality of research, but improved governance of the national research system is an important secondary objective. Through competitive funding arrangements governments are able to increase accountability for public funds; increase the flexibility of research institutions to adapt to changing environments; and achieve a better inclusion of socio-economic objectives and priorities into the national research agenda.

The Australian Research Council (ARC) strongly believes that the quality of Australia's research system in the future will depend heavily on the degree to which individual researchers; teams and research centres are integrated into networks of research excellence at local, regional, national and international levels. To remain internationally competitive, Australia must build this sort of scale and focus in its research effort and resource this effort at the highest level the nation can afford. The dual system for allocating higher education research funding requires reform to ensure that the contribution of higher education research to Australia's overall R&D

and innovation effort is optimised and that it is capable of delivering the necessary outcomes against the above objectives and principles.

The current dual funding system for university research in Australia involves the allocation of funding by the Commonwealth through two funding streams. The larger stream (some 60% of the total) involves block funding for teaching, research, research training and general operating purposes – this can be expended at the discretion of each university. The second stream involves targeted research grants, provided specifically for research, which are allocated competitively on the basis of qualitative internationally peer-review judged criteria such as those used by the ARC and the NHMRC. The dual system, in the view of the ARC, is an unnecessarily complex system that requires reform.

It is a system which is neither transparent, accountable, effective nor efficient in the allocation of resources, whereas the processes for allocating funds for research and research training should be competitive in nature, as simple as possible to administer and readily intelligible to researchers, institutions, students, industry and the wider community. Above all else, however, we need to be confident that our funding mechanisms are supporting and promoting the highest-quality research wherever it is found. A preliminary analysis conducted by the ARC of the output of publications in 2000 from ARC funded Large Grants indicates that a Commonwealth dollar invested through the ARC results in at least five times more publications than a Commonwealth dollar allocated to university research through non-contestable processes.

This submission proposes a model for reforming the dual funding system for higher education research in Australia. This model involves the allocation of the block funds for university research via a largely fully funded, single, contestable model, through the competitive programs of the ARC and the NHMRC. The direct (including the Chief Investigator salaries) and identifiable indirect costs of the projects and programs of research supported by these bodies would be funded by the responsible agencies, except for those programs which are explicitly designed to leverage contributions from partners, often industry partners, such as the ARC's Linkage scheme or the CRC program. The balance between block and contestable funding for higher education research would change from 60:40 in favour of block funding to approximately 30:70 in favour of contestable funding.

Implementation of this model could be staged, with initially, the ARC and the NHMRC assuming responsibility for the funding of all of the direct costs of the research they sponsor, that is the Chief Investigator salaries and project-specific infrastructure. The indirect costs of the research would continue for the time being to be met by the universities from the remaining research block funding. This would change the balance between block and contestable funding to approximately 40:60 in favour of contestable funding. Stage 2 of the implementation would involve the transfer to the funding agencies of the responsibility and resources for funding the indirect costs of the research they sponsor, taking the balance to 30:70 in favour of contestable funding.

The ARC strongly supports the retention by universities of the capacity to support scholarship, which underpins good teaching and learning outcomes and can also provide the basis for research which is successful in the future in a contestable environment. The ARC also strongly supports the vitally important role regional universities play in supporting the activities and needs of their communities. The proposals in this submission would not exclude any particular university or group of universities from competing for research funding. Universities that manage their resources to build scale and focus in their research effort will be successful in an open competition administered by the ARC and other funding agencies. Success which is based

on fair and open competition, and which has excellence as its key criterion, is more likely to build the type of national research effort which Australia requires to be internationally competitive.

The proposals in this submission would change the way universities organise and resource research. However, in addition to the impact on universities the proposals would also require the ARC to continue to change the way in which it administers competitive schemes. A change in focus, already underway, from short-term grant-getting to investment in long-term strategic research, together with a greater emphasis on the outputs and outcomes from the research, is required. Enhanced efficiency of the granting process, primarily through shorter response times, is also required. This has commenced, with the ARC conducting two rounds of applications for its Linkage scheme in 2002.

Reforms to the granting processes need to provide opportunities for the ARC to invest in the best and most creative researchers with excellent track records to undertake larger, longer-term programs of research. The truly innovative discoveries of high impact often arise in an environment that frees high-quality researchers from the need to deliver short-term results and the constraints of uncertain funding.

The proposals put forward in this submission would lead to a more direct relationship between the funding from government which is intended to support teaching and scholarship, on the one hand, and research, on the other hand. In particular the proposals would allow the government, the higher education sector and the community to have far greater transparency than at present as to taxpayer-funded higher education expenditure. The various signals to universities as to how they receive government funding would be replaced with signals that better align good performance in teaching, scholarship and research with appropriate funding. Rather than weakening the nexus between teaching/scholarship and research, clarification of roles and responsibilities would strengthen the two functions and promote a stronger interaction.

The Government, within the existing research funding envelope, has an opportunity at this time to reform the funding arrangements for university research, in the context of broader sectoral reform, so that the contribution by the sector to Australia's overall R&D and innovation effort is optimised.

### **The Value Proposition**

**Arrangements for allocating public funds for university research should focus on the achievement of world-class research and research training to ensure Australia develops and maintains high-quality and innovative research, which is respected in a global context.**

**Streamlined, reformed and rebalanced structural arrangements that promote excellence, scale, focus and concentration of Australia's higher education research effort through enhanced efficiency, effectiveness, transparency and accountability are vital contributors to achieving the highest-quality research outcomes for Australia.**

## 1. THE CHALLENGE

1.1 The importance to Australia's future of competing as a knowledge economy has been well recognised in public debate, public policy and increased government funding in the past two to three years. Research, innovation and economic performance are intimately linked in the knowledge economy. Research expands our capabilities to solve technical and social problems and it underpins innovation within firms.

1.2 In addition to achieving a competitive level of investment relative to our OECD competitors, there are several critical issues and key principles which Australia needs to continue to pursue in the publicly funded national research effort if we are to maintain the momentum of positioning Australia as a knowledge economy.

These are:

- **Excellence and quality** – to invest in research which, through contestability, is determined to be high quality, innovative and internationally competitive.
- **Focus and national priorities** – to provide a critical mass of support for research and research training activities to foster world-class outcomes through a coordinated approach to national priorities.
- **Coordination and partnership** – to coordinate and encourage research and innovation partnerships between universities, research institutions, government, business and the wider community at the local, national and international level.
- **Accountability** – research needs to be carried out within a framework that demonstrates accountability to government and the community, is transparent, is performance driven and is capable of highlighting the return on investment in research.
- **Efficiency and effectiveness** – funding arrangements need to be as simple as possible to administer and readily intelligible to researchers, institutions, industry and the wider community. Above all else they need to support and promote the highest quality research and research training wherever it is found.

1.3 The Government has demonstrated a high level of confidence in the ARC to deliver high-quality outcomes by doubling its investment, through the ARC, in higher education research. However, if the promise and the contribution made by the higher education sector to Australia's overall R&D and innovation effort are to be optimised, streamlined structural and funding arrangements are required.

### **This Submission**

1.4 This submission addresses these issues and, in the context of the above principles, advocates that Australia increase the share of higher education research and research training funding that is allocated through competitive processes, consistent with the trend in the majority of OECD countries. The overall objective of these contestable and more innovative funding instruments is to increase excellence and the quality of research and research training, but improved governance of the national research system is an important secondary objective. Through competitive funding arrangements governments are able to increase accountability for public funds; increase the flexibility of research institutions to adapt to changing environments; and achieve a better inclusion of socio-economic objectives and priorities into the national research agenda.

1.5 The ARC strongly believes that, in Australia, arrangements for allocating public funds for research should focus on the achievement of world-class research and research training to ensure Australia develops and maintains high-quality and innovative research, which is respected in a global context. Flexible and responsive programs should support the varied needs and opportunities of research. Institutions should be encouraged to concentrate their resources, so as to build critical mass in their particular strengths, thus providing the optimal conditions for maintaining excellence over the long term. Individual researchers and research teams, including research students, should have access to an environment that fosters excellent research.

1.6 The quality of Australia's research system in the future will depend heavily on the degree to which individual researchers, teams and research centres are integrated into networks of research excellence at local, regional, national and international levels. To remain internationally competitive, Australia must build this sort of scale and focus in its research effort and resource this effort at the highest level the nation can afford.

1.7 The proposals in this submission are intended to achieve these objectives. However, in addition to changes to the way universities organise and resource research, the proposals would also require changes in the way the ARC's competitive schemes are administered. A change in focus, already underway, from short-term grant-getting to investment in long-term strategic research, with a greater emphasis on the outputs and outcomes from the research is essential. In addition, enhanced efficiency of the granting process, primarily through shorter response times, would be required. The ARC has commenced this process through the introduction of program grants which provide larger investments over a five-year period.

1.8 A reformed granting process needs to provide opportunities for the ARC to invest in the best and most creative researchers with excellent track records to undertake larger, longer-term programs of research. The truly innovative discoveries of high impact often arise in an environment that frees high-quality researchers from the need to deliver short-term results and the constraints of uncertain funding. To make the necessary adjustments would require implementation of the reforms to be phased.

## **2. THE CONTEXT**

### **Policy Background**

2.1 In 1998, the Commonwealth Minister for Health and Aged Care commissioned a comprehensive review of the state of Australian health and medical research. The report of the review, released in May 1999, entitled *The Virtuous Cycle – Working together for health and medical research*, provided a strategic framework for the development of Australian health and medical research. Following the release of the report, in the 1999-2000 Federal Budget the Government announced that the NHMRC's budget would be doubled over a period of six years, from \$165 million in 1998-99 to more than \$350 million in 2004-05. The increase in funding over six years will total \$614 million.

2.2 In 1999, the Government released a discussion paper *New Knowledge, New Opportunities* which identified significant strengths in Australia's research capacity, but which also identified several deficiencies in the then structure and performance of higher education research and research training. Amongst the deficiencies were that government-funding incentives did not sufficiently encourage diversity and excellence; and that there was too little concentration by institutions on areas of relative strength.

2.3 Subsequently, the Government in its 2000 White Paper *Knowledge and Innovation: A Policy Statement on Research and Research Training* sought *inter alia* to ensure that Australia is able to maintain and develop its research competence and international credibility across a wide range of fields of knowledge; and to secure and strengthen Australia's internationally regarded basic research effort.

2.4 The 2000 White Paper recognised that changes were needed to the way research is funded and organised across the higher education sector and within institutions. The Government indicated that it expected to see greater diversity across the system as some universities focus on achieving international excellence across a wide range of fields, while others focus on excellence in particular strengths, including building on their links with their regions, and assisting their local economies to grow through strategically targeted research. The Government also emphasised that public funding will, through bodies such as the ARC, encourage and support excellence through the competitive allocation of grants for individual investigator-initiated projects on the basis of peer review and through mechanisms which encourage and support collaboration.

2.5 In January 2001, the Government released *Backing Australia's Ability: An Innovation Action Plan for the Future*, which projected an additional \$2.9 billion in government expenditure on R&D over five years with approximately half of it, \$1.5 billion, directed to research in the higher education sector. The largest single funding element is an additional \$736 million over five years to double the funding for national competitive research grants administered by the ARC over the five-year period 2002–06. In announcing the additional funding, the Government indicated its intention to direct some of the funding into priority areas of research in which Australia enjoys or seeks to establish a competitive advantage. The additional government funding of almost \$3 billion is expected to leverage an additional \$6 billion in expenditure on R&D over the same period.

2.6 On 25 January 2002, the Minister for Education, Science and Training issued a direction to the ARC (under subsection 7 (1) of the *Australian Research Council Act 2001*) to target 33 per cent of funding under the ARC's National Competitive Grants Program (NCGP) in the 2003 funding round to four priority areas – Nano-and Bio-materials; Genome/Phenome Research; Complex/Intelligent Systems; and Photon Science and Technology.

2.7 In May 2002, the Government announced its intention, in the context of *Backing Australia's Ability*, to develop a set of national research priorities in consultation with industry, universities, research agencies and the wider community. An issues paper proposes that priorities be established which are based on broad themes underpinned by specific areas of research. These priorities would identify areas of strength, opportunity or need for Australia and encompass Australia's key public research agencies and funding bodies.

### **Higher Education Research – the International Context**

2.8 In 2000 (the latest figures available), the level of Australia's expenditure in higher education research (HERD), as a percentage of GDP, at 6<sup>th</sup> out of 17 countries, compared favourably with that for Germany (8<sup>th</sup>), the US (9<sup>th</sup>), and France (10<sup>th</sup>), but below that for Canada (1<sup>st</sup>), and Finland (2<sup>nd</sup>). However, it declined from 0.43 per cent of GDP in 1998 to 0.41 per cent in 2000 (Table 1, Attachment A).

2.9 The relatively high level of HERD as a proportion of GDP for Australia (6<sup>th</sup> out of 17 countries) reflects the relatively high level of public expenditure on R&D for Australia as a whole. However, there is a relatively low level of private or business expenditure on R&D (BERD) in Australia (13<sup>th</sup> out of 17 countries in 1999-2000) (Table 2, Attachment A).

2.10 Most OECD economies have increased public funding for research during the last few years and intend to further increase their funding in the future. However, with the emergence of the knowledge economy, a demand for better inclusion of socio-economic objectives in research agendas, an increasing internationalisation of research facilitated by the new information and communications technologies and the emergence of new multidisciplinary research areas, such as biotechnology, several deficiencies in the traditional funding schemes have become evident.

2.11 There is a view among OECD countries that previous funding incentives do not sufficiently encourage excellence, that they tend to create a large volume of mediocre researchers and research results and that there is insufficient concentration by institutions on their relative strengths but rather an involvement in a wide variety of research areas. In response, most OECD countries are allocating an increased share of public funding for research to specific programs, such as centres of excellence, and also to priorities, focused on performance-based and competitive funding instruments, such as those used by the ARC and the NHMRC. 16 of 22 OECD economies have increased the share of competitive funding or this process is underway.<sup>1</sup> Correspondingly this has led to a decline in institutional or block funding in favour of more funding distributed through competitive processes, contracts and grants for specific projects.

2.12 Consistent with this trend the Australian Government in 1999 implemented one of the key recommendations of the Wills Review of Health and Medical Research,<sup>2</sup> that block funding for the medical research institutes be progressively de-blocked and the funding allocated through the competitive processes of the NHMRC. Implementation of the proposals in this paper would be an extension to the ARC of existing government policy on the allocation of funding for health and medical research through the NHMRC. It is also consistent with the transfer, commencing in 2002, of a proportion of the block grant from the Institute of Advanced Studies at the Australian National University to the ARC and the NHMRC for allocation as part of their competitive grants processes and the corresponding eligibility of IAS researchers to receive ARC and NHMRC funding.

2.13 As noted above, the overall objective of these more competitive and innovative funding instruments is to increase excellence and the quality of research, but improved governance of the national research system is an important secondary objective. Through competitive funding arrangements, governments are able to increase accountability for public funds; increase the flexibility of research institutions to adapt to changing environments; and achieve a better alignment of the national research agenda with socio-economic objectives and priorities.

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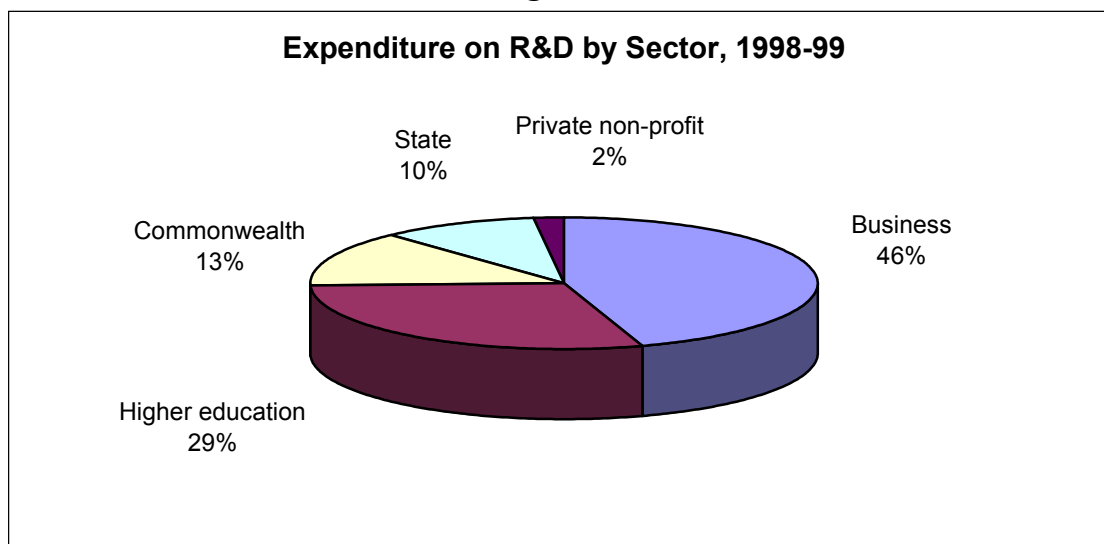
<sup>1</sup> OECD unpublished background papers – see References for details

<sup>2</sup> Health and Medical Research Strategic Review Committee, *The Virtuous Cycle: Working for Health and Medical Research*, Final Report, (P.Wills, Chair), Canberra, 1999.

## Higher Education Research in Australia

2.14 Universities are major players in the national innovation system – both in performing research and training skilled personnel. The higher education sector represents 29 per cent of the national R&D effort and accounts for 84 per cent of basic research, and 49 per cent of strategic basic research. Universities are providers of research training, which underpins Australia’s R&D effort.

Diagram 1



Source: Australian Bureau of Statistics, *Research and Experimental Development All-Sector Summary, 1998-99*

2.15 Australia makes close to 3 per cent of the world’s contributions to science (against a share of the world’s population of 0.3 per cent and of world trade of 1 per cent), and it is imperative that Australia accesses the remaining 97 per cent if we are to remain competitive. For a country such as Australia, with a small population, a highly developed and respected research community provides an essential channel of information on and access to research developments in other countries and provides a gateway for international business investment. Australia’s influence in international forums is enhanced by its research standing.

2.16 By international standards, Australia has a well-respected research capability in its universities, although there is a relative decline in citation indices for Australian research publications in recent years which is of growing concern. In 2001 Linda Butler observed that Australia’s share of the major international scientific journal literature has increased significantly in the 1990s from 2.2 per cent to nearly 2.8 per cent and that much of the increased publication share comes from the university sector. However, overall and to a greater extent in some fields, Australia’s relative citation impact is falling further behind that of most other comparable OECD countries. According to Butler there are indications that Australia’s relative citation impact may have been adversely affected by the push to evaluate research on the basis of the quantity of publications, with little reference to the quality of those publications.<sup>3</sup>

2.17 A preliminary analysis conducted by the ARC of the output of publications in 2000 from ARC funded Large Grants indicates that a Commonwealth dollar invested through the ARC results in at least five times more publications than a Commonwealth dollar allocated to university research through non-contestable processes.<sup>4</sup>

<sup>3</sup> Butler, L., *Monitoring Australia’s Scientific Research*, Australian Academy of Science, Canberra, 2001, p. ix.

<sup>4</sup> Unpublished analysis using 2000 ARC output data and 2000 sector wide publications data - *Crossroads*, p 54.

## High Quality Research and Economic Development – A Direct Link

2.18 Recent evidence from studies carried out in the US and Australia by Narin *et al*, which link patents – as indicators of innovative activity in the economy – to publicly funded research, indicates not only the economic importance of publicly funded basic research but also the continuing importance of traditional methods of disseminating the results of that research, through publications in academic journals.

2.19 A study carried out by Narin in 1997,<sup>5</sup> which examined 397,000 patents in five industrial countries, found that:

- 73 per cent of the patents cite publicly funded research; and
- 52 per cent cite university research funded through agencies such as the ARC.

2.20 Notwithstanding the relatively low levels of Australian patents, a similar study for Australia by Narin *et al* and published jointly by the ARC and CSIRO in 2000 found an even higher relationship between patents and high-quality publicly funded research:

- 97 per cent of citations in Australian-invented US patents are to papers authored at publicly funded institutions - 45.5 per cent to papers authored at universities;
- Of all Australian-authored scientific research papers cited in 1988–97 US patents, the ARC and the NHMRC are the individual organisations most frequently acknowledged in those papers; and
- The only countries which had higher science-linked patents than Australia are Israel, the USA and Canada.<sup>6</sup>

2.21 A 2000 study by Chi Research<sup>7</sup> found that the papers cited in US patents are drawn preferentially from the most highly cited, highest-quality research. More specifically, a U.S. paper in the most highly cited 1% of scientific papers is 9 times more likely to be cited in a patent than is a randomly chosen U.S. paper.

2.22 A policy conclusion, which can be drawn from these data, is that scientific excellence and innovation are closely linked. The fact that highly cited papers are much more likely to be cited in patents suggests that scientific excellence and contributions to innovation go hand in hand. In other words agencies like the ARC and the NHMRC, which support the best research, will support the research most likely to contribute to innovation. Conversely when mediocre research is supported, for whatever reason, neither science nor innovation is likely to gain much direct benefit. This is true across all scientific fields and in both basic and applied research. The results imply that governments and private sector companies that fund the best science have the best chance of reaping technological benefit.

### 3. CURRENT FUNDING MECHANISMS

3.1 The Commonwealth is providing a total of \$4.7 billion funding support for R&D in 2001-02. This includes programs directed at supporting R&D in industry as well as block funding for public research organisations such as CSIRO. \$2.6 billion of this funding is for university research, the majority of which is allocated through the Education, Science and Training portfolio.

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<sup>5</sup> Narin, F, 1997, *The Linkage Between Patents and the Scientific Literature*.

<sup>6</sup> Narin, F. et al, *Inventing Our Future: The link between Australian patenting and basic science*, ARC and CSIRO, Canberra, 2000.

<sup>7</sup> *CHI's Research, Vol. VIII, No.1 - July 2000* (<<http://www.chiresearch.com/docs/nltviii1.pdf>>).



subject directly to any qualitative or quantitative research-related performance criteria. It is driven largely by the enrolment patterns of undergraduate students.

3.4 The Government's 1999 White Paper on research and research training *Knowledge and Innovation* streamlined the comprehensive program of peer-reviewed competitive grants, restructured the ARC, and introduced a formula-driven, performance-based system for block funding of university research and research training activities, administered by the then DETYA. A fresh look at these arrangements is required to ensure that it is capable of delivering the necessary outcomes against the key principles articulated above.

### **Responsibility and Accountability for Research Funding and Outcomes**

3.5 Under the dual system of research funding, agencies such as the ARC and the NHMRC cover only part of the direct costs of the projects, programs, centres and fellowships they support, and very little or none of the indirect costs. Most significantly, the grants and centres programs do not fund the salaries of Chief Investigators, which often are a significant component of the full costs of a research activity.

3.6 The ARC and the NHMRC provide none of the project-specific infrastructure, nor the overhead infrastructure which is needed to back up the research grants they provide. In universities, this is funded by universities from their operating and block grants and other sources of income. This shared funding arrangement has been a source of ongoing tension in the system. Implicitly there is considerable scope for cost shifting between the parties and for hidden cross-subsidies from university funds to externally funded research and vice versa. There is also considerable scope for tension if the two funding streams don't rise or fall in appropriate proportion to each other and with corresponding timing. Such an imbalance can lead to compromised outcomes for both the research and teaching functions of universities.

3.7 Researchers supported by the ARC frequently express their concerns that adequate infrastructure support, particularly dedicated time for the Chief Investigator to spend on the research project, is either not available to them or not sufficiently available to avoid compromising the objectives and expected outcomes from their ARC-sponsored research. It is primarily through time constraints as well as through inadequate physical infrastructure support that university researchers experience the consequences of a poorly functioning dual funding system. The ARC believes that this situation prevents the benefits of competitive funding being maximised for researchers, their institutions and the overall national research effort.

3.8 The level of the universities' overall operating grant and the demands upon it are central issues in relation to research infrastructure. The capacity of university operating grants in Australia to support research and research infrastructure has been affected adversely by factors that have little to do with research, such as increases in the cost of teaching, underfunded over-enrolment etc.

3.9 In a simple model of university research funding, agencies such as the ARC and the NHMRC, Commonwealth programs such as R&D Start and non-Commonwealth programs such as the Australian Coal Association Research Program would fund the full costs of the research they sponsor, and the operating grant would be the source of funds for undergraduate and postgraduate teaching (excluding higher degrees by research) and "departmental" research. Departmental research, in the US meaning of the term, means research, development and scholarly activities that are not regarded, in the US system, as organised research and are consequently not separately budgeted and accounted for. This type of research is considered in

the American system to be part of the instruction, or teaching, function of the institution and in Australia is often referred to as scholarship. Some other countries, such as Denmark and Korea, separate their university funding for teaching and research or, like Sweden, pay separately for undergraduate studies.

3.10 Part of the complexity surrounding issues related to university research infrastructure is because infrastructure is shared by the teaching and research functions, which interact closely at many levels. It is very unclear in the dual funding system precisely where the division of funding responsibility falls between the undergraduate student-related stream and the research granting agencies. Institutions may fail to support grant-funded activities to the level necessary to ensure that research has the maximum chance of achieving successful results, preferring to utilise discretionary funds to meet their own priorities. This complexity, at the very least, puts a premium on the coherent and transparent costing and pricing of externally sponsored research.

3.11 Commencing in 2001, the ARC requires applicants to fully cost their research proposals by indicating the full cost of the proposed research and to identify, alongside the funding being sought from the ARC, which of the remaining costs of the research are being provided by the host university or other provider, such as an industry partner. For ARC grants commencing in 2002, the ARC has undertaken an analysis of the costing data provided by applicants and their universities in their 2001 applications. The data indicate that the ARC is currently funding only about 34 per cent of the overall costs of the research it sponsors (approximately 38 per cent for the Discovery-Projects program and 22 per cent for the Linkage-Projects program.) Universities are funding approximately 47 per cent of the overall costs, industry 11% (primarily through the Linkage-Projects program) and other sources 8 per cent. A more detailed analysis of these data is covered in the paragraphs below.

### **Direct Costs – Chief Investigator Salaries**

3.12 The ARC is currently funding approximately 52 per cent of the direct costs of the research it sponsors (approximately 60 per cent for the Discovery-Projects program compared with the Linkage-Projects program of approximately 33 per cent, due to the industry contribution for the Linkage program). As indicated above the main direct cost component the ARC does not currently fund is the salaries of the Chief Investigators. This cost is met by the universities from General University Funds (GUF), most likely from the operating grant provided to each university by the Government, which is based on the institution's undergraduate student profile. Using the budget data provided by universities to the ARC for those ARC grants for which funding is approved to commence in 2002, this amounts to some \$47 million in 2002 for the 2002 cohort of grants and \$170 million over the five-year period 2002–2006 for these grants. Typically it is about 0.2 to 0.3 of the Chief Investigator's time.

3.13 If this amount, and the associated pipeline funding, were transferred progressively to the ARC to enable it to fund the time of ARC Chief Investigators as part of its responsibility for the funding of the highest-quality competitive research, the ARC, based on 2002 data, would be providing approximately 75 per cent of the direct costs of the research its sponsors (85 per cent under the Discovery-Projects program and approximately 49 per cent for the Linkage-Projects program).

3.14 This funding of ARC Chief Investigator's time by the ARC would enhance the transparency and accountability for the funding of the direct costs of ARC-sponsored university research in Australia. It would also improve the efficiency and effectiveness of ARC-sponsored research by providing adequately funded grants to the highest-quality university research in

Australia, ensuring that the proposed work can be accomplished as planned and that the Government's return on its investment is maximised.

### **Direct Costs - Project-specific Infrastructure**

3.15 Under current funding arrangements, aside from the Chief Investigator's time, there are two levels of infrastructure support – project-specific infrastructure and overhead infrastructure, such as accommodation, libraries, laboratories, animal houses etc. Project-specific infrastructure is provided to universities through the Research Infrastructure Block Grants Scheme (RIBG) in proportion to the success of each university in winning national competitive grants from the ARC, the NHMRC, the Rural R&D Corporations, the Australian Coal Research Board etc. There are anomalies in this arrangement in that research providers other than universities, such as museums, which are eligible for ARC funding, and medical research institutes, which are eligible for NHMRC funding, are not eligible to receive RIBG. ARC funding makes up approximately half of the base eligible for RIBG funding, which in 2002 totals some \$114 million.

3.16 Universities do not use RIBG solely, or perhaps even predominantly, to provide infrastructure for national competitive grants research sponsored by agencies such as the ARC and the NHMRC. Indeed, RIBG funding in any one year is derived from the success of the university in winning national competitive grants for the previous two years. That is, the funding lags by at least one year. An unpublished survey of universities by the consultants Phillips Curran in 1998 noted that only three of the 28 universities which participated in the survey reported distributing RIBG income solely on an "as earned" basis, that is RIBG funds directly supported national competitive grants in those universities. Most of the time, under current funding arrangements, these two parts of the funding system (competitive grants and RIBG funding) operate independently of each other. It is this situation which gives rise to many of the problems referred to in paragraph 3.7 above.

3.17 Under current arrangements, responsibility for RIBG is spread across several different government agencies and departments. Funding under RIBG amounts to approximately 20 cents in the dollar relative to the amount of national competitive grants funding. Should the funding for Chief Investigator salaries be included in the agencies' grants, as discussed above, this ratio, in the absence of additional funding for RIBG, would decline and it is not clear which department or agency should be responsible for ensuring that it is maintained at an adequate level. An alternative approach would be to transfer this project-related infrastructure funding directly to the agencies responsible for allocating national competitive grants and fold the funding directly into the grants. In this way the agencies would be responsible for ensuring that project-related infrastructure is adequate to ensure successful outcomes from the research they fund.

3.18 As in the proposal to include Chief Investigator salaries in ARC grants, this proposal to include the Commonwealth's contribution to project-specific infrastructure in the grants of agencies such as the ARC, the NHMRC, the Rural R&D Corporations and through other Commonwealth and non-Commonwealth granting programs would improve the transparency and accountability for the funding and, notwithstanding the low level of the infrastructure funding in absolute terms, ensure that the dual funding system in Australia works more efficiently and effectively by delivering improved outcomes for the highest-quality university research in Australia, ensuring that the Government's return on its investment is maximised.

## **Indirect Costs**

3.19 Under current funding arrangements the ARC makes no contribution to the indirect costs of the research it sponsors. This funding is provided by the universities from the block grants identified in Table 3. From the budget data the ARC holds for the 2002 funding round of Discovery-Projects and Linkage-Projects grants, this funding is some \$96 million for the 2002 cohort of ARC grants and a total of \$330 million for these grants for the five-year period 2002–06. If this amount, and the associated pipeline funding, were transferred progressively to the ARC for distribution as part of its responsibility for the funding of the highest-quality competitive research, the ARC would be providing approximately 91 per cent of the indirect costs of the research its sponsors under the Discovery-Projects program and approximately 66 per cent for the Linkage-Projects program.

3.20 Under this arrangement, universities would continue to fund high-level generic infrastructure which supports both the teaching and research function, and the type of research infrastructure funded under three additional Commonwealth competitive research infrastructure programs. The ARC's Linkage Infrastructure Equipment and Facilities (LIEF) scheme (\$25 million per year), DEST's Systemic Research Infrastructure Grants (\$56 million over four years for funding commencing in 2002 rising in total to \$276 million over five years), and the Major National Research Facilities (MNRF) program (\$155 million). These infrastructure funds are allocated on a competitive basis, and on the advice of an ongoing or ad hoc expert advisory body. The objectives of all three schemes are similar and consideration could be given in the first instance to better coordination within the DEST portfolio between them, with a view to their rationalisation in the future.

## **Full costs**

3.21 In summary, based on figures for the 2002 round of grants, if the ARC were to assume responsibility for funding both the direct (that is the salaries of the Chief Investigators and the project-specific infrastructure currently funded through the RIBG program) and the indirect costs of the research it sponsors, it would be funding approximately 78 per cent of the full costs of the research ( 87 per cent for Discovery-Projects and 54 per cent for Linkage-Projects). The balance of funding, particularly for the Linkage-Projects program, would be contributed by industry and other partners.

3.22 In addition to the public policy benefits cited above of enhanced transparency and accountability for the funding of university research, the adoption by the ARC of a full funding approach to the research it sponsors would result in enhanced coordination of people, projects and infrastructure, which would build critical mass and focus the national research effort, particularly in areas of national priority.

## **International Perspectives**

3.23 The ARC's and the NHMRC's international peers, the leading research agencies in the US (the National Science Foundation (NSF), the National Institutes of Health (NIH)) as well as the research funding councils in Finland and Denmark, meet the direct costs of the research that they sponsor. The salary component for the Chief Investigator or equivalent, is included in the agencies' overall allocation from government. This funding component in turn forms part of the research budget for the projects and programs funded by the research agencies.

3.24 The UK Research Councils pay a contribution of 46 per cent of the direct staff costs within project grants to meet the overhead or indirect costs of the research they sponsor and the NSF and NIH reimburse universities for the overhead costs of the research they sponsor by negotiating with each university, with the average amongst top research institutions being more than 50 per cent. The research funding councils in Finland and Denmark also meet the cost of the overheads of the research they sponsor. By comparison, as indicated above, Australian universities receive approximately 20 cents in the dollar for the project-related infrastructure costs of the research funded by agencies such as the ARC and the NHMRC.

3.25 In their report *Academic Work in the Twenty-first Century*, Coaldrake and Stedman<sup>8</sup> make the observation that some universities are moving to academic calendars based on two publicly funded semesters plus a third semester, usually over summer, the latter being predominantly based on fee-paying arrangements. They suggest that this trend allows for the possibility of Australian universities adapting the semester-based appointment model from the US, where many academic staff are engaged on a nine-month basis which holds them to undertake scholarly work for the university only during the two main semesters. Staff are then free to pursue consultancies or undertake additional teaching or undertake contract research for industry or research funded by agencies such as the ARC and the NHMRC for the remainder of the academic year.

3.26 In its report *Research in the National Interest: Commercialising University Research in Australia*,<sup>9</sup> published in 2000, the ARC proposed that a structural option for facilitating collaboration between universities and industry could be the introduction in Australia of the above practice in American universities of allowing staff to earn funds above their normal salary for up to three months each year. The report observed that the practice of championing the commercialisation of their research is made easier for American researchers by the fact that the route back to the university is easier than in Australia.

3.27 Notwithstanding the challenge of implementing this approach, there is little doubt, based on the American experience, that the flexibility it affords to staff to supplement their earnings through a number of ways assists to establish crucial links with industry. Integral to implementing this approach in Australia is, as discussed above, the transfer of the proportion of the operating grant, which can be attributed to the salaries of the chief investigators on grants, to the agencies for funding directly the salaries of the Chief Investigators in the projects they support.

3.28 A more cost-targeted approach such as this is more likely to promote the payment of internationally competitive salaries to Australia's best university researchers, than the current arrangements whereby in universities there is insufficient individual salary differentiation on the basis of research and other performance measures. The ARC has benchmarked the salary levels of the researchers it funds on a full-time basis through its various fellowship schemes, at the highest level nationally and at an internationally competitive level. For example, Australia's premier research fellowship, the Federation Fellowship, pays salaries which are highly attractive in international terms and which enable Australia to address the brain drain by retaining top Australian researchers, as well as attracting expatriate and overseas researchers.

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<sup>8</sup> Coaldrake, P. and Stedman, L., *Academic Work in the Twenty-First Century*, Department of Education, Training and Youth Affairs, Canberra, 1999.

<sup>9</sup> ARC, *Research in the National Interest: Commercialising University Research in Australia*, Canberra, 2000.

3.29 Above all, as Coaldrake and Stedman observe, we need to be able to harness the full potential of the knowledge and expertise available to, as well as within, our universities to create new knowledge and solve problems, and enable those individuals and teams of researchers to receive recognition and reward for doing so.

## **4. CONCLUSIONS**

### **Reforming the Dual Funding System**

4.1 The dual funding system for university research in Australia, which is represented diagrammatically in Table 3, is, in the view of the ARC, an unnecessarily complex system. On one side there are contestable national competitive grants, allocated on the basis of an internationally benchmarked system of peer assessment. On the other side there are block-granting schemes, which are allocated by DEST on the basis of formulae comprising quantitative performance indicators or, in the case of the operating grant, on the basis of the enrolment patterns of undergraduate students. Overlaid is a split in responsibilities for funding of project-specific infrastructure and the direct and indirect costs of competitively funded research.

4.2 It is a system which is neither transparent, accountable, effective nor efficient in the allocation of resources, whereas the processes for allocating funds for research and research training should be competitive in nature, as simple as possible to administer and readily intelligible to researchers, institutions, students, industry and the wider community. Taxpayers should be able to identify how public funds have been used and to what effect. The true costs of research and responsibility for meeting those costs should be apparent. Above all else, however, we need to be confident that our funding mechanisms are supporting and promoting the highest-quality research wherever it is found.

### **A Strategy for Reform**

4.3 It is important to assess any strategy for reform against the key principles laid out at the beginning of this submission. That is, in addressing the weaknesses in the current arrangements it is essential that we advance our organisational arrangements in a way which also advances Australia's capacity to build scale, focus and the all important linkages which are the key to developing a vibrant and productive innovation system and to international competitiveness.

4.4 The balance in the national system for funding university research between competitive, peer-reviewed and internationally benchmarked research on the one hand and research which has not been exposed to these quality focussed processes, on the other hand, is the key focus of this submission. The current balance is approximately 60:40 in favour of block funding.

### *A Single Contestable Funding System*

4.5 In the ARC's view, the most effective way to reform the dual funding system for university research would be to allocate the Commonwealth funds through a largely fully funded, single, contestable model. That is, the major part of the annual university block funding identified in Table 3 (excluding the Research Training Scheme) would be allocated through competitive programs such as those of the ARC and the NHMRC. The direct (including the Chief Investigator salaries) and indirect costs of the projects and programs of research supported by these bodies would be funded by the responsible agency, except for those programs, which are explicitly designed to leverage contributions from partners, often industry partners, such as the ARC's Linkage scheme or the CRC program. If, in the context of comparable international

practice (discussed in paragraph 3.24 above)<sup>10</sup> the identifiable indirect costs, say 50 per cent, were funded by the ARC, the balance between block and contestable funding would change from 60:40 in favour of block funding to approximately 30:70 in favour of contestable funding.

4.6 A funding system balance such as this would significantly improve the efficiency and effectiveness of higher education research in Australia through enhanced transparency and accountability arrangements. This approach would also significantly improve the quality of higher education research in Australia, by subjecting it to the contestable processes of agencies such as the ARC and the NHMRC and also by linking it directly to the national research effort through the Government's designated priority areas for research.

4.7 As indicated above, there is a view among OECD countries that current and previous funding incentives do not sufficiently encourage excellence, that they tend to create a large volume of mediocre researchers and research results and that there is insufficient concentration by institutions on their relative strengths, but rather an involvement in a wide variety of research areas. In response, most OECD countries are allocating an increased share of public funding for research to specific programs, such as centres of excellence and also to priorities, focused on performance-based and competitive funding instruments, such as those used by the ARC. 16 of 22 OECD economies have increased the share of competitive funding or this process is underway.<sup>8</sup> Correspondingly this has led to a decline in institutional or block funding in favour of more funding through contracts and grants for specific projects.

4.8 The overall objective of these more contestable and innovative funding instruments is to increase excellence and the quality of research, but improved governance of the national research system is an important secondary objective. Through competitive funding arrangements, governments are able to increase accountability for public funds; increase the flexibility of research institutions to adapt to changing environments; and achieve a better inclusion of socio-economic objectives and priorities (inclusive of the humanities and social sciences) into the national research agenda. As demonstrated above through the work of Narin, agencies like the ARC and the NHMRC, which support the best research, will support the research most likely to contribute to innovation.

4.9 In Australia, arrangements for allocating public funds for research should focus on the achievement of world-class research and research training to ensure that Australia develops and maintains high-quality and innovative research, which is respected in a global context. Flexible and responsive programs should support the varied needs and opportunities of research. Institutions should be encouraged to concentrate their resources, so as to build a critical mass in their particular strengths, thus providing the optimal conditions for maintaining excellence over the long term. Individual researchers and research teams, including postgraduate research students, should have access to an environment that fosters excellent research.

4.10 However, as foreshadowed above a move from short-term grant-getting to investment in long-term strategic research, with a greater emphasis on the outputs and outcomes from the research as well as enhanced efficiency of the granting process, is required. The ARC has commenced this process through the introduction of program grants, which provide larger investments over a five-year period.

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<sup>10</sup> The NSF reimburses universities for the overhead costs of the research they sponsor by negotiating a level with each university, with the average amongst top research institutions being more than 50 per cent. This approach recognises that some infrastructure in universities is shared between the teaching and research functions.

<sup>8</sup> OECD, *op cit*.

4.11 Flexible opportunities for researchers to undertake activities along a continuum from relatively small, discrete research projects through to longer-term team-based programs are vital for discoveries and innovation to occur. Flexibility of funding options enables the needs of researchers in different disciplines and at different stages of their careers to be met, which is important for nurturing early-career researchers and to enable highly innovative and promising ideas and techniques to be tested. Opportunities are also required for the best and most creative researchers with excellent track records to undertake larger, longer-term programs of research. The truly innovative discoveries of high impact often arise in an environment that frees high-quality researchers from the need to deliver short-term results and the constraints of uncertain funding.

4.12 The quality of Australia's research system in the future will depend heavily on the degree to which individual researchers; teams and research centres are integrated into networks of research excellence at local, regional, national and international levels. To remain internationally competitive, Australia must build scale and focus in its research effort and resource this effort at the highest level the nation can afford.

4.13 Reforming the system for funding university research by changing the balance between competitive and block funding and improving the administration of the competitive programs would also provide an opportunity to widen the access of Government-funded Research Agencies (GFRAs), such as CSIRO, ANSTO and AIMS to the competitively funded programs of the ARC. As part of the implementation of the Wills Review of Health and Medical Research,<sup>9</sup> this approach has already been adopted for the block-funded medical research institutes and the NHMRC. The Chief Scientist observed, when discussing this issue in his report *A Chance to Change*, that it is always better to widen the scope of competition than to operate a series of non-competing groups. The Review goes on to note that such a move should be on the same basis as that by which the block-funded medical research institutes gained access to NHMRC grants, viz, an entry fee would be paid by the GFRAs to the ARC.<sup>10</sup> A model for achieving this has recently been developed for the entry of the ANU's block-funded Institute of Advanced Studies to the ARC's schemes. A transfer of funding from these block-funded organisations to the competitive schemes would further improve the balance in Australia's overall R&D funding arrangements in favour of contestability.

4.14 Initially, the reforms proposed in this submission need not impact dramatically on particular universities, as the major change they would experience would be that the payment of the direct and indirect costs for research funded by agencies such as the ARC and the NHMRC would be made in an integrated way by these agencies, rather than by DEST. Over time, however, accountability expectations by the agencies would require the universities to make internal adjustments to how they resource externally funded research. Given the interconnectedness of university funding arrangements for teaching and research, there would be resource implications for the universities in adjusting to the new arrangements. The ARC strongly supports the retention by the universities of the capacity to support scholarship, which underpins good teaching and learning outcomes and can also provide the basis for research which is successful in the future in a contestable environment. The ARC recognises that the concept of scholarship is a complex one, but agrees with the statement in a discussion paper released recently by the Minister for Education, Science and Training, Dr Nelson, that "although scholarship is related to research, it can be distinguished from research."<sup>11</sup>

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<sup>9</sup> Health and Medical Research Strategic Review Committee, *op cit*.

<sup>10</sup> Chief Scientist, *A Chance to Change – Final Report*, Canberra, 2000.

<sup>11</sup> DEST, *Striving for Quality: learning, teaching and scholarship*, Canberra, June 2002.

4.15 The proposals in this submission would not exclude any particular university or group of universities from competing for research funding. Universities that manage their resources to build scale and focus in their research effort will be successful in an open competition administered by the ARC and other funding agencies. Success which is based on fair and open competition, and which has excellence as its key criterion, is more likely to build the type of national research effort which Australia requires to be internationally competitive in the knowledge economy.

4.16 The ARC strongly endorses the vitally important role regional universities play in supporting the activities and needs of their communities. In *Higher Education at the Crossroads*, the Ministerial Discussion Paper which forms the context for the current review of higher education, Dr Nelson expressed the view that “Universities could become a mechanism for ensuring Australia’s regional communities are not by-passed by the knowledge economy by offering technology and expertise to both community members and businesses to increase competitiveness and sustainability.”<sup>12</sup>

4.17 An example of the benefits which can accrue to universities which focus their research effort on building scale and mass is provided by the Centre for Plant Conservation Genetics at Southern Cross University. The Centre, which was established in 1996, provides research and commercial services in plant gene characterisation, genetic fingerprinting technology and genetic transformation. Since its inception, the Centre has attracted over \$10 million in external research grants, including from the ARC, and has a staff of over 40. It has, through its innovative approaches, developed a growing portfolio of strategic alliances with industry bodies and companies to conduct contract and collaborative research and development in plant biotechnology. The Centre has been a key player in the establishment by Southern Cross University of the “Cellulose Valley” concept, incorporating the Cellulose Valley Technology Park adjacent to the Lismore campus of the University.

4.18 The ARC believes that there is a need for a national development fund to focus the development of intellectual, social and physical capital in regional areas of Australia. However, this fund must meet the key principles set out at the beginning of this submission, that is excellence through contestability, focus, coordination, accountability and efficiency and effectiveness. It would be, therefore, optimally incorporated into the programs and responsibilities of the funding agencies. A useful example is provided by the initiative which was announced by the Government in *Knowledge and Innovation* and which came into effect for the first time in 2001, whereby 20 per cent of new funding under the ARC’s Linkage-Projects program is targeted to research that directly benefits regional and rural Australian communities. In 2001, over \$27 million was provided to support 216 collaborative research projects of benefit to regional and rural communities.

4.19 The proposals put forward in this submission would lead to a more direct relationship between the funding from government which is intended to support teaching and scholarship on the one hand and research on the other hand. In particular the proposals would allow the Government, the higher education sector and the community to have far greater transparency than at present as to taxpayer-funded higher education expenditure. The various signals to universities as to how they receive government funding would be replaced with signals that better align good performance in teaching, scholarship and research with appropriate funding. Rather than weakening the nexus between teaching/scholarship and research, clarification of roles and responsibilities would strengthen the two functions and promote a stronger interaction.

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<sup>12</sup> DEST, *Higher Education at the Crossroads*, Canberra, April 2002.

## **Implementation**

4.20 The introduction of a single contestable funding system for university research in Australia would need to be phased, not only to smooth the impact of the changes on the universities, their operations and on researchers, but also to provide the ARC time to reform its procedures. The earliest the ARC could begin to implement this model would be for funding in 2005.

4.21 The first step in implementing the reforms would be for the ARC to assume responsibility for the funding of all of the direct costs of the research it sponsors, that is, to include in the funding agencies' grants, the Chief Investigator salaries and project-specific infrastructure, currently funded through the RIBG program. This step would rebalance the system in favour of contestability by changing the current balance from 40:60 to approximately 60:40 in favour of contestability (assuming all else stays the same). For the time being the indirect costs of the research would continue to be met by the universities from the remaining block funding, which would mean the retention, during a transition period, of the dual system for funding university research. Implementation of the second stage, that is, a single contestable funding system for university research in Australia should follow as soon as possible after the completion of the first phase. The precise timing would need to be negotiated by the parties, but should be without delay so that the reforms to the structure and functioning of Australia's innovation system can enable Australia to compete internationally in reaping the full benefits of the knowledge economy.

4.22 The Government, within the existing funding envelope for research, has an opportunity at this time to reform the funding arrangements for university research in the context of broader sectoral reform so that the contribution by the sector to Australia's overall R&D and innovation effort is optimised. Streamlined, reformed and rebalanced structural arrangements, which promote the highest-quality outcomes through enhanced efficiency, effectiveness, transparency, accountability and greater focus are important contributors to achieving better higher education research outcomes for Australia. Investment in research, particularly basic research in which universities excel, and in the infrastructure to support it, is an outstanding case – perhaps the most outstanding case – of intellectual infrastructure which will generate major returns to the nation from public investment.

**Table 1**  
**Higher Education Research and Development (HERD)**  
**as a % of GDP**

Country	1998 %	2000 %
Canada	0.49	0.60
Finland	0.57	0.59
Netherlands	0.53	na
Iceland	0.51	na
Japan	0.44	na
<b>Australia</b>	<b>0.43</b>	<b>0.41</b>
Denmark	0.41	na
Germany	0.40	0.40
USA	0.37	0.37
France	0.38	0.36
UK	0.36	na
Spain	0.27	0.27
Ireland	0.26	na
Italy	0.25	na
Poland	0.20	0.22
Hungary	0.17	0.20
Czech Republic	0.12	0.19

Source: ABS Bulletin 8111.0 Research and Experimental Development, April 2002

**Table 2**  
**BERD as a % of GDP**

Country	1998-99	1999-2000
Finland	1.94	2.18
Japan	2.17	2.15
USA	1.94	2.00
Korea	1.79	1.76
Germany	1.57	1.69
France	1.36	1.37
UK	1.20	1.27
Denmark	1.32	1.25
Netherlands	1.06	1.13
Iceland	0.75	1.08
Canada	1.03	0.99
Czech Republic	0.82	0.81
<b>Australia</b>	<b>0.68</b>	<b>0.64</b>
Italy	0.55	0.56
Spain	0.47	0.46
Poland	0.30	0.31
Hungary	0.26	0.28

Source: Australian Bureau of Statistics, Research and Experimental Development, Businesses, 1999-2000

## **FORMULA-BASED BLOCK FUNDING PROGRAMS**

### **Institutional Grants Scheme**

The Institutional Grants Scheme (IGS) supports institutions' research and research training activities. The Scheme commenced in 2002 and replaces the Research Quantum and the Small Research Grants Scheme. IGS funding is distributed across universities by a formula comprising research income (60 per cent) and publications (10 per cent), using the two most recent years' data, and higher degree research student places (EFTSU) (30 per cent) using the previous year's data.

### **Research Infrastructure Block Grants Scheme**

The Research Infrastructure Block Grants (RIBG) Scheme aims to support high quality research by: (i) meeting project-related infrastructure costs associated with Australian competitive grants; (ii) ensuring that areas of recognised research potential have access to the support necessary for their development; (iii) enhancing support for areas of existing research strength; and (iv) remedying deficiencies in research infrastructure. The Scheme allocates grants to publicly funded universities on the basis of an index which measures institutional success in obtaining competitively awarded research funding. RIBG allocations, which can be paid to universities only, are derived from data collected for the two most recent calendar years.

### **Research Training Scheme**

The Research Training Scheme (RTS) allocates higher degree research student places to institutions. The Scheme aims to improve the quality of the research training environment, reduce attrition rates and improve the completion times of student completion rates. As research students complete or discontinue their studies, their vacated RTS places become available for reallocation through a performance-based formula. This formula distributes funding across universities based on successful research student completions (50 per cent), research income (40 per cent) and the number of research publications (10 per cent).

### **Australian Postgraduate Awards (APA) Scheme**

The Australian Postgraduate Awards (APA) Scheme provides financial support to Australian postgraduate students of exceptional research promise who undertake their higher degree by research at an Australian higher education institution. Masters students may receive an award for a maximum of two years and Doctoral students for three years with a possible extension of six months. Students in receipt of an award receive an annual stipend and may qualify for other allowances. From 2002, the determination of institutional APA allocations will be aligned with the formula used in the Research Training Scheme (RTS) and new funding arrangements will allow institutions to offer additional awards from within their overall funding allocation.

## **International Postgraduate Research Scholarships (IPRS) Scheme**

The International Postgraduate Research Scholarships (IPRS) Scheme aims to attract high calibre international postgraduate students to areas of research strength in Australian higher education institutions and to develop international research linkages. Masters students may receive a scholarship for two years and Doctoral students for three years with a possible extension of up to twelve months in certain circumstances. A scholarship covers the student's tuition fees and health insurance premiums. From 2002, the determination of institutional IPRS allocations will be aligned with the formula used in the Research Training Scheme (RTS).

## **Other Research-Related Programs Administered by DEST**

### **Systemic Research Infrastructure Grants**

The Systemic Infrastructure Initiative provides funding to upgrade the systemic infrastructure of universities to meet demonstrated needs. Funding is provided for innovative approaches that link or expand access to shared facilities, such as libraries, information and communications technologies, specialised equipment, technical and administrative assistance. The Systemic Infrastructure Initiative will provide \$246 million to eligible institutions over five years beginning in January 2002. Funding under this Initiative is allocated on the basis of a competitive application process.

### **Regional Protection Fund**

The White Paper *Knowledge and Innovation* recognised that the new research arrangements may adversely impact on institutions in regional areas. The Government has provided a special fund of \$6 million over three years to ensure no regional institution would suffer a deterioration in its research funding, from its starting position, in the first three years of the new arrangements.

**\* Source: *Higher Education Report for the 2002-2004 Triennium – Pre-print/draft release, Commonwealth of Australia 2001***

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