

The **Allen Consulting** Group

Recognising the full costs of university research

Discussion Paper

November 2008

Report to the Department of Innovation, Industry, Science and Research

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Suggested citation for this report:

Allen Consulting Group 2008, 'Recognising the full costs of university research', report to the Department of Innovation, Industry Science and Research, Canberra

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Acknowledgments

The authors wish to thank Australia's universities and the organisations that represent them for their assistance in providing data and other information and discussions relating to this project. We also wish to thank the Australian Research Council, the National Health and Medical Research Council and the Department of Innovation, Industry and Research for data and useful discussions.

The members of the Project Steering Committee have also provided assistance in obtaining data and valuable guidance. A list of Steering Committee members is provided in Table B.2 of this report.

We are also indebted to those universities who participated in this study. In particular, we wish to acknowledge Monash University, the University of South Australia, the University of Wollongong, the University of NSW, Griffith University, Charles Darwin University and the Australian National University for taking the time to extract cost and revenue-related data. Even though some of this data does not appear in the final report, we appreciate the contribution of each university to this project.

Contents

| | |
|---|-----------|
| <i>Executive summary</i> | <i>vi</i> |
| <i>Abbreviations</i> | <i>ix</i> |
| <hr/> | |
| Chapter 1 | 11 |
| <i>Context, terms of reference and methodology</i> | <i>11</i> |
| 1.1 Context to the project | 11 |
| 1.2 The importance of sustainable research funding | 12 |
| 1.3 Terms of reference | 13 |
| 1.4 Project methodology | 13 |
| 1.5 Definitions | 14 |
| 1.6 This report | 14 |
| <hr/> | |
| Chapter 2 | 16 |
| <i>Current Australian university research funding arrangements</i> | <i>16</i> |
| 2.1 Competitive grants available to university researchers | 16 |
| 2.2 Block grants provided to universities | 18 |
| 2.3 Key features of the Australian system | 20 |
| <hr/> | |
| Chapter 3 | 22 |
| <i>International experience</i> | <i>22</i> |
| 3.1 The United States of America — negotiated indirect cost rates | 22 |
| 3.2 Canada — three stage formula approach | 25 |
| 3.3 The United Kingdom — activity-based costing | 28 |
| 3.4 Ireland — separate grants to universities for indirect costs | 30 |
| 3.5 Sweden — partial payment of indirect costs by funding agencies | 32 |
| 3.6 The EU Framework Programmes — moving to full economic costs | 32 |
| 3.7 Other European countries — moving to cover indirect costs | 35 |
| 3.8 New Zealand — simple formula-based approach | 35 |
| 3.9 Analysis of overseas models – Summary | 36 |
| 3.10 Application to the Australian context | 37 |
| <hr/> | |
| Chapter 4 | 39 |
| <i>Analysis of research costs in the Australian university sector</i> | <i>39</i> |
| 4.1 Sector-wide indicators of funding shortfalls | 39 |
| 4.2 Empirical evidence of funding shortfalls | 41 |
| 4.3 Direct costs of research | 44 |
| 4.4 Indirect costs of research | 46 |
| 4.5 The costs associated with research training | 49 |
| 4.6 Analysis for the funding shortfall | 49 |
| <hr/> | |
| Chapter 5 | 50 |

| | |
|---|----|
| <i>Potential models and next steps</i> | 50 |
| 5.1 Direct costs | 50 |
| 5.2 Indirect costs | 51 |
| 5.3 Indirect cost models for Australia | 54 |
| 5.4 Areas for further investigation | 57 |
| 5.5 Concluding comments | 58 |
| Appendix A | 59 |
| <i>References</i> | 59 |
| Appendix B | 63 |
| <i>Stakeholder consultations and project steering group</i> | 63 |
| Appendix C | 65 |
| <i>Calculation of RTS and RIBG 2008 grants</i> | 65 |
| Process for determining RTS grant amounts | 65 |
| Process for determining RIBG grant amounts | 66 |
| Appendix D | 67 |
| <i>Rationale for examining university level data</i> | 67 |
| D.1 Monash University data | 67 |
| D.2 University of South Australia data | 68 |
| D.3 Other universities | 70 |
| Appendix E | 71 |
| <i>University research revenues for 2007</i> | 71 |
| Appendix F | 73 |
| <i>Australian Competitive Grants Register 2008</i> | 73 |
| Commonwealth Schemes (by portfolio) | 73 |
| Non-Commonwealth | 75 |
| Appendix G | 76 |
| <i>Funding of ARC Discovery Grants</i> | 76 |

Executive summary

The purpose of this project has been to examine the full economic costs of research funded through competitive grants, and research training in our universities, and to identify ways of closing the gap between the cost of these activities and the funding provided. This project aims to provide a sound evidence base for further analytical work in the area.

The report analyses present Australian arrangements for funding university research and research training. Competitive grants are provided from a number of sources, but the Australian Research Council (ARC) and the National Health and Medical Research Council (NHMRC) together account for about 96 per cent of all the funding provided through Australian Competitive Grants. Under Australia's dual support system for university research, the Australian Government also provides funding through the Research Infrastructure Block Grants (RIBG) and the Research Training Scheme (RTS). Additional general funding for universities is provided through the Institutional Grants Scheme (IGS).

International experience

Our analysis of international experience in meeting the full economic costs of university research focuses primarily on the indirect costs of research. An examination of practices in the USA, Canada, the UK, Ireland, Sweden, the European Union and New Zealand shows that indirect costs associated with public-funded university research projects are a real and legitimate part of the cost of undertaking university research. In the case of the USA, these arrangements have been in place for decades. In other countries, moves to address indirect costs started in the 1990s.

Payments for indirect costs in the USA, UK, and to a lesser extent the Canadian system, are determined in ways that reflect the particular cost structures of individual institutions. In other countries, a single indirect cost rate applies. While the USA and UK approaches involve greater administrative complexity, they are more equitable in that they address actual costs which vary between institutions.

There is some variation between countries as to what can be included in claims for the payment (or reimbursement) of indirect costs. However there is general agreement that the average indirect cost rate is around **50 per cent of the funding received from research projects**. For this reason, a fixed percentage of 50 per cent, in addition to existing project funding, for indirect costs would be necessary to maintain a sustainable research effort in Australia.

While the UK is close to achieving full economic costing of research funded by their research councils, most other countries do not yet meet full indirect costs. Countries limit their payment/reimbursement of indirect costs by specifically excluding some costs, capping some costs (eg administration costs in the USA) or using indirect cost rates that do not cover actual costs. The UK experience demonstrates that it takes considerable time and investment to introduce a full activity based costing approach to university research.

Analysis of Australian data

An analysis of Australian research and research training costs has been undertaken with data provided by universities, the Department of Innovation, Industry, Science and Research (DIISR), the ARC, the NHMRC and the Australian Bureau of Statistics (ABS). This report shows that funding from block grants, which are intended to cover the indirect costs of competitive grant funded research, have not kept pace with funding of Australian Competitive Grants and the gap has been widening since 2002-03. An additional \$56m would have been needed in 2006-07 just to maintain RIBG at the same percentage of Australian Competitive Grants as it was in 2002-03. This would still be well short of the funding needed to approach full indirect costs.

Even the direct costs of Australian university research projects funded by competitive grants are not being fully covered. In 2007, Australian universities' funding of the direct costs of ARC Discovery projects alone was \$275m. The rules of Australian Competitive Grants programs preclude funding of some direct costs, for example where animals are required. The data shows that Australian universities have to top up the salaries of researchers employed on ARC grants by significant amounts. Estimates from one Group of Eight university suggests this top up is as much as 63 per cent over the original dollar value of ARC grants.

The Research Training Scheme (RTS) funding as a percentage of HERD has been declining while numbers of Higher Degree Research (HDR) students have been increasing. Additional analytical work is necessary to assess the implications of these trends on the delivery of research training.

This report uses data from Australian universities to demonstrate the shortfall in competitive research grants compared with actual costs. The data shows that Monash University's overhead cost rate is around 60 per cent and the University of South Australia's cost rate is approximately 66 per cent of total direct costs. These rates are comparable with indirect cost rates found in other parts of the world. In the view of the authors of this study, Monash and the University of South Australia are generally representative of research-active universities in Australia. Some research-intensive universities, such as the Australian National University, are likely to have higher cost ratios because of the nature of some of the fields of research that they undertake.

Options for addressing funding shortfalls

This report discusses shortfalls in direct funding of competitive grant funded research, as well as ways of meeting indirect costs. Activity based costing provides greater accuracy in identifying indirect costs but is costly to implement and involves significant transaction costs to maintain. Formula based approaches are simple but can be inequitable and risk encouraging mediocrity. The report therefore proposes a composite model for Australia that is based on a *minimum* fixed percentage of 50 per cent of project funding to cover the indirect costs of competitive research. This funding would ensure that indirect costs incurred in research supported through competitive grants are adequately funded.

In this composite model, universities would be offered two options: they could accept fixed percentage funding of indirect costs, or they could opt for full project based costing. Those universities that judged the investment to be worthwhile would establish the accounting systems for project based costing in order to track costs associated with competitive grant-supported research. Whether universities are encouraged to adopt a project based costing approach would depend on the level of the fixed percentage and the likely costs and benefits of establishing activity based costing. Initially the fixed percentage approach would apply to all universities. Those universities wishing to move to the project based costing approach could do so when they were ready.

Further work is needed to establish a new approach to accounting for research costs. Universities opting for the project based costing approach would need accounting systems that could attribute costs to individual research projects. There would also be a need for agreement on precisely what indirect costs would be taken into account when determining funding. This report provides an initial list.

There is evidence of a significant backlog in the maintenance of university buildings and facilities as a result of the need to find resources to support competitive grant funded research over the past two decades. As a result, a large one-off injection of funds to bring buildings and facilities up to current standards will also be necessary. Both the UK and Ireland have faced a similar problem and found it necessary to fund a catch up.

Abbreviations

| | |
|---------------|---|
| ABS | Australian Bureau of Statistics |
| AC | Additional Costs Basis (EU) |
| ACGP | Australian Competitive Grants Programs |
| ACST | (former) Advisory Council on Science and Technology (Canada) |
| ARC | Australian Research Council |
| ATN | Australian Technology Network of Universities |
| AVCC | Australian Vice Chancellors' Committee (now Universities Australia) |
| CAUBO | Canadian Association of University Business Officers |
| CFHSS | Canadian Federation for the Humanities and Social Sciences |
| CI | Chief Investigator (Principal Investigator in some countries) |
| CoGR | Council on Governmental Relations (USA) |
| CVCP | Committee of Vice Chancellors and Principals (UK) |
| EFR | Externally funded research (New Zealand) |
| EU | European Union |
| F&A | Facilities and Administration (USA and Canada) |
| FC | Full Cost Model (EU) |
| FCF | Full Cost Fixed Rate Model (EU) |
| FTE | Full Time Equivalent |
| GAO | General Accounting Office (USA) |
| Go8 | Group of Eight (universities) |
| HDR | Higher Degree (by) Research |
| HEI | Higher Education Institution (UK) |
| HEP | Higher Education Provider |
| HERD | Higher Education Expenditure on Research and Development |
| IGS | Institutional Grants Scheme |
| IRU Australia | Innovative Research Universities Australia |
| JCPSPG | Joint Costing and Pricing Steering Group (UK) |

| | |
|-------|--|
| MTDC | Modified Total Direct Costs (USA) |
| NHMRC | National Health and Medical Research Council |
| OECD | Organisation for Economic Cooperation and Development, Paris |
| OMB | Office of Management and Budget (USA) |
| OSTP | Office of Science and Technology Policy (USA) |
| PRTL | Programme for Research in Third Level Institutions (Ireland) |
| R&D | Research and Development |
| RIBG | Research Infrastructure Block Grants |
| RTS | Research Training Scheme |
| SFI | Science Foundation of Ireland |
| SUHF | Association of Swedish Higher Education |
| TEKES | National Technology Agency (Finland) |
| TRAC | Transparent Approach to Costing (UK) |
| UNSW | University of New South Wales |

Chapter 1

Context, terms of reference and methodology

1.1 Context to the project

In progressing consideration of the Australian Government's proposed process for negotiating mission-based compacts with universities, the full cost of research and research training will need to be identified so that sustainable funding arrangements can be set in place. A key area of concern amongst stakeholders is the lack of available evidence relating to the quantification of the full (direct and indirect) cost of research in Australian universities.

Like a number of OECD countries, Australia has a dual support system for funding university research. The two components of this system are competitive grants, such as those awarded by the Australian Research Council (ARC) and the National Health and Medical Research Council (NHMRC), and block grants such as the Research Infrastructure Block Grants (RIBG) Scheme.

Universities in Australia (AVCC 1996) and overseas have long expressed concerns that research grants do not cover administrative, technical and other overheads. Recently, Universities Australia and the Group of Eight (Go8) have raised the issue again in their submissions to the Government's Review of the National Innovation System (Go8, 2008). Other submissions have also addressed this matter (see for example Australian National University, 2008 and Innovative Research Universities Australia, 2008).

Larger universities with strong research activity, such as those within the Group of Eight (Go8), feel this problem acutely because of the scale of their respective research enterprises. The Go8 universities receive more than seventy per cent of funding allocated under Australian Competitive Grant Programs (ACGPs). One estimate for 2003-04 put the gap between the cost of research and the direct funding provided by ACGPs and the full cost at \$330m for the Go8 universities (Fell *et al.* 2004). For smaller universities, the problem becomes one of where to find the funds to meet indirect costs of ACGP-funded research projects.

Various approaches have been adopted to address this issue. A number of OECD countries operate dual funding systems, where competitive grants are supplemented by separate block funding schemes to meet infrastructure and indirect costs. The block funding component is generally determined by a formula that reflects the levels of competitive grant income received by individual universities. In Australia this is achieved primarily through the RIBG Scheme, and to a lesser extent through the Institutional Grants Scheme (IGS).

In the USA, government funding agencies make contributions towards the overhead costs of research grants on the basis of negotiated rates (which vary from university to university). The United Kingdom and some other countries have adopted a full cost accounting approach, with government funding agencies making in principle commitments to meet the full costs of research.

Each of the above approaches has advantages and disadvantages. For example, it has been argued that the formula approach can reward those universities with high management costs, at the expense of others whose management structures are leaner.

There has also been debate about the adequacy of the block funding provided through schemes, such as the Research Infrastructure Block Grants (RIBG), to meet the actual costs of research. There is evidence to suggest that the growth of RIBG has not matched the growth of ACGPs over the past decade. In any event, establishing whether this type of approach provides an equitable outcome *and* meets the costs of research requires knowledge of the indirect costs that can legitimately be attributed to research projects.

1.2 The importance of sustainable research funding

The argument for moving to a model of full economic costing of university research is that universities must be able to perform research of quality on a financially sustainable basis.

The key issues relating to a model of full cost of university research are as follows.

- The basic principle that research undertaken by universities should be fully costed and funded, and not cross subsidised from other sources of revenue – ensuring that universities are sustainable and competitive in the longer term.
- Cross-subsidising university research from other funds (such as international student fees) is undesirable from an accountability perspective, and results in under-delivery of education services in these areas.
- In dual funding systems for university research there is a need to ensure that research block grants provide appropriate levels of support for projects funded through competitive grant programs.
- Chronic under-funding of university research can lead to cost cutting in other areas. It commonly leads to maintenance backlogs – deferring maintenance creates problems in the longer term. Underspending on maintenance also reduces the quality of our research facilities, making it harder to attract the best staff and students, reducing the efficiency of research activity and potentially creating safety issues.
- Under-funding of research can result in a lack of investment in up-to-date research equipment, facilities and other supporting infrastructure, again limiting the effectiveness and efficiency of research activity and impacting on the standing of our universities.
- Under-funding of research has adverse impacts on university staff engaged in research including lack of employment security, excessive workloads and high level of workplace stress. Australian universities' capacity to engage in world class research will ultimately be determined by their capacity to attract and retain high level researchers (Winefield, 2008).

This project aims to identify and evaluate the evidence underlying these issues.

Benefits of recognising direct and indirect costs of university research

It is generally acknowledged that recognising the full cost of university research – including direct and indirect costs of administrative and capital overheads – facilitates better research outcomes for the entire community. In particular, it enables:

- better resource allocation;
- transparency of any cross-subsidies;

- improved asset management;
- better understanding by researchers of the costs associated with research activity;
- integration of financial and academic decision making;
- up to date and consistent information for project costing and pricing;
- benchmarking on a reasonably consistent basis; and
- sustainable performance quality (Group of Eight, 2008, p. 65).

1.3 Terms of reference

The Terms of Reference of this project were to:

- identify as far as practical the direct and indirect costs involved in undertaking research and research training in Australian universities from competitive research grants by
 - identifying key criteria for categorising indirect and overhead costs associated with research and research training
 - identifying the variation in the way universities collect and report on R&D expenditure
- identify and describe (where possible) how the direct and indirect costs of performing research and research training are included in competitive research grants
- identify ways of closing the gap between the actual cost (direct and indirect) of conducting research and research training and competitive grant-based research funding (based on indicative international benchmarks where possible)
- highlight the steps necessary for establishing a new method for allocating research funding.

It is important to note that the objectives of the project were modified in light of discussions with stakeholders and the availability of data.

1.4 Project methodology

This report draws on individual university data and other information to make conclusions generally applicable to the Australian university sector. In the absence of detailed sector-wide data on indirect costs of research, this study has used data from institutions that reflect the various aspects of the Australian university sector.

For this reason the selection and development of data used underpinning this report has sought to take account of:

- key institutional variations between universities (caused by differences in research intensity, locality, asset-base, and the number of campuses operated by some universities);
- key variations between the different disciplines undertaking grant-based research; and
- the availability of robust university-level data that can be used to inform evidence-based policy making.

This project has requested data at both whole-of-institution level and specific research project level data from the following university groupings:

- the Group of Eight;
- the Australian Technology Network of Universities;
- the Innovative Research Universities of Australia; and
- a non-aligned university.

This data has been supplemented by a review of key documents and surveys. These have included:

- university submissions to the Review of the National Innovation System and other relevant recent reviews;
- Australian surveys and research reports including preliminary data on the Group of Eight's Infrastructure Condition Survey of facilities managers;
- Australian Bureau of Statistics (ABS) data on the capital components of Higher Education Expenditure on R&D (HERD) – although this data does not commonly include expenditure on capital maintenance; and
- international literature analysing how other countries have addressed these issues.

1.5 Definitions

Unless otherwise indicated, the definitions of direct and indirect costs associated with university research are:

- **Direct costs:** costs directly attributable to individual research projects including consumables and researcher salaries. The Chief Investigator's salary is a direct cost but is not generally provided for in grants. For the purposes of this study the direct costs of competitive research are calculated as a percentage of the revenues received from competitive grants. This is a definition that is consistent with the experience of most OECD countries that calculate direct costs on a project-by-project basis.
- **Indirect costs:** costs that institutions incur to support research, but are not attributable to individual research projects. Examples of indirect costs accepted by the USA, Canada and the EU are provided in Chapter 3. For the purposes of this study the indirect costs of competitive research are calculated as a percentage of the revenues received from competitive grants. This is a definition that is consistent with the experience of most OECD countries that calculate indirect costs on a project-by-project basis.

1.6 This report

Chapter 2 of this report summarises relevant aspects of university funding arrangements in Australia.

Chapter 3 analyses the experiences of other countries in addressing the full costs of research.

Chapter 4 analyses Australian university research costs using data sourced from the ABS, Department of Innovation, Industry, Science and Research, the ARC and the universities themselves.

Chapter 5 discusses potential models for addressing the full costs of university research, and the implementation of these models.

The Appendices provide:

- references;
- stakeholder discussions and steering committee members;
- formulae used to calculate RTS and RIBG grants;
- the rationale for using data from individual universities;
- university research revenues from competitive grants and block grants;
- details of the Australian Competitive Grants Register for 2008; and
- ARC Discovery Grant data.

Chapter 2

Current Australian university research funding arrangements

This chapter discusses current arrangements for funding university research in Australia. It highlights the 'dual funding' system, comprising competitive research grants and block research grants, before concluding with a consideration of the main strengths and weaknesses of the Australian model.

The following sections provide an overview of the main granting schemes. They are important for highlighting the differences between competitive grant schemes and block grant funding.

2.1 Competitive grants available to university researchers

The total value of competitive grants awarded to universities for the year 2006 was \$979 845 000. This represents about 19 per cent of Higher Education Expenditure on Research and Development (HERD) in that year. While this percentage is significant, the majority of HERD in 2006 was actually sourced from general university funds (\$3 200m or about 59 per cent of HERD) —much of this in the form of salary costs.

Grants provided by the Australian Research Council (ARC) and the National Health and Medical Research Council (NHMRC) account for about 96 per cent by value of all Australian Competitive Grants (see Appendix F). For this reason, much of this report refers to grants provided from these two sources. In many ways, these organisations provide the benchmark for the policies of other Australian granting organisations.

The mission of the ARC is to advance Australia's research excellence to be globally competitive and deliver benefits to the community. It supports the highest-quality fundamental, applied research and research training through national competition across all disciplines, with the exception of clinical medicine and dentistry. Its funding programs include Discovery, Linkage and Special Research Centre grants and a range of Fellowships.

The NHMRC is Australia's peak body for health and medical research; for health advice; and for ethics in health care and in health and medical research. The NHMRC provides funding to support:

- research undertaken to promote the health of Australians;
- the infrastructure required to complete health and medical research in Australia; and
- grants and fellowships for the people required to complete health and medical research in Australia.

Table 2.1 highlights the growth in Australian Competitive Grants between 1994 and 2006. It shows that the ratio of competitive grants to research funding from general university activities has remained relatively constant over the past decade.

Table 2.1

AUSTRALIAN GOVERNMENT FUNDING OF UNIVERSITIES 1996-2006 (IN 2006 \$000'S)¹

| Funding source | 1994 ² | 1996 | 1998 | 2000 | 2002 | 2004 | 2006 |
|---|-------------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Commonwealth Govt competitive grants | 487 169 | 509 005 | 549 930 | 600 516 | 584 567 | 736 785 | 945 709 |
| Other competitive grants | 19 019 | 18 183 | 21 892 | 14 987 | 14 417 | 26 523 | 34 136 |
| <i>Total competitive grants</i> | <i>506 118</i> | <i>527 188</i> | <i>571 822</i> | <i>615 503</i> | <i>598 984</i> | <i>763 308</i> | <i>979 845</i> |
| General University Funds (GUF) ³ | 1 721 983 | 2 112 439 | 2 145 660 | 2 187 431 | 2 342 533 | 2 842 482 | 3 199 501 |
| Total Competitive/GUF | 29.3% | 24.9% | 26.6% | 28.1% | 25.5% | 26.8% | 30.6% |
| HERD | 2 702 481 | 3 231 190 | 3 397 761 | 3 465 553 | 3 951 148 | 4 698 833 | 5 404 372 |
| Total Competitive/HERD | 18.7% | 16.3% | 16.8% | 17.7% | 15.1% | 16.2% | 18.1% |

Source: ABS, Cat. No 8111.0 issued 13 June 2008.

Notes: 1. This report uses the ABS's 'R&D Implicit Price Deflators' to translate the data into 2006 constant \$000s.

2. ABS reports this data every two years.

3. General University Funds are other Commonwealth government funding not covered by competitive grants.

The Australian Competitive Grants Register

When this report refers to Australian Competitive Grants, these are grants listed on the Australian Competitive Grants Register (ACGR). The qualifying criteria for inclusion in the ACGR are:

- funds must be provided on a nationally competitive basis and clearly be for research only;
- the funding scheme must be nationally advertised and available to universities throughout Australia;
- the funding scheme must have a well-defined mechanism for competition and selection by a well-qualified panel;
- funds must be provided through direct transfer from the funding agency to the higher education institution;
- grants in kind such as the use of facilities, equipment etc. or subsidised travel or accommodation are not eligible;
- funding schemes used exclusively to fund student scholarships are not eligible;
- schemes that provide funding wholly or mainly for infrastructure purposes are not eligible;
- the funding body must agree to provide funding data to the Department of Education, Employment and Workplace Relations and the data must be up to date; and
- for non-Commonwealth research funding schemes, the total annual budget in 2006 must be at least \$200 000.

The Department of Innovation, Industry, Science and Research (DIISR) reviews the ACGR annually. Schemes must continue to meet the ACGR listing criteria to stay on the Register. The current list, which applies to competitive grants paid in 2007, can be found at Appendix F.

2.2 Block grants provided to universities

Total block grants awarded to universities for the year 2008 were \$1125.2m. For the year 2006 the total level of block grants approximated 19.5 per cent of HERD.

Table 2.2 shows that the Research Training Scheme (RTS) is the largest of the three block grant schemes analysed in this report, with \$585.4m allocated for the year 2008. It also highlights that RTS is larger than IGS and RIBG combined (\$539.8m in 2008).

Table 2.2

BLOCK GRANT SCHEME FUNDING 2000 – 08 (IN 2006 \$000'S)¹

| Source of funds | 2000 | 2002 | 2004 | 2006 |
|--------------------------------|------------------|------------------|------------------|------------------|
| IGS | 319 503 | 329 953 | 309 663 | 296 100 |
| RIBG | 101 242 | 157 488 | 174 375 | 199 900 |
| RTS | 626 708 | 608 294 | 588 382 | 562 600 |
| <i>Total Block Grants</i> | <i>1 047 453</i> | <i>1 095 735</i> | <i>1 072 420</i> | <i>1 058 600</i> |
| HERD | 3 465 553 | 3 951 148 | 4 698 833 | 5 404 372 |
| Total Block Grants/HERD | 30.2% | 27.7% | 22.8% | 19.5% |

Source: DIISR Budget Papers 2008, Table 4.

Note: 1. This report uses the ABS's 'R&D Implicit Price Deflators' to translate the data into 2006 dollars.

A description of the key elements of the block grants schemes is outlined below.

Research Infrastructure Block Grants

The Research Infrastructure Block Grants (RIBG) is the main block grant which supports competitive grants (approx \$208m in 2008). RIBG is intended to:

- enhance the development and maintenance of research infrastructure in higher education institutions for the support of high quality research in all disciplines;
- meet project-related infrastructure costs associated with Australian Competitive Grants;
- remedy deficiencies in current research infrastructure; and
- ensure that areas of recognised research potential, in which higher education institutions have taken steps to initiate high quality research activity, have access to the support necessary for development.¹

¹ DIISR, 2008, accessed on 25 August 2008 at http://www.dest.gov.au/sectors/research_sector/programmes_funding/general_funding/research_infrastructure/research_infrastructure_block_grants_scheme.htm

RIBG grants, paid to higher education institutions, are determined on the basis of their relative success in attracting research income from competitive funding schemes listed on the Australian Competitive Grants Register (ACGR). Details of the formula used to calculate these grants can be found in Appendix C.

Institutional Grants Scheme

The broad purpose of the Institutional Grant Scheme (IGS) (approx \$308m in 2008) is to maintain and strengthen Australia's knowledge base and research capabilities by developing an effective research and research training system in the higher education sector.

IGS funds may be used to:

- support the general fabric of the research and research training activities of Higher Education Providers (HEPs);
- allow HEPs to manage their own research activities and set their own priorities;
- assist HEPs to respond flexibly to their research environment in accordance with their own strategies; and
- enhance support for areas of research strength.²

Under the scheme block grants are provided on a calendar year basis to eligible higher education institutions to support research, research training and other teaching related activities. Institutions have discretion in the way they spend their IGS grant provided it is used to fund any of these activities.

The key elements of the scheme include:

- the requirement that all IGS funds are shared out amongst all eligible institutions;
- the allocation of IGS funds on the basis of institutional performance as measured by research income and publications averaged over previous two years and higher Degree Research (HDR) student load for the most recent year; and
- a safety net, which means the most an institution can lose is 5 per cent of funding from year to year.

Research Training Scheme

The Research Training Scheme (RTS) is the largest of the block grants in support of research and research training (\$585.4m in 2008). Under this scheme, block grants are provided to higher education institutions on a calendar year basis to support research training for students undertaking doctorates and masters degrees by research. The objectives of the RTS are to:

- enhance the quality of research training provision in Australia;
- improve the responsiveness of HEPs to the needs of their research students;
- encourage HEPs to develop their own research training profiles;

²

DIISR 2008, accessed on 25 August 2008 at http://www.dest.gov.au/sectors/research_sector/programmes_funding/general_funding/operating_grants/institutional_grants_scheme.htm

- ensure the relevance of research degree programs to labour market requirements; and
- improve the efficiency and effectiveness of research training.³

RTS students are entitled to a maximum of four years full-time equivalent study if undertaking an eligible Doctorate degree by research or a maximum of two years full-time equivalent study if undertaking a Masters degree by research. In policy terms, the RTS aims to improve the training environment, reduce attrition rates and encourage timely completions for students.

The key elements of the scheme include:

- the requirement that all RTS funds are shared amongst all eligible institutions;
- completion rate (a 40 per cent allocation on the basis of research income and a 10 per cent allocation based on publication rates) is calculated using data averaged over the previous two years;
- the allocation of 25 per cent of the total RTS funds available each year on the basis of institutional performance; and
- a safety net, which means the most an institution can lose is 5 per cent of funding from year to year.

More details of the formula used to determine RTS grants can be found in Appendix C.

2.3 Key features of the Australian system

Table 2.3 summarises the main elements relating to the direct and indirect costs of research that are funded under the various competitive and block granting schemes in Australia. This Table also provides an insight into the main strengths and weaknesses of the Australian system. The strengths can be summarised as:

- the presence of a dual funding model promotes diversity in research through flexible financing mechanisms;
- research funding is based on performance-related criteria; and
- formula-based processes provide for a degree of equity and transparency in the allocation of public research funding.

Conversely the weaknesses can be described as:

- funding providers have not had an ‘in principle’ commitment to the systematic funding of the full economic costs of doing research;
- as a consequence, universities, funders and government lack the detailed information necessary to calculate and attribute the direct and indirect costs of research;
- the cost of the Chief Investigator’s (CI) time is not covered by competitive grants; and

³ DIISR 2008, access on 25 August 2008 at http://www.dest.gov.au/sectors/research_sector/programmes_funding/programme_categories/professional_skills/research_training_scheme.htm

- indirect costs that support research activities (in particular, information and communications technology (ICT) support, human resources (HR) services, financial services, space and office space, and security and cleaning) are not explicitly covered by competitive research grants or block grants for research.

Table 2.3

MAIN SOURCES OF FUNDING FROM COMPETITIVE RESEARCH & BLOCK GRANTS

| Definition | Competitive Grants | | Block Grants | | |
|--|--------------------|-------|--------------|---------|-----|
| | ARC | NHMRC | RIBG | IGS (1) | RTS |
| Direct costs | | | | | |
| Staff salaries | Yes | Yes | No | Yes | No |
| Chief Investigator salaries | No | No | No | Yes | No |
| Project equipment, materials and consumables | Yes | Yes | No | Yes | Yes |
| Travel and conferences | Yes | Yes | No | Yes | Yes |
| Infrastructure costs | Some (2) | No | Yes | Yes | No |
| Indirect costs | | | | | |
| Library | No | No | No | Yes | No |
| Research support | Yes | Yes | No | Yes | Yes |
| Animals for research | No | No | Yes | Yes | No |
| ICT support | No | No | No | Yes | No |
| HR services | No | No | No | Yes | No |
| Financial services | No | No | No | Yes | No |
| Research & office space | No | No | No | Yes | No |
| Security and cleaning | No | No | No | Yes | No |
| Building maintenance and refurbishment | No | No | Yes | Yes | No |

Source: Allen Consulting Group.

Notes:

- The IGS Grant is made to support the recipient's research and research training activities. The recipient has discretion in the way it spends its IGS Grant. The IGS Grant may be used to fund any activity related to research.
- While most ARC funding does not provide for infrastructure costs, 'Linkage Infrastructure Scheme' provides institutions with a small level of funding for project-related infrastructure costs.

Chapter 3

International experience

This chapter examines the approaches to university research funding that have been adopted in some OECD countries. It summarises the various approaches that have been adopted to meet indirect costs and discusses the current arrangements for addressing the indirect costs in Europe, Australasia and North America. The focus on indirect cost in this Chapter reflects this study's terms of reference and the fact that direct costs, with the exception of Chief Investigator costs, are generally met in full in other countries.

The issue of indirect costs associated with competitive research grants was addressed as long ago as 1958 in the USA. Since that time other countries including the United Kingdom, Canada, New Zealand, Ireland, the Netherlands and Sweden have all taken steps to recognise and fund indirect costs associated with research. Recent moves by the EU to address the full cost of research in the Framework Program is resulting in other European countries starting to address these indirect costs.

There are some variations between countries as to what can be included in indirect costs. In addition, different terminologies are also in use. The most common way in which indirect costs are expressed is as a percentage of direct costs. There are also examples of indirect costs being expressed as a percentage of total (i.e. direct plus indirect) costs or as a percentage of direct payroll costs.

3.1 The United States of America — negotiated indirect cost rates

The indirect costs associated with federally funded research have been the subject of considerable discussion and analysis in the USA over a period of many years. The US Office of Management and Budget (OMB) Circular A-21 (US OMB, 2004) sets out the arrangements for the reimbursement of indirect costs (Facilities and Administration, or F&A costs) on federally-funded grants. This circular has been the subject of a number of amendments since it was first issued in 1958.

Much of the US discussion is based on 'indirect cost rate' — indirect costs expressed as a percentage of Modified Total Direct Costs (MTDC). Modified Total Direct Costs (MTDC) – consist of all salaries and wages, fringe benefits, materials and supplies, services, travel, sub-grants and subcontracts up to US\$25,000 of each sub-grant or subcontract. Equipment, capital expenditures, charges for patient care and tuition remission), space rental costs, scholarships and fellowships, as well as the portion of each sub-grant or subcontract in excess of US\$25,000 are excluded from MTDC.

A 1985 article in the journal *Science* (Kennedy, 1985) prompted a lively national debate on the adequacy of reimbursement arrangements for indirect costs. Subsequently, a major study undertaken for Cornell University (Zuiches and Vallely, 1987) examined indirect costs and how they are allocated through a survey of 113 US institutions. Its major findings were as follows.

- For 1985 the average on-campus indirect cost rate was 48.4 per cent, with public institutions averaging 44.9 per cent and private institutions averaging 61.1 per cent.

- The overall rate of recovery of indirect costs was 24 per cent, significantly lower than previous studies by the Office of Science and Technology Policy (OSTP) (US OSTP, 1986) and the General Accounting Office (GAO) (US GAO, 1986).
- There was some variability in the allocation of costs to research projects.

The Cornell study took place at a time when US universities were experiencing a major shift in their revenue sources and research had become more capital intensive.

In the early 1990s there was further debate and controversy on the issue of indirect costs involving Stanford and some other universities. This led to four major revisions of OMB Circular A-21 in 1991, 1993, 1996 and 1998. Administrative costs were capped at 26 per cent (of MTDC). Other changes included the introduction of cost accounting standards and disclosure statements, together with tighter rules on the allocation of indirect cost pools.

In March 1996, Arthur Andersen (Andersen, 1996) reported the results of a study of the cost of research among industry and university participants. This work had been commissioned by the Government-University-Industry Roundtable in response to allegations of excessive indirect costs being charged to federal research funding programs. The objective of the study was to compare research costs in industry and academic sectors. Seven private and state-supported universities including UCLA and MIT participated in the study as well as thirteen major national laboratories.

Arthur Andersen found that the average direct costs of research conducted in universities was slightly higher (69 per cent against 64 per cent of total costs) and indirect costs slightly lower (31 per cent against 36 per cent of *total* costs) than in industry. This suggested that university average indirect costs could not be regarded as excessive.

A RAND Corporation study (Goldman *et al*, 2000) for OSTP found that ‘about 31 per cent of total true costs appear to be for facilities and administration’. RAND found that under reimbursement arrangements prevailing at that time, the US Government was meeting 24-28 per cent of *total* costs, with the balance being carried by the universities. The authors concluded that, at that time, US universities were recovering 70-90 per cent of indirect costs associated with federally-funded projects.

The RAND report analysed the F&A costs and noted that many of them derive from legal requirements, including environmental, health and animal protection laws. This regulatory compliance burden had grown significantly in the period preceding the study.

The 2005-6 bi-annual survey undertaken for the US Council on Government Relations (US CoGR, 2006) found that F&A rates had stayed fairly constant at 51.2-51.5 per cent of direct costs since 2000. The survey covered 139 institutions accounting for about three quarters of federal R&D expenditures in academic institutions. The survey included the top twenty research institutions, 41 of the top 50, and 81 out of the top 100 institutions.

Recently the GAO responded to a request from Senator Coburn (US GAO, 2007) to review NIH research grants. The GAO reported that the proportion of NIH grant funds awarded to universities for reimbursement of indirect costs was stable at about 28.5 per cent of *total* costs for fiscal years 2003 to 2005.

In 2008 the Department of Defense capped F&A costs for basic research at 35 per cent of *total* costs. This is equivalent to 53.8 per cent indirect costs as a percentage of direct costs.

Current arrangements

In the USA, federal research grants include part (or in some cases all) Chief Investigator salaries. Allowable indirect costs of federally funded research are reimbursed in accordance with OMB Circular A-21. This circular, in effect, limits what can be claimed as F&A costs. For individual institutions, these costs are recovered through a system of negotiated rates, which are subject to periodic review and renegotiation by the Department of Health and Human Services' Division of Cost Allocation or the Defense Department's Office of Naval Research.

US indirect cost rates include:

- a Provisional Rate is sometimes established to apply until a final rate is determined through negotiations;
- a Fixed Rate with Carry-Forward is a rate fixed for a defined period though negotiations, with annual adjustments for under- or over-recovery of costs; and
- a Special Rate is a rate negotiated to apply to a unique facility.

In a few cases, different rates apply within a single institution — for example the Harvard Medical School has its own rate. For institutions expecting to receive less than US\$10m per annum in federal grants, the process is simplified. For larger institutions, the negotiations involve extensive documentation and time.

OMB Circular A-21 requires overhead costs within institutions to be assigned to one of nine F&A cost pools (see Table 3.1). Institutions' total indirect costs attributed to federally funded research are determined by aggregating the components attributable to this research from each cost pool.

Negotiated F&A cost rates vary from about 30 to 70 per cent of MTDC. Some universities have income from State governments that is used to help meet indirect costs. These universities generally have lower F&A rates.

Administration costs for most US federal grants are capped at 26 per cent and some indirect research costs borne by universities are not allowable as F&A costs. In addition, the US Congress has legislated to make some grant programs ineligible for F&A costs. However, unlike some other countries, US grants pay a proportion of the Chief Investigator's salary for the proportion of time he/she devotes to a project. Overall, about half of the indirect costs relate to people, half to equipment (Smith 2001, p. 12).

Table 3.1

USA – FACILITIES AND ADMINISTRATION (F&A) COST POOLS

| Categories |
|---|
| Building depreciation |
| Equipment depreciation |
| Interest expense related to facility construction |
| Operations and maintenance expenses |
| General administration and general expenses |
| Departmental administration |
| Sponsored projects administration |
| Library |
| Student services |

Source: OMB Circular A-21

The USA experience with indirect costs is widely referenced in reports on indirect research costs and has influenced the policies of other countries, particularly Canada and Ireland.

3.2 Canada — three stage formula approach

University research in Canada is financed via a dual support mechanism of federal and provincial government funding. Under this system, Canada's provinces have been traditionally responsible for providing infrastructure and operating costs. The provinces' contribution is financed in part through the payments received from the federal government through the Canada Social Transfer Program. This Program provides funds for the provinces to spend on post-secondary education, social assistance and social services. Thus the flow of these funds to universities may be influenced by other priorities.

The federal government is the major source of funds to support the direct costs of university research in Canada. Some provinces also provide funding for university research. There is no clear demarcation between federal and provincial responsibilities in relation to university funding in Canada.

As early as 1984, the Bovey Commission identified a need for additional funding for 'research infrastructure, overhead and capital costs' (Bovey, 1984). Following debate in the 1990s, the year 2000 saw considerable activity in Canada on the issue of indirect costs of university research. Canada's Advisory Council on Science and Technology (ACST) commenced a major review and received a number of submissions.

The Council of Ontario Universities (Vander Voet, 2000) submission pointed out the inadequacy of funding arrangements prevailing at that time. The Canadian Federation for the Humanities and Social Sciences submission (CFHSS, 2000) argued that, as a percentage of total costs, the indirect costs of research in the humanities and social sciences are higher than for other disciplines. This may be related to the relatively smaller size of research grants in the humanities and social sciences.

The Canadian Association of University Business Officers (CAUBO, 2000) submission noted that federal grants for research had increased from C\$317m in 1977 to C\$1 986m in 1998. By 2001, research grant income per faculty member was predicted to be about 2.5 times what it had been in 1977. Over the same period, the average operating income of universities per full time equivalent (FTE) student had decreased by more than 10 per cent. CAUBO concluded that the considerable growth in grants funding (which does not include a CI salary and on-costs) had not been matched by the universities' capacity to provide faculty time for research and meet indirect costs.

CAUBO noted that their 1982 study of data from 14 institutions, accounting for more than 60 per cent of federal research funding) had found that on average indirect costs were 50 per cent of total direct costs. On the basis of insured replacement values of capital assets, indirect capital costs were estimated at 29 per cent of total direct costs. Thus overall indirect costs were estimated to be 79 per cent of total direct costs. CAUBO recommended initial indirect cost funding of 50 per cent of all research grants provided to universities by the federal funding agencies. It favoured simplicity and administratively light, but credible and verifiable reporting mechanisms.

ACST's report (ACST, 2000) recommended that the Canadian Government begin funding the indirect costs of university research in proportion to the amount of funding for the direct costs of research that it provides to universities through federal funding agencies.

The immediate outcome of the ACST project was the announcement in October 2000 that the Canadian Government would start to address research overhead costs through a one-off allocation of C\$268m to rejuvenate laboratories in universities and research hospitals. These funds were provided through the Canadian Foundation for Innovation, which had been established with C\$1.3b in 1997. While this was a useful step in addressing the indirect cost problem, it did not provide a long-term solution.

In 2003, the Canadian Government established an Indirect Costs Program to provide support for a portion of indirect costs of federally funded research incurred by Canadian institutions. Funding under this Program rose slowly from C\$225m in 2003-04 to C\$260m in 2005-06. The Canadian Government continued to argue that responsibility for meeting indirect costs of research was one shared with the Canadian provinces.

After three years of operation, the Indirect Costs Program was reviewed by consultants (Malatest *et al*, 2006). Some difficulties were encountered in obtaining satisfactory data. The consultants noted that the Program did not take into account funding from non-federal government sources. They were critical of the low rate of funding of indirect costs (19.6 per cent) and noted that this rate had declined by seven per cent in the short period that the Program had been operating. The extent to which the universities passed on payments under the indirect Costs Program to affiliated research institutes was examined.

Table 3.2

EXPENDITURES ELIGIBLE UNDER THE INDIRECT COSTS PROGRAM

| Expenditure category | Eligible expenditure |
|---|---|
| Facilities | <ul style="list-style-type: none"> • Renovation and maintenance of research spaces and equipment. • Technical support for laboratories, offices, animal care and other facilities. • Custodial, security, utility, leasing and capital planning costs associated with research spaces and research equipment. • Insurance on research spaces. |
| Resources | <ul style="list-style-type: none"> • Acquisition, custodial, security, utility, leasing, and capital planning costs associated with libraries, databases, telecommunications, and information technologies, systems and research tools. • Insurance on research equipment and vehicles. |
| Management & Administration | <ul style="list-style-type: none"> • Research planning and promotion. • Help for researchers to prepare research proposals. • Public relations. • Training of faculty and research personnel. • Financial and other administrative services. • Acquisition, maintenance and upgrade of information systems to track grant applications, certifications and awards. • Human resources and payroll, including the salaries and benefits of employees who support the research enterprise, and who are not already funded through a direct research grant. • Purchasing, audit, health and safety costs. |
| Regulatory requirements & accreditation | <ul style="list-style-type: none"> • Creation and support of regulatory bodies. • Training of faculty and other research personnel in animal care, ethics review, radiation and biohazards. • Costs for international accreditation related to research capacity. • Upgrades to facilities and equipment to meet requirements. |
| Intellectual property | <ul style="list-style-type: none"> • Creating, expanding or sustaining a technology transfer office or similar function. • Reports of invention patent applications, licensing, and creation of spin-off companies. • Communications and outreach activities undertaken to transfer knowledge through venues not eligible for funding under other federal programs. • Marketing of teaching materials, scientific photo libraries, survey instruments, statistical packages, data sets and databases, software and computer models. |

Source: Malatest, 2006, from the Indirect Costs Program www.indirectcosts.com/using/costs_e.asp

The review was also critical of the adequacy of the list of eligible costs. Alternative delivery models were also explored but no changes were recommended. The review recommended that a stable fixed rate, higher than the 2003-04 rate, be implemented. The major advantage of a fixed rate was the certainty that would allow institutions to plan their expenditures. Overall, the review found that the Program was working satisfactorily.

Current arrangements

Higher Education institutions apply annually for funding from the Indirect Costs Program, which provides 80 per cent of the first C\$100 000 of research grant income, 50 per cent for the next C\$900 000, 40 per cent for the next C\$6m and 20 per cent for amounts above C\$7m. Eligible costs are specified in five categories shown in Table 3.2.

The Canadian funding formula for indirect costs is not equitable in its treatment of the larger research-performing institutions (Go8, 2008).

3.3 The United Kingdom — activity-based costing

The costing and funding of university research has been the subject of a number of reports and initiatives since the 1988 Hanham report. This was followed by the Research Accountability Review (1992), the UK Committee of Vice-Chancellors and Principals (CVCP) report on the research infrastructure funding gap (CVCP, 1998), and the Joint Funding Councils Costing Guidelines Project (1998).

The funding gap issue was also addressed in reports for the UK Parliament's Select Committee on Science and Technology.⁴ However it was the Transparency Review of Research, commissioned by the Joint Costing and Pricing Steering Group (JCPSG) (J M Consulting, 1999) that resulted in a new approach to the costing and funding of university research in the UK.

The Transparency Review report outlined the key principles and criteria that should underpin activity based costing:

- the approach must be capable of being implemented by the whole sector;
- it must be holistic – compatible with other developments in institutions and applicable to other costing objectives as appropriate;
- it should focus attention onto important costs (materiality) and not require repeated measurement of factors which do not change, or undue precision over small cost elements;
- it must be acceptable to sponsors as sufficiently rigorous and auditable;
- it must be capable of development and flexible enough to accommodate those institutions that wish to go further or faster than the minimum required; and
- it should specify standards or objectives to be achieved, and illustrate methods to do this, but institutions should be free to adopt alternative methods provided these can be demonstrated to meet these requirements.

The following statement issued by the UK Treasury in 2002 is pivotal to the whole economic costing process and philosophy:

In return for greater support for research, universities have a responsibility to manage their research effectively and sustainably. This will mean continued development of their costing and financial management systems to enable them better to understand the contribution of individual research projects to the actual costs, direct and indirect, of the research. The Government will expect universities to manage their budgets in a way which allows them to invest properly in infrastructure renewal and ensures that research is put on a sustainable footing.

The JCPSG's first publication on a Transparent Approach to Costing (TRAC) was issued in 2000 (UK JCPSG, 2000a). The purpose of TRAC is to help Higher Education Institutions (HEIs) to calculate the full economic cost of their research activities by providing a basic set of costing tools. This was followed by a further publication to promote good practice in pricing in the higher education sector (UK JCPSG, 2000b), and guidance on indirect cost rates (JCPSG, 2001). Guidance material was consolidated and revised in a new publication in 2002 (Clements *et al*, 2002), which provided examples of specific costing issues.

⁴ Now the Innovation, Universities, Science and Skills Committee

A consultation paper and questionnaire (J M Consulting, 2001a) was also sent to UK universities seeking data on both under investment in research infrastructure across the sciences, arts and humanities. The surveys requested data on buildings, libraries, ICT and non-academic staff associated with the effective use of this infrastructure and formed the basis of number of case studies focussing on the impact of unmet need within the university sector.

The results of the surveys and case studies were used in a major report (J M Consulting, 2001b) on the state of science research infrastructure in the UK. The report found significant unmet need in the UK (to the magnitude of £3.2bn) and argued for remedial investment in generic university infrastructure and laboratories. In addition to this capital requirement, the report found that additional recurrent spending was needed for maintenance, technical support, libraries etc.

Further, the report estimated that an additional £1bn was required for a small number of infrastructure projects required if the UK was to remain competitive and productive in leading edge science. The report also discussed how to avoid similar problems in the future.

In 2005 the JCPSG issued new consolidated TRAC Guidance (JCPSG, 2005) and started to move towards a similar activity based costing approach for university teaching. HEIs were required to be able to calculate the full economic cost of all activities down to individual project level.

In this report we have mentioned only a selection of the key TRAC-related documents.⁵ Overall, the process of implementing TRAC has been long and costly. The cost of implementing TRAC for a typical research-intensive university has been estimated to be in the region of £250 000⁶ per annum over several years (J M Consulting, 2004). The UK Government has provided financial assistance to meet these costs.

Current arrangements

The key elements of TRAC are:

- costs are reported under three categories; Teaching, Research and Other;
- the Teaching and Research categories are broken down into publicly and non-publicly funded categories;
- there are three cost types; academic staff, academic services, and infrastructure;
- costs are measured on the basis of academic time, square meters of space, and capital costs;
- TRAC was initially an annual retrospective allocation of costs. It has now moved to a system where payments are based on forecast full economic costs;
- TRAC requires CIs to do some timekeeping in relation to research projects; and
- There is a commitment by funding agencies that the full costs of research should be identified and covered by the universities.

⁵ For more relevant documentation see <http://www.jcpsg.ac.uk/resources/publications.htm>

⁶ At August 2005 exchange rates this is approximately A\$539 000.

From 1 September 2005 applications for research grants from the UK Research Councils must be on a full economic cost basis. Since that time, the Research Councils have been paying 80 per cent of these costs in HEIs and Government departments are generally paying 100 per cent (UK Treasury, 2004). The UK Department of Business Enterprise and Regulatory Reform (BERR) has provided useful answers to frequently asked questions about the current full economic costing policy (UK BERR, 2008).

The UK experience with TRAC is clearly having an influence within the EU and across Europe.

3.4 Ireland — separate grants to universities for indirect costs

Until the 1990s, Ireland's R&D system was characterised by 'serious under funding and lack of adequate infrastructure' (Working Party on Research Infrastructure in Higher Education, 2005). Significant funding infrastructure in higher education institutions came from the EU Framework Programme. However under investment in higher education infrastructure over a period of decades had left the sector largely incapable of supporting further development.

In 1998 the Irish Government launched the Programme for Research in Third Level Institutions (PRTLTI) through the provision on a competitive basis of support for the implementation of institutional strategic plans. Shortly after this significant funds were provided to newly-established funding councils including the Science Foundation Ireland, the Irish Research Council for Science, Engineering and Technology and the Irish Research Council for Humanities and Social Science. In the years shortly after PRTLTI was established existing government research granting organisations also received significantly increased levels of funding.

Despite these developments in public investment in higher education R&D, infrastructure deficits in research in the higher education sector remained. Several reports highlighted the need for sustainable funding arrangements for universities and enhanced funding for research infrastructure.

The influential report of the Group of Research Overheads (Ireland Higher Education Authority/Forfàs, 2003) provided the policy framework for determining the direct and indirect costs of research that was eventually adopted by the government. The key elements of the framework included a methodology for:

- calculating both the direct and indirect costs of research;
- enabling funding agencies to allocate these costs to funded research projects; and
- distributing funds for overheads within the research organisations (HEA/Forfàs 2003, p. 17).

The Group recommended that, in the short term, an overhead (on direct costs) of 30 per cent for laboratory-based research and 25 per cent for desk-based research should be applied by all research funding agencies. The Group also considered what longer-term arrangements would be appropriate. The Group noted that in all countries studied, including the US, institutions receiving funding have responsibility for allocating indirect costs and ensuring that these are used to support funded projects. In some cases there is a nationally agreed allocation between different cost components. It favoured the US approach which required universities to provide a detailed breakdown of where the total aggregate indirect costs received are spent.

The features of the US model which the Group particularly noted were:

- there is a systematic procedure for the identification of indirect costs and consequently the calculation of a rate for each institution;
- institutions are responsible for distributing the indirect costs; areas where overheads cannot be spent are clearly identified; and
- the overhead rate is audited regularly, which ensures that the indirect costs are minimised and properly updated.

The Group concluded that the US definitions of direct and indirect expenditure are recognisable and transferable to the Irish research system and that the US provided the most comprehensive model that met the criteria of the Group's terms of reference.

In 2004, a Working Party on Research Infrastructure (consisting of the main stakeholders in Ireland's higher education and research system) was established to address the issue of persistent deficits in infrastructure funding, as well as the sustainability of research infrastructure (Ireland Working Party on Research Infrastructure in Higher Education, 2005). The Working Party recommended, among other things, that 30 per cent of direct costs (less equipment costs) should be allocated as overhead for science and technology, with 25 per cent of these costs being allocated for research in the humanities and social sciences'.

Current arrangements

Since 2003, Irish Government research funding agencies have provided a contribution to indirect costs of research through an overhead rate of up to 30 per cent on direct costs.

The Science Foundation of Ireland (SFI) is now the major source of funding for university research in Ireland. SFI requires the overhead funds that it provides to be invested by the universities in accordance with a long-term plan. SFI claims that Vice-Presidents of Research are empowered under this arrangement and that the new approach focuses on the quality of services to support researchers.

Universities have to apply to receive these overheads. They are paid on the basis of the previous year's funded research and have to be spent within the year of receipt. This is reported to have created a large additional workload for university research offices (Robertson, 2007).

The Irish Universities Association (2008) continues to argue for 'a more realistic rate' of 50 per cent of direct costs. It has been reported that the Irish Higher Education Authority has established a project to examine the issue of full economic costs, which is expected to report later in 2008.

3.5 Sweden — partial payment of indirect costs by funding agencies

In Sweden the balance of research support has shifted from internal sources (government block funding) to involve increasing amounts of competitive grant funding. In 2000, the Swedish Government accepted the general proposition that granting bodies should meet indirect costs. The government-funded research councils reached an agreement with the Association of Swedish Higher Education (SUHF) to apply a 35 per cent overhead on direct costs, a figure which has been shown to be less than the actual indirect costs of Uppsala University, one of Sweden's leading research institutions (Ottosson and Falk, 2005). However the private funding bodies (e.g. the Wallenberg Foundations), which are significant in Sweden, did not accept this agreement. Some university researchers were also opposed to what they saw as a tax on their research grant.

Current arrangements

A new funding model has been developed which allocates costs to teaching and research on the basis of the sum of components of salaries of staff engaged in research projects and/or teaching courses. Direct and indirect costs are calculated on the basis of time spent on teaching and/or research. The data are aggregated up from Department, to Faculty, to whole of university (Bremer, 2008).

A pilot study of the new model has been applied to 23 grant-supported projects at Uppsala, Lund and Stockholm universities. The average indirect costs for these projects were found to be 52 per cent of direct costs, with individual project indirect costs ranging from 31 to 66 per cent. This meant that, if these projects attracted the 35 per cent indirect cost support, then the universities were receiving on average 78 per cent of total project costs. Stockholm University is implementing a funding model in 2008 where all resources are distributed to Departments, which are then billed for support services according to Department size (Bremer, 2008)

Sweden's research councils have recognised that 35 per cent overheads are inadequate and are expected to move to full cost coverage in the near future (Bremer, 2008).

3.6 The EU Framework Programmes — moving to full economic costs

Table 3.3 sets out the eligibility details for the EU Framework Programme. This Table was originally provided to applicants for Fifth Framework Programme grants and has been updated to reflect changes in the Seventh Framework Programme (FP7).

The European Commission documentation (EC, 2007) notes:

Indirect costs are all those eligible costs which cannot be identified by the beneficiary as being directly attributed to the project, but which can be identified and justified by its accounting system as being incurred in direct relationship with the eligible direct costs attributed to the project.

Indirect costs, also called overheads, are all the structural and support costs of an administrative, technical and logistical nature which are cross-cutting for the operation of the beneficiary body's various activities and cannot therefore be attributed in full to the project. The nature of an indirect cost is such that it is not possible, or at least not feasible, to measure directly how much of the cost is attributable to a single cost objective.

Table 3.3

EU FRAMEWORK PROGRAMME ELIGIBLE COST CATEGORIES

| Cost | Eligibility rules |
|---------------------------------------|--|
| Personnel costs: | The cost of scientific and technical personnel assigned to the project is a direct cost. Time devoted to the project to be recorded. Salary on-costs may be treated as indirect costs. |
| Durable equipment: | Equipment purchased for the project is a direct cost. Depreciation is handled in accordance with standard practice in the applicants' institution. Leased equipment is reimbursed without exceeding the eligible cost if it were to be purchased. |
| Subcontracting: | External services are direct eligible costs. |
| Travel and subsistence: | A direct cost. Travel outside the European Union or an Associated State needs the prior approval of the Commission, except for visiting a participant. |
| Consumables: | Only project specific items, which are normally treated as direct costs except where the applicant's institution treats them as indirect costs. |
| Certification of financial statements | A direct cost. |
| Computing: | Only project specific items, which are direct costs. |
| Protection of knowledge: | Only with prior approval of the Commission |
| Other specific costs | Any cost necessary for the project, not falling within a defined category and having received the prior approval of the Commission |
| Co-ordination costs: | Costs for the financial/administrative administration (personnel, travel and all other cost categories apart from subcontracting) incurred only by the coordinator - the financial/administrative coordinator in case of split between scientific and administrative coordinator - in order to fulfill his tasks. An indirect cost, up to 7 per cent of direct eligible costs. |
| Transnational access: | User fees for researchers from another country. A direct cost subject to a number of limitations. |
| RTD performer | Special provisions apply to SMEs and to the cost of research performed by a non-participant. |

Source: Allen Consulting Group adapted from <http://cordis.europa.eu/fp5/management/particip/v-qfpbox7.htm> - **Box 7**

Indirect costs have to be handled in accordance with normal accounting practices of the grant recipient's institution and should be extracted from, or reconciled with, the official accounts. Where the accounting system of the recipient's institution includes overhead costs that are not eligible under the FP7 Grant Agreement, these costs have to be removed when submitting financial reports.

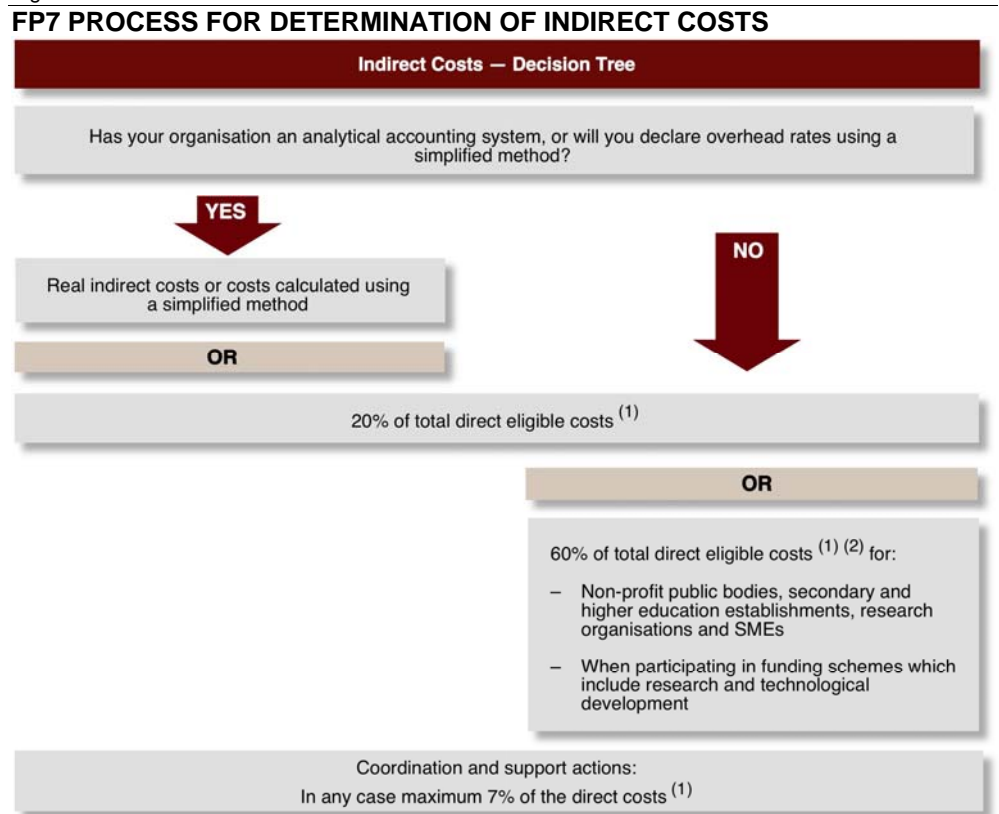
Methods of calculation of indirect costs:

Under the Sixth Framework Programme direct and indirect eligible costs charged by a participant had to be declared according to a cost-reporting model. There were three cost models available:

- the Full cost model (FC), where all the eligible actual costs (direct and indirect) were charged by the grant recipient;
- the Full cost with fixed rate model (FCF), where actual direct cost and a fixed rate (20 per cent of direct cost minus subcontracting) for indirect cost were charged by the grant recipient; and,
- additional costs (AC) basis, where the direct additional eligible costs and a fixed rate (20 per cent of additional direct costs minus subcontracting) were charged by the grant recipient.

Under FP7, there are no cost-reporting models. The grant recipients must declare their actual costs (with the possibility of using average personnel costs if this is approved by the Commission). The ‘Simplified Method’ applies to institutions that do not aggregate their indirect costs at a detailed level but can aggregate them at institutional level. Grant recipients following this method have to keep records of all their working hours so as to accurately attribute time to an FP7 project. The process for determining how indirect costs are determined in FP7 is illustrated in Figure 3.1.

Figure 3.1



Source: European Commission 2007, ‘Guide to Financial Issues relating to FP& Indirect Actions’ assessed on 25 August 2008 at ftp://ftp.cordis.europa.eu/pub/fp7/docs/financialguide_en.pdf

Note: 1 Excluding direct eligible costs for subcontractors and some other costs.

2 The fixed rate can be used for proposals due before 1 January 2010.

This policy is driving implementation of full economic costing of research in universities across Europe according to papers presented at a workshop early in 2008 (European Liaison Office of the German Research Organisations (KoWi), 2008).

Optionally, grant recipients may opt for the ‘Fixed Rate method’ where they declare their actual direct costs plus a fixed rate for indirect costs of 20 per cent of the direct costs (minus subcontracting and third party costs not incurred on the premises of the beneficiary). Where grant recipients opt for a fixed rate of reimbursement of indirect costs, these do not need to be backed up by accounting documents.

In addition a transitional fixed rate of 60 per cent is available for any applications that have to be lodged before 1 January 2010. This is to help and encourage institutions to transition from a fixed rate from the old AC model to a full cost model.

For FP7, all departments, faculties or institutes that are part of the same legal entity must use the same system of cost calculation (unless a special clause foreseeing a derogation for a particular department/institute is included in the Grant Agreement).

3.7 Other European countries — moving to cover indirect costs

In Finland, the National Technology Agency (TEKES) pays research overheads on funded projects calculated at 46 per cent of salaries plus on-costs. The Academy of Finland is reported to pay overheads of 12.5 per cent of grant funds (Niemi, 2005).

The Netherlands has started to apply full economic costing to grant-funded research.

3.8 New Zealand — simple formula-based approach

New Zealand's first approach to support research overheads and fully fund research was announced in 2003 (Buwalda, 2003). The core principles of full cost funding announced at that time included:

- real costs of research are measured;
- longer-term viability of research providers is maintained;
- university research is not cross-subsidised by other activities – especially education;
- the cost of owning and using capital equipment in research, including depreciation, is to be fully funded;
- universities are to have long-term asset management plans; and
- research grants are to pay for the full direct and indirect costs of research projects.

New Zealand has adopted the breakdown of costs summarised in Table 3.4.

In addition, the New Zealand Government expects universities to maintain a modest financial surplus of up to three per cent of revenue for future capital development and as a risk buffer. Universities can choose to include a contribution towards such a surplus.

To supplement these arrangements the New Zealand Government introduced a program of 'negotiated investment' in 2006. The purpose of this new program was to provide longer-term funding to support important research, science and technology capabilities. Only large projects funded for at least six years in two successive funding rounds are taken into account in determining allocations from this program. These attract up to 40 per cent of additional support.

Table 3.4

BREAKDOWN OF DIRECT AND INDIRECT COSTS - NEW ZEALAND

| | |
|--|---|
| Direct costs | |
| Staff costs | Salaries of staff directly involved in research projects including on-costs |
| General operating costs | Consumables, travel, fieldwork costs, conferences, recruitment and relocation of project specific staff |
| Equipment depreciation, usage and rental | For equipment costing more than NZ\$5000, cost of using equipment including maintenance and decommissioning, specialised support staff and pro-rata depreciation. |
| Indirect costs | |
| Support staff costs | Salaries of staff that support researchers, administration |
| Premises | Cost of using premises based on depreciated cost or cost of replacement |
| Libraries | Journal subscriptions, books and librarian salaries |

Source: Buwalda, 2003

Current arrangements

The basic calculation methodology for the NZ universities (NZ Vice Chancellors' Committee, 2003) is as follows:

- determination of the total indirect costs of an institution's externally funded research (EFR). The total costs of the institution supporting EFR are divided into three cost pools (administrative pool, facilities pool, and library pool) before being assembled and allocated to EFR;
- determination of the total direct salary component associated with EFR. Total salaries associated with EFR are established by taking all salaries associated with direct EFR and excluding the salary components associated with consulting contracts and contract administration; and
- the research overhead recovery rate is then determined by dividing total salary costs by EFR, and is expressed as a percentage.

3.9 Analysis of overseas models – Summary

In summary, this chapter demonstrated that

- indirect costs associated with publicly funded university research projects are recognised by leading OECD countries as a legitimate element of the cost of undertaking these projects;
- leading OECD countries have established, or are moving to establish mechanisms to fund indirect costs. In the case of the USA, these arrangements have been in place for decades. In other countries, moves to address indirect costs started in the 1990s;
- payments for indirect costs in the USA, UK and to a lesser extent the Canadian systems, reflect the particular cost structures of individual institutions. In other countries, a single indirect cost rate applies;

- the USA and UK approaches involve greater administrative complexity but are more equitable in that they address actual costs;
- while there is some variation over what can be included in claims for the payment (or reimbursement) of indirect costs, there is general agreement that the average indirect cost is around 50 per cent of direct project costs;
- while the UK is close to achieving full economic costing of research funded by their research councils, most other countries do not meet full indirect costs. Countries limit their payment/reimbursement of indirect costs by specifically excluding some costs, by capping some costs (e.g. US Administration costs) or using indirect cost rates that do not cover actual costs;
- the UK experience demonstrates that it takes considerable time and effort to introduce a full activity based costing approach to university research;
- in the countries discussed in this Chapter, indirect cost payment/reimbursement rates vary from 35 per cent to more than 70 per cent. In the USA, federal reimbursement rates below 50 per cent are generally a consequence of state government support for indirect costs;
- some countries have rules and reporting requirements associated with the payment of indirect costs;
- in most countries, universities find it difficult to get charitable trusts, foundations and industry to pay full indirect costs; and
- reimbursement of capital costs and/or depreciation has not been addressed in some countries.

The strengths and weaknesses of each model have been summarised in Table 3.5.

3.10 Application to the Australian context

The important aspects from overseas experience is that many OECD countries are considerably more advanced in both the recognition of funding indirect research costs and in developing policy measures that seek to fund the full cost of research. These countries have undertaken numerous studies and audits of indirect costs over a period of more than a decade. Within this context, issues that stand out include

- the methods for calculating (attributing) the indirect costs associated with publicly funded research;
- the methods for paying the indirect costs of research;
- the methods for allocating funded indirect costs within universities
- the treatment of Chief Investigator salaries;
- rules and reporting requirements associated with indirect costs;
- the need to provide large one off funding to address backlogs from decades of under-investment in maintenance, and capital assets (Canada, Ireland and the UK); and
- the provision of financial assistance to universities to assist the introduction of full economic cost accounting (UK and currently other countries in Europe).

Table 3.5

STRENGTHS AND WEAKNESSES OF OVERSEAS MODELS

| Country | Strengths | Weaknesses |
|------------------------------|---|--|
| The United States of America | <ul style="list-style-type: none"> • Systematic procedure for identifying indirect costs • Predetermined rates give stability for 2-4 years allowing universities to plan • Institutions have complete responsibility for distributing indirect costs • Institutional rates vary to reflect different cost structures | <ul style="list-style-type: none"> • Some indirect costs not reimbursed • Complexity of administration and accounting procedures • Pressure on institutions to accept less than their entitlement in order to successfully conclude F&A negotiations |
| Canada | <ul style="list-style-type: none"> • Special federal fund established to pay indirect costs • | <ul style="list-style-type: none"> • Indirect costs not fully reimbursed • Indirect cost reimbursement formula unfair to larger research performing institutions |
| United Kingdom | <ul style="list-style-type: none"> • TRAC gives more accurate data on indirect costs than other approaches • Creates awareness amongst academics about the need to accurately capture the full cost of research. • Government research funders have increased total investment | <ul style="list-style-type: none"> • TRAC is relatively complex and resource intensive • Activity-based costing is open to manipulation and gaming by individual academics. |
| Ireland | <ul style="list-style-type: none"> • SFI claims that their system empowers Vice Presidents responsible for research and leads to better institutional management of research | <ul style="list-style-type: none"> • Indirect costs not (yet) fully covered • Planning and reporting requirements associated with indirect cost recovery involves significant compliance costs |
| Sweden | <ul style="list-style-type: none"> • New funds management approach being adopted by Stockholm University appears similar to that of Monash University | <ul style="list-style-type: none"> • Indirect costs not (yet) fully covered |
| Other European countries | <ul style="list-style-type: none"> • EU Framework Program requirements are likely to drive a more uniform European approach to indirect costs • | <ul style="list-style-type: none"> • EU Framework Program procedures on indirect costs currently favour universities with full economic cost data, but these procedures could undergo further change |
| New Zealand | <ul style="list-style-type: none"> • Simplicity. • Full research costs recognised. | <ul style="list-style-type: none"> • Only some project funding eligible for indirect costs • Government funding agencies have chosen to fund fewer “full-cost” projects • Funding bodies have continuously challenged the methods for calculating university overheads and battled with universities over budget components |

Source: Allen Consulting Group from various sources.

Chapter 4

Analysis of research costs in the Australian university sector

This Chapter provides evidence from a variety of sources on the current shortfall in the funding of university research from competitive grant schemes. It does this by introducing sector-wide indicators of funding shortfalls. It then draws on empirical evidence from individual universities to verify broad trends across the entire sector. In doing so, the Chapter explores research revenues and costs through a number of themes, namely the extent to which university research funding covers the direct and indirect costs of research.

4.1 Sector-wide indicators of funding shortfalls

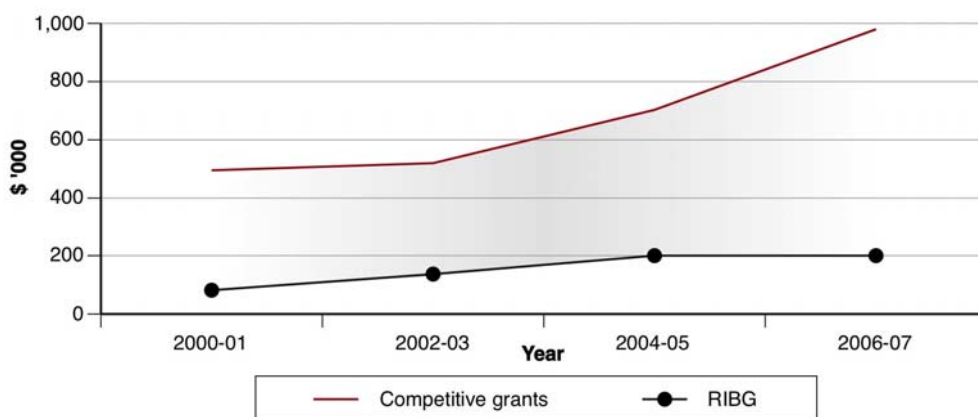
There are a number of indicators that demonstrate that the cost of undertaking university research exceeds the revenue obtained from research funding. These indicators are outlined below.

Funding from block grants has not kept pace with funding from competitive grant schemes

The relationship between competitive research funding and related block grants is highlighted in Figure 4.1. The figure shows that the funding received by Australian universities for the RIBG scheme, which exists to support infrastructure costs in institutions that achieve success in competitive grant schemes, has not kept pace with the growth of competitive grants for the period 2000-01 to 2006-07.

Figure 4.1

AUSTRALIAN UNIVERSITY NATIONAL COMPETITIVE GRANT INCOME AND RESEARCH INFRASTRUCTURE BLOCK GRANT FUNDING 2000-07



Source: adapted from Go8 Submission to the Review of the National Innovation System 2008, and ABS HERD Survey 2008, Cat. No. 8111.0, issued 13 June 2008.

Figure 4.1 also demonstrates the growing gap between total competitive grants and RIBG. It is estimated that an additional \$58m would have been needed in 2006-07 just to maintain RIBG at the same percentage of competitive grants as it was in 2002-03. It is estimated that, in 2006-07, an additional \$200m would have been required to bring RIBG up to the level of 40 per cent and about \$300m to reach 50 per cent of competitive grants.

Competitive grants do not meet the cost of research

There are several reasons why competitive grants do not meet the full economic costs of the research projects they are intended to support. These include:

- the rules set by funding agencies do not allow applicants to claim some direct costs;
- the use of ‘leveraging’ funds by universities in order to win grants; and
- the funds provided through RIBG are much less than the indirect costs incurred in relation to competitive grants. Currently, total RIBG funding is about 20 per cent of total competitive grants, a figure that is currently below the average used by other countries (i.e. 50 per cent).

While it may be unrealistic to expect funding agencies to meet all the costs of research projects, it is important that the gap between funding and costs does not become detrimental to Australia’s research effort. Evidence provided to the Review of the National Innovation System suggests that the gap between project funding and university costs is significant (ATN, 2008; Go8, 2008; IRU Australia, 2008).

Recent ARC and NHMRC data show that universities are attempting to bridge the gap by making contributions to the direct costs of individual research projects. Funding data for 2007 indicates that the total direct university support for ARC Discovery Grants was approximately \$220m or 44 per cent of the total funding requested for ARC funded projects (Appendix G provides rolling averages for the period 2003-2007).⁷ For the period 2000-07, universities received between 81 and 92 per cent of the total grant value requested from the NHMRC.⁸

Funding for research training may not cover the direct costs of Higher Degree Research students

The effectiveness of research training is vital to Australia’s future research profile. Research graduates are considered to be an important source of new knowledge for the economy. Students enable the scholarly community to renew and serve as a conduit for new ideas and technologies to flow into the community and the economy. For most universities, doctorate by research (PhD) and Masters by research are the main types of Higher Degrees by Research (HDRs).

Sustainable funding of research training is essential to ensuring a sustainable research effort in Australia. Table 4.1 highlights the decline of RTS relative to HERD for the period 2000-06. There is also some inference in the data that funding for research training has declined relative to HDR competitions, however the complex way in which universities fund research training make it difficult to substantiate this through RTS/HDR comparisons.

⁷ ARC information provided to this project

⁸ Data supplied to this study by the NHMRC.

The decline of RTS funding as a share of HERD has occurred in the context of significant growth within the sector. For example, between 2000 and 2006 total HDR graduate output grew by approximately 20 per cent, while RTS funding declined per completion. But it is important to see this as an indicative measure of decline only. Most universities receive income for research training from a number of sources and also use general operating funds to finance research training.

Table 4.1

FUNDING OF THE RESEARCH TRAINING SCHEME 2000–06 (IN 2006 \$000'S)¹

| Source of funds | 2000 | 2002 | 2004 | 2006 |
|-------------------------------------|-----------|-----------|-----------|--------------------|
| RTS (\$000's) | 626 708 | 608 294 | 588 382 | 562 600 |
| Total HERD (\$000's) | 3 465 553 | 3 951 148 | 4 698 833 | 5 404 372 |
| RTS/Total HERD (%) | 18.0% | 15.3 | 12.5% | 10.4% |
| HDR completions (domestic students) | 4 573 | 4 939 | 5 249 | 5 541 ² |

Source: DIISR Budget Papers 2008, Table 4, ABS 2008 HERD Survey.

Note: 1. This report uses the ABS's 'R&D Implicit Price Deflators' to translate the data into 2006 dollars.
2. Due to the unavailability of figures for 2006, completions for 2005 have been used instead.

4.2 Empirical evidence of funding shortfalls

The following sections provide the empirical evidence that underpins the conclusions outlined in Section 4.1.

Analysis of university revenues and expenditures associated with research

Before discussing university data it is important to note the difficulties in obtaining comparable cost data for university research. This study has found that Australian university accounting systems can generally distinguish between teaching and research costs. However even this is not without some difficulties in relation to methods for the attribution of costs. For example, there is some evidence that research-active staff tend to work more than a forty-hour week. It is likely that this additional effort involves research rather than teaching. This complicates the attribution of a percentage of time, and therefore salary and on-costs, to teaching, research and other activities.

A number of university administrators allocate staff time, on average, 40:40:20 to teaching, research and other functions. Time allocation is a contentious issue and has received some attention over a number of years. It should be noted that the ABS relies on university estimates of time allocation to research in order to develop Australia's HERD statistics.

Staff time required for teaching-related activities varies over the academic year and the timing and scope of research grants also varies significantly. As a result, obtaining satisfactory empirical data on time commitments to university research is difficult. Without extensive time-keeping data on research effort over an extended period, research activity can only be estimated.

A bigger problem with university cost data lies in the difficulty which some university accounting systems face in distinguishing research costs relating to competitive grants from research costs relating to other funding sources (e.g. internal sources and industry contracts). While some university accounting systems can handle these distinctions, consultations reveal that most university systems have not been set up to separate costs in this way.

Data collection

Monash University data was collected during a full activity based costing exercise for each faculty in 2003-04. The results of the activity based costing were then aggregated to arrive at conclusions for the entire university. The 2003-04 period precedes an organisational restructure of Monash University's financial arrangements in which many administrative functions were centralised and purchasing agreements with each faculty were established. Hence, the arrangements in the 2003-04 accounting period mirror the traditional faculty based administrations and the data is therefore comparable with other research-active universities. The data relates to category 1 income (nationally competitive grants) Appendix D covers this issue in more detail.

The University of South Australia constructed data specifically for this project. The data was based on some activity based costing previously undertaken within the university and some key assumptions based on FTE rates. Data for the whole of university and a science-based institute for the year 2007 was constructed for the project using the Monash University's template. To account for sensitivity of conclusions to data selection, revenue and expenditure data for the University of South Australia includes research income from categories 1 to 5. Again, more details about the choice of this university data can be found in Appendix D.

Data presentation

The revenues and costs associated with research from competitive grants in two universities are presented in Table 4.2. This Table presents revenue data from two main sources; competitive grants and RIBG. These sources have been added together to show total revenues received by each university that directly relate to competitive research.⁹

Table 4.2 also presents data relating to the direct and indirect costs of competitive research. Not all direct costs are funded by competitive research grants. Typically, the salaries of Chief Investigators are not funded by grants, and these are referred to as unfunded direct costs. These unfunded direct costs are excluded from the analysis in Table 4.2. For the purposes of this project, the unfunded direct costs of research have been defined as those costs, arising from salaries of research staff other than Chief Investigators and consumables, that directly relate to individual research projects. Indirect costs have been identified as those costs which relate to the departmental, faculty, corporate and central overheads incurred as a consequence of competitive research (see Table 4.5 for indication of these costs).

The sub-total (funded direct and indirect) costs identified here have been shown as a percentage of competitive grants for Monash University and total research grants for the University of South Australia, and as a percentage of RIBG. Such proportions offer guidance to funding agencies about the quantum of funding necessary to meet the full cost of competitive research.

⁹ Although Monash University has supplied 2004 data and the University of South Australia has provided 2007 data this is not a problem for the analysis presented here, as our interest is in cost ratios rather than actual dollars.

The key points to be noted from Table 4.2 are:

- direct project costs equal 100 per cent of grant revenue;
- indirect project costs (consisting of departmental and faculty overheads and corporate and central costs) range between 60.5 and 66.1 per cent of total revenue associated with competitive grants; and
- funded direct and indirect range between 160.5 and 166.2 per cent of competitive grants and above 500 per cent of the RIBG allocation for Monash University.

These findings are confirmed by data from two faculties and one research school at the ANU that suggests that the total costs of undertaking competitive research range between 2.0 and 2.2 times the income from competitive grants.¹⁰

Table 4.2

REVENUES AND COSTS FROM GRANTS FOR TWO UNIVERSITIES

| Revenue/Costs | Monash University | | University of South Australia | |
|---|-------------------|--|-------------------------------|---|
| | \$'000 | Percentage of revenue/ expenditure from competitive research grants | \$'000 | Percentage of revenue/ expenditure from research grants |
| Revenues | | | | |
| Grants | 30 527 | 100.0 | 47 992 ¹ | 100.0 |
| RIBG | 8 487 | 27.8 | 1 870 | 3.8 |
| <i>Total revenue from competitive grants and RIBG</i> | <i>39 014</i> | <i>127.8</i> | <i>49 862</i> | <i>103.8</i> |
| Costs² | | | | |
| Direct project costs | 30 527 | 100.0 | 47 992 | 100.0 |
| Indirect costs | | | | |
| • Departmental and faculty overheads ³ | 8 987 | 29.4 | 15 919 | 33.1 |
| • Corporate overheads/central costs | 9 512 | 31.1 | 15 862 | 33.0 |
| <i>Total indirect and direct cost of undertaking research from competitive grants</i> | <i>49 026</i> | <i>160.5</i> | <i>79 773</i> | <i>166.2</i> |
| Indirect/direct costs | | 60.5% | | 66.2% |
| Costs/revenues | | | | |
| Direct and indirect costs/competitive grant revenue | | 160.5% | | 166.2% |
| Direct and indirect costs/RIBG | | 577.6% | | n.a. ⁴ |

Source: Monash University (2004) and University of South Australia (2007).

Note:

1. Revenue data for University of South Australia includes revenue from Category 1-5. The Category 1 revenue (competitive grants) for the university in 2007 was \$11.56m.
2. Cost data for the University of South Australia is derived from Category 1-5 revenue sources.
3. Figures also include the estimated costs associated with research grant preparation.
4. Figure unavailable.

¹⁰ ANU submission to this project 2 September 2008.

Revenues from project grants

University accounting systems track competitive grant costs with considerable precision. In some universities (such as the University of South Australia) there are relatively small amounts of research other than that supported by competitive research grants (see Table E.1 for total competitive grants awarded to universities). In these cases, attributing both direct and indirect costs to revenue from competitive research grants can be difficult, but not impossible.

In the case of other universities (such as the ANU and NSW), where a significant amount of research is funded from other university sources, attribution of indirect costs is more difficult. In these universities, further work that more clearly attributes costs to competitive grants would need to be undertaken.

4.3 Direct costs of research

Table 4.2 assumes that the funded direct costs of undertaking research from a competitive grant are equal to 100 per cent of the grant value for Monash University and the University of South Australia. The table does not include revenues from IGS and RTS as universities were unable to distinguish between research and non-research related activities from these funding sources.

The assumption that funded direct costs of competitively funded research can be equated with grant revenue has been tested through a more detailed analysis of data relating to salary costs. Salaries represent by far the most significant direct cost of undertaking university research and the funding category (for post-doctoral and research support) is a major element of competitive grant schemes. Many universities report that revenues received from funding agencies do not meet the full direct salary costs of competitive grants. This is discussed in more detail below.

The data relating to the University of NSW, a Go8 university with a high proportion of research active staff, is used here to illustrate shortfalls in the salary component of ARC grants (see also Table D.4 for an indication of the comparability of UNSW to other research active universities). The data has been constructed from an activity based costs exercise in which staff were asked to allocate the proportion of research time (assumed to be 40 per cent of total time under the 40:40:20 assumption) spent working on ARC research grants.

The results of this exercise and the estimated direct salary cost of research is presented in Table 4.3. It is the view of the authors of this report that such figures are a reliable, if a somewhat conservative proxy for the entire university sector. This is because allocation guidelines used in the audit of UNSW are applied by the rest of the Go8 sector, as well as in other universities (i.e. University of Newcastle), in discussions about staff workload.

Table 4.3

COST OF EMPLOYING ACADEMIC RESEARCH STAFF AT UNSW BETWEEN 2006 AND 2008 (\$000'S)

| Year | Revenues from ARC grants for salaries (a) | Direct costs not covered by the ARC salary component | | | Total salary costs (a+b) | ARC's share of total direct salary costs (%) |
|------|---|--|--------------------|--|--------------------------|--|
| | | Salary costs | Other salary costs | Salary costs met by the university (b) | | |
| 2006 | 45 935.4 | 19 933.5 | 6 146.1 | 26 079.6 | 72 015.0 | 63.7 |
| 2007 | 47 551.0 | 21 336.2 | 5 946.4 | 27 282.6 | 74 883.6 | 63.4 |
| 2008 | 49 281.9 | 22 451.0 | 5 824.4 | 28 275.4 | 77 557.3 | 63.5 |

Source: UNSW 2008

The data in Table 4.3 confirms that universities spend all revenues from grants on direct research costs. In addition, it also indicates that UNSW is contributing approximately 37 per cent of the salary costs to ARC projects and that this percentage has remained remarkably stable between 2006 and 2008. It is apparent that most competitive granting schemes are not meeting the basic direct costs of undertaking competitive research projects.

The cost of Chief Investigators

Not captured in Table 4.2 (because of a lack of comparable data) is the cost of the time of the Chief Investigator (CI) in undertaking research supported by competitive grants. The time of the CIs is a legitimate direct cost in undertaking research, and an approximate cost has been modelled by Monash University and used for this study.

CI costs have been calculated by assuming that, on average, CIs spend a quarter of their time (i.e. 0.25 FTE salary on-costs) leading projects supported by competitive research grants. They also include some support costs for CIs, which are calculated using rates per FTEs for central services (see Table D.3 for further explanation of the assumptions underpinning the Monash University data). It should be noted that ARC rules limit the number of Discovery Grant on which a researcher can be CIs (one as sole CI with the possibility of a supporting CI role on a second grant). Thus the 0.25 FTE assumption appears to be reasonable.

Table 4.4 indicates the cost of the CI across each faculty of Monash University. It shows this as a proportion of the total revenue received from competitive grants in 2004. The calculation of CIs' time spent on competitive grants is based on a sample of grant applications provided by the University. It is based on a CI salary of Level D (professorial salary which include on-costs) of \$100 000. This is a significant underestimate of current average professorial salary (including on-costs) in Australia.

From Table 4.4 we can infer:

- that in six faculties (Arts, Education, Engineering, ICT, Law and Science) the estimated cost of CI contributions to competitive grants exceeded total revenues from competitive grants;
- in all other faculties bar two, estimated CI costs exceeded 50 per cent of total revenues from competitive grants; and

- conservative estimates suggest that 73.2 per cent of total revenues from competitive grants can be attributed to CI costs. This suggests that for every dollar given to universities for competitive grants an additional 73.2 cents is contributed by universities through CI costs.

Table 4.4

CI COSTS AS A PERCENTAGE OF REVENUES FROM COMPETITIVE GRANTS FOR MONASH UNIVERSITY (\$'000'S)

| Faculty | Revenues (competitive grants) | Estimated CI costs (including support costs) | Revenues less expenditures | Percentage of revenues spent on CIs |
|----------------------|-------------------------------|--|----------------------------|-------------------------------------|
| Arts | 878 | 1 590 | (712) | 181.0 |
| Business/Economics | 476 | 413 | 63 | 86.7 |
| Education | 854 | 1 449 | (595) | 169.6 |
| Engineering | 2 619 | 3 013 | (394) | 115.0.0 |
| ICT | 326 | 363 | (37) | 111.3 |
| Law | 117 | 430 | (313) | 367.5 |
| Medicine | 21 029 | 10 966 | 10 063 | 52.1 |
| Pharmacy | 270 | 217 | 53 | 80.3 |
| Science | 3 898 | 3 925 | (27) | 100.6 |
| <i>All faculties</i> | <i>30 527</i> | <i>22 367</i> | <i>8 205</i> | <i>73.2</i> |

Source: Monash University (2004)

Table 4.4 highlights that CI salaries are a significant cost of undertaking competitive research. While CI salaries are not directly reimbursed by competitive grants, the introduction of Fellowships schemes (such as ARC Federation Fellows) is an important indicator that funding agencies are starting to fund the direct salary costs of CIs. This project's *Issues Paper* provides more detail the various fellowship schemes offered by funding agencies (Allen Consulting Group, 2008).

4.4 Indirect costs of research

Data relating to Monash University and the University of South Australia has been used to highlight the proportion of indirect costs attributed to undertaking research from project grants (see also notes relating to Table 4.2). Table 4.5 provides data on the Faculty of Science at Monash University and a science-based institute at the University of South Australia. Importantly it shows the high level of indirect costs as a proportion of revenues from competitive grants and RIBG.

The key points to arise from this data are:

- the total indirect costs for two science based faculties/institutes are 48.3 per cent of revenues from project grants (categories 1 – 5) for the University of South Australia and 71.8 per cent of revenues from competitive grants for Monash University. The Monash University figure is about 2.5 times the RIBG;

- departmental, faculty and institute overheads are the largest group of indirect costs for both universities (ranging between 23.8 and 29.3 per cent of total revenues from competitive grants). This has been confirmed by data from two faculties (Science and Arts) and one science-based research school at the ANU which suggests that overheads range between 18 per cent and 21.5 per cent revenues from competitive grants for 2007;
- these figures do not include infrastructure costs (maintenance and refurbishment), hence the true indirect costs of both universities would be significantly higher; and
- the figures also do not estimate the total cost of CIs that undertake research supported by competitive grants. An explanation of these costs is presented below.

Table 4.5

REVENUES AND COSTS FROM COMPETITIVE GRANTS FOR A FACULTY AND A RESEARCH INSTITUTE

| Revenue/ Expenditure | Monash University (Faculty of Science) | | University of South Australia (Science-based institute) | |
|--|---|---|--|---|
| | \$'000 | Percentage of revenue/ expenditure from competitive research grants | \$'000 | Percentage of revenue/ expenditure from research grants |
| Revenues | | | | |
| Grants | 3 898 | 100.0 | 10 532 ³ | 100.0 |
| RIBG | 1 084 | 27.8 | 1 142 | 10.8 |
| <i>Total revenue</i> | <i>4 981</i> | <i>127.8</i> | <i>11 674</i> | <i>110.8</i> |
| Indirect costs | | | | |
| Departmental, faculty, institute overheads ¹ | 1 187 | 30.4 | 3 092 | 29.3 |
| Corporate overheads/central costs | | | | |
| • Library services | 127 | 3.2 | 126 | 1.1 |
| • Research support | 163 | 4.1 | 88 | 0.8 |
| • Corporate services | 198 | 5.0 | 396 | 3.7 |
| • HR services | 59 | 1.5 | 168 | 1.5 |
| • ICT services | 43 | 1.1 | 141 | 1.3 |
| • Financial services | 65 | 1.6 | 97 | 0.9 |
| • Space | 868 | 22.2 | 911 | 8.6 |
| • Other | 91 | 2.3 | 70 | 0.6 |
| <i>Total indirect costs from grants</i> | <i>2 801</i> | <i>71.8</i> | <i>5 089</i> | <i>48.3</i> |
| Indirect costs/revenues | | | | |
| Indirect costs/grant revenue | 71.8% | | 48.3% | |
| Indirect costs/RIBG | 258.3% | | n.a. ² | |

Source: Monash University (2004) and University of South Australia (2007).

- Note:
1. Figures also include costs of research grant preparation.
 2. See notes relating to Table. 4.3.
 3. Categories 1 – 5.

Variation in indirect costs between faculties

It is commonly acknowledged that there are significant cost variations between different research disciplines. The data provided by Monash University for this project provides some insight into the proportion of additional funding required by different faculties in order to support their research activities. Table 4.6 shows the percentage of additional funding to support each faculty for the year 2004. It is important to note that the average additional funding for all faculties that is provided by Monash University when a competitive grant is received is 28.8 per cent.

This figure was determined by subtracting total direct and indirect costs associated with competitive grants (including CI costs) from total grant revenue to determine the unfunded component (as per Table 4.2 and Table 4.5). Additional non-research revenue was then factored in to cover the costs of the CI, and the level of research funding support was ascertained by subtracting the additional revenue from the unfunded component and the revenue from competitive grants. The results of this work are presented in Table 4.6.

Table 4.6

LEVEL OF RESEARCH SUPPORT FUNDING BY FACULTY 2004

| Faculty | Level of research support funding (%) |
|-----------------------------|--|
| Information Technology | 48.8 |
| Science | 39.1 |
| Law | 38.8 |
| Art and Design ¹ | 33.2 |
| Engineering | 29.5 |
| Pharmacy | 29.1 |
| Business and Economics | 28.6 |
| Medicine | 26.7 |
| Arts | 25.1 |
| Education | 24.7 |

Source: Monash University 2004.

Note: 1. Total costs also include CI cost and support costs.

The inferences for this data are:

- the information technology and science faculties require the most research support to undertake research activities;
- the visual arts disciplines (such as faculty of art and design) requires more additional funding than some science based disciplines (i.e. pharmacy and medicine); and
- the faculty of education requires least additional funding.

The results of this study would suggest that although there are variations in indirect costs across faculties, working with any average value is likely to be satisfactory for smaller universities.

4.5 The costs associated with research training

An examination of the direct and indirect costs of research training was an important initial aim of this project. However, due to problems with the data collected for this project, sufficient conclusions about the adequacy of funding, in particular the sustainability of RTS, are unable to be drawn.

Further analytical work is necessary to inform the university-sector about adequacy of research funding.

4.6 Analysis for the funding shortfall

The main findings from this chapter suggest that both the direct and the indirect costs of undertaking research from competitive grants are considerable for universities. In particular, they suggest that:

- while direct costs for two universities are equal to 100 per cent of revenue from competitive grants, the percentage is increased significantly when the full direct costs of employing research staff are recorded against competitive research grants. For example, conservative estimates from UNSW suggest that the salary component alone for one university was approximately 37 per cent above the revenue received from ARC Discovery Grants for the period 2006-08;
- while CI costs are generally not recorded as a funded direct cost of competitive research (which is inline with most OECD countries), attribution of their time is, in some instances, a cost greater than the dollar value of grants;
- indirect costs are not only a significant proportion of the total dollar value of grants, but also vary between faculties. Estimates in this chapter suggest they range between 48.3 and 71.8 per cent of grant revenue;
- the full cost of training HDR students is relatively unknown across the sector and requires further investigation; and
- funding from competitive grants and block grants (i.e. RIBG) would need to be increased significantly to meet the direct and indirect costs of competitive research.

Chapter 5

Potential models and next steps

This Chapter discusses three models that could be used to address the gap between the actual costs of research and research training, and competitive-grant-based funding highlighted in the report. Each model presented here has been developed within the context of international experience in both identifying and then funding the full costs over a number of decades. Even though the primary focus of this report is on indirect costs associated with research funded through competitive research grants, it is not possible to examine the full costs of research without considering both direct and indirect costs.

The dual funding system of Australian research is widely recognised as a strength of the Australian system. The dual system is used in most OECD countries with the notable exception of the USA, where a negotiated funding model is in place. In drawing the conclusions in this Chapter, we seek to build on these strengths by focussing on possible new approaches that are consistent with the dual funding model.

5.1 Direct costs

There are several ways in which competitive funding of research projects results in the provision of less than the full direct costs involved. These can include:

- circumstances where the grant awarded is less than the funding sought;
- leverage requirements, either explicit or implicit, that involve the applicant's institution proposing to meet part of the project costs;
- direct costs which are not permitted to be included in grant applications;
- direct costs which are limited to less than actual costs by granting body rules; and
- Chief Investigator time contributed to projects.

Examples of all the above can be found in Australia. A reviewing panel may reduce the funds sought in a grant application. This could be because, in the view of the panel, the project requires fewer resources than requested. The funding body may then decide to further reduce the funding recommended by the review panel. Competitive granting bodies are under pressure to keep success rates above the point where researchers decide that the chances of success are so low that the effort of preparing an application is not worthwhile. There are also pressures on research grant applicants not to be too ambitious in their funding requests for fear of having their proposal rejected on account of its size. These factors can easily lead to a research system which fails to adequately support world-class research.

Stakeholders have reported to this study that leverage requirements have become a feature of research granting schemes in recent years. Their aim is to catalyse a level of activity greater than would otherwise occur. Examples include the Cooperative Research Centres Program, where it is important that private sector participants are fully committed and demonstrate this through the provision of cash or in-kind resources. While leverage requirements make good sense when the private sector is involved, their logic in the university sector is highly questionable.

In the university context, the question needs to be asked: From what source of funds are the universities to obtain their financial contribution for leveraged research projects? In Australia, the government is the major source of university research funds. Other university funds are provided to meet identified functions such as teaching. Thus universities have little scope to provide cash contributions to competitively funded research projects. The task of managing university block grant funds is also complicated by a lack of university control over which research applications will be awarded competitive grants.

Grant program rules sometimes exclude certain direct costs from being included in grant applications. The example most commonly cited to this study is the exclusion of animal costs. Research projects involving animals have become more expensive as a result of animal welfare requirements. This may be one of the reasons that funding bodies do not wish to meet the costs involved. However, these are direct costs and should be covered by competitive research grants.

Grant program rules may also specify caps or fixed rates on some costs. One example drawn to the attention of this study has been the fixed salaries that the ARC and NHMRC fund for postdoctoral positions. When these salaries do not reflect market rates or wage agreements, the universities have to pay the difference. In some cases, the ARC salary rate is below the level set in university enterprise bargaining agreements, which means that universities are legally obliged to pay the difference. This difference can range from \$1000 per staff member per year, to many thousands of dollars per staff member per year.

In addition to this, Chief Investigator costs are a legitimate component of project costs that are not covered by competitive grants except in the case of fellowships. This has long been recognised in the USA where many academic researchers receive a nine-month salary from their university and pay themselves from research grant funds over the summer. In Australia this is not the case. However CI time is a real contribution to competitively funded research projects and the appropriate fraction of salary and on-costs should be taken into account in full economic costing of research.

5.2 Indirect costs

Chapter 4 highlighted the growing disparity between competitive grant funding and block grants that directly support that funding. These arguments are confirmed by Figure 4.1 that shows the difference between the growth of competitive and block grants and the additional resources necessary to bridge the gap. Chapter 3 explored the range of international models for addressing indirect costs. From these, two main models can be identified.

Project/activity based costing

Project based costing (a form of activity based costing) in universities seeks to allocate each and every cost incurred to projects (teaching, research or other) undertaken by an institution. The result is a high level of transparency in relation to costs and cost structures that in turn, should lead to better allocation of resources. The UK and the US approaches to meeting indirect costs both rely on forms of activity based costing. In the UK, TRAC records are used to adjust current year payments and forecast payments for the following year. In the USA, accounting records are required for audit and for future rounds of negotiation on reimbursement rates.

Consumables are billed against individual projects. Equipment time and maintenance is billed by allocating the costs involved against projects, usually on the basis of a logbook that records the time used by individual projects. One of the major costs of research is the salaries and on-costs of researchers. These costs are usually allocated on the basis of a sample period in which time spent on research projects and teaching is recorded.

The major disadvantages of activity based costing are the transaction and compliance costs. While some form of activity based costing may be useful for large research-intensive universities, it is hard to justify as the means of determining indirect costs in universities that receive only modest amounts of competitive grant funding. For these reasons, some countries have looked to simpler approaches.

Formula based approaches

The simplest way to address indirect costs is to reimburse a fixed percentage of competitive grant funding received in the previous year. However this approach does not recognise that universities have a wide range of research and discipline profiles, which can result in differences in cost structures. Both overseas and Australian data shows that there is significant variation between institutions and between disciplines. The major concern, from the viewpoint of equity is the difference between institutions. The US data clearly shows that the indirect cost rates of world leading institutions are significantly higher than other institutions. Variations between disciplines are influenced by capital intensity of research. In addition, there is some evidence to suggest that disciplines where the average grant size is small have higher indirect cost rates. Caps have been placed on some costs (e.g. administration and grant preparation costs) in the USA.

There is also a case for basing indirect costs on the average of the last two or three years. This removes any 'lumpiness' influenced by one-off events such as the receipt of a particularly large one off grant. In some systems, payments relating to indirect costs are based on forecasts, with end of year adjustments. This ensures that universities receive funding for indirect costs throughout the year in which they are incurred rather than having to finance these costs and wait for subsequent reimbursement.

Eligible indirect costs

There is also a need to determine what indirect costs are going to be funded. The list of indirect costs produced by the US, Canada and Ireland provide a useful basis for developing a list that meets Australian requirements. The criteria for inclusion of an indirect cost in the list of those eligible to be taken into account here include:

- clear relation and attribution to competitive grant-based research; and
- avoidance of scope for manipulation of costs.

Table 5.1 draws on the Canadian experience, with some modifications, and could provide the basis for developing a more detailed list of eligible and ineligible expenditures for Australian universities.

Table 5.1

PROPOSED ELIGIBLE INDIRECT COSTS

| Expenditure category | Eligible expenditure |
|---|--|
| Facilities | <ul style="list-style-type: none"> • Renovation and maintenance of research spaces and equipment. • Technical support for laboratories, offices, animal care and other facilities. • Custodial, security, utility, leasing and capital planning costs associated with research spaces and research equipment. • Insurance on research spaces. |
| Resources | <ul style="list-style-type: none"> • Acquisition, custodial, security, utility, leasing, and capital planning costs associated with libraries, databases, telecommunications, and information technologies, systems and research tools. • Insurance on research equipment and vehicles. |
| Management & Administration | <ul style="list-style-type: none"> • Research planning and promotion. • Help for researchers to prepare research proposals. • Training of faculty and research personnel. • Financial and other administrative services. • Acquisition, maintenance and upgrade of information systems to track grant applications, certifications and awards. • Human resources and payroll, including the salaries and benefits of employees who support research and who are not already funded through a direct research grant. • Purchasing, audit, health and safety costs. |
| Regulatory requirements & accreditation | <ul style="list-style-type: none"> • Creation and support of regulatory bodies. • Training of faculty and other research personnel in animal care, ethics review, radiation and biohazards. • Costs for international accreditation related to research. • Upgrades to facilities and equipment to meet regulatory requirements. |
| Intellectual property | <ul style="list-style-type: none"> • Creating, expanding or sustaining a technology transfer office or similar function. • Cost of patent applications, licensing, and creation of spin-off companies. • Activities undertaken to transfer knowledge not supported by other Commonwealth Government programs. |

Source: Allen Consulting Group

Table 5.1 includes some intellectual property costs because these are likely to flow from competitive grant-funded research and there is no current source of Commonwealth Government funds directed to address these costs.

Table 5.1 does not include provision for:

- the capital cost of buildings — this is best addressed by including depreciation, although there is also an issue of catch-up on maintenance and facilities which this study suggests should be addressed separately;
- Chief Investigator salary and on-costs — the USA covers these costs (for special reasons not applicable to Australia) but most other countries do not; or
- public relations — while some public relations activities promote research and research outcomes, including public relations costs would raise questions of including maintaining contacts with alumni, and lobbying. In an Australian context these are not likely to be accepted by government.

5.3 Indirect cost models for Australia

In considering possible models for addressing the indirect costs of competitive grant-based research in Australia, this study has identified some relevant criteria:

- equity in terms of ensuring that institutions receive funding that reflects their indirect costs;
- avoidance of approaches that might discourage Australian universities from seeking to undertake world class research projects;
- flexibility to meet the needs of different universities;
- compliance costs that are commensurate with benefits; and
- compatibility with funding agency policies.

There are benefits from a better understanding of indirect costs that flow beyond the question of funding models. Better tracking of indirect costs could also result in more accurate estimates of HERD being provided to the ABS in the future. Furthermore, the University of South Australia has highlighted to this study research-related indirect costs that are not currently included in the collection of HERD data by the ABS, such as:

- professional staff time spent on supporting research at the academic unit or level; and
- direct project costs associated with research student projects.

Option 1 – Full activity based costing

This model would be based on the UK TRAC system. It would benefit from, and be able to draw on the UK experience in implementing TRAC. It would provide more precise accounting of costs than other models. Some simplification would be required for universities receiving smaller amounts of competitive grant funding for whom the cost of new accounting systems might not be worthwhile. The full adoption of the TRAC model across the Australian university system would be costly, and the overall benefits might not exceed the costs. Further, the UK has found it desirable to introduce a second version of TRAC for teaching costs. It appears that the implementation of TRAC for research led to some distortions that could only be removed by tracking teaching costs in a similar way. Doing this in Australia would further increase costs.

Option 2 – Formula approach

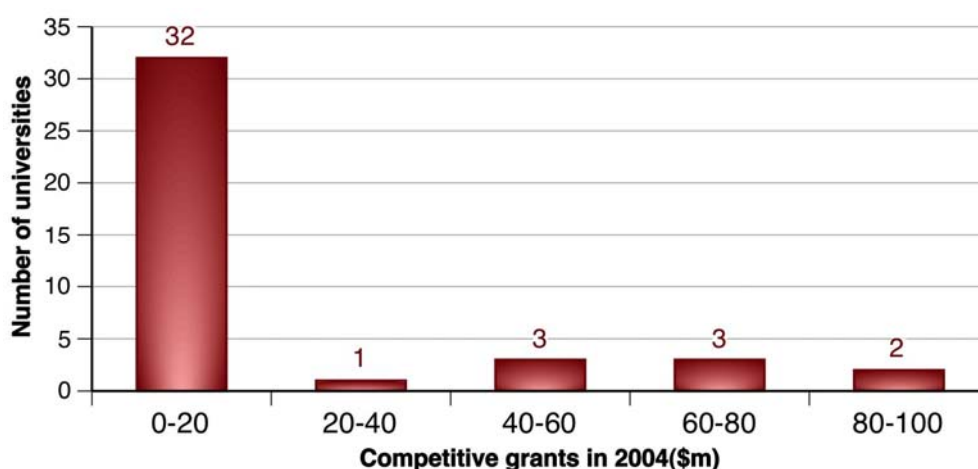
This model would address indirect costs through an approach that could provide a fixed rate of funding for indirect costs based on an appropriate formula. The present RIBG could be used with increased funding. From the earlier chapters of this report, a reimbursement rate that, across all Commonwealth Government competitive grants, covered around 50 per cent of direct costs would be appropriate. This fixed rate approach avoids the audit and verification requirements of full activity based costing. However it clearly has serious limitations. As noted above, this option provides less than full indirect costs for strongly research-active universities. International evidence suggests that if Australia aspires to have world-class universities and some ranked in the World's top one hundred, provision has to be made for higher indirect costs in some cases.

Option 3 – Composite model

In a composite model, universities would be offered two options: they could accept formula based funding of indirect costs, or they could opt for full project based costing. Those universities that judged the investment to be worthwhile would establish the accounting systems for project based costing in order to track costs associated with competitive grant-supported research. From Figure 5.1 we infer that at least eight universities receive sufficient revenue from competitive grants to make this investment worthwhile. However, it is important to note that while research intensity may be important in determining which approach is adopted, project based costing could also be seen as a management tool aimed at improving university management of project revenues and costs.

Figure 5.1

DISTRIBUTION OF UNIVERSITIES BY REVENUES FROM COMPETITIVE GRANTS 2004



Source: ABS 2004 'Research Income Data reported by Institutions under the Higher Education Research Data Collection', DIISR Database.

The extent to which universities adopt the second part of this option would depend on the level of the formula-based component and the likely costs and benefits of establishing project based costing. Initially the formula based approach could apply to all universities. Those wishing to move to project based costing may do so when they were ready.

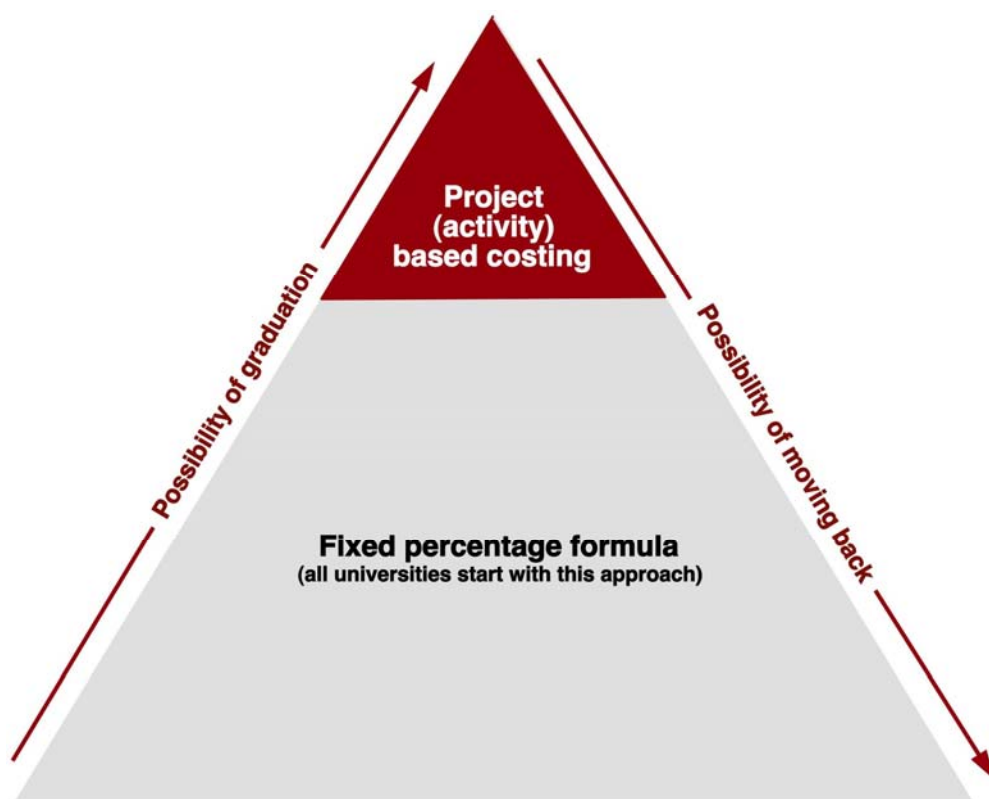
Figure 5.2 illustrates how universities would transition between the formula based and activity based costing components of the model. The decision to accept a fixed percentage or adopt a project/activity based approach would be a matter for university management.

In any event, a greater understanding of university costs will assist the sector in better managing research and research funding. Such understanding is clearly beneficial for the efficiency and effectiveness of the entire university sector.

Related matters

With each of the Options described above, there are related matters that would require decisions. Options 1 and 3 require decisions on what indirect costs will be taken into account in the provision of indirect funding. Table 5.1 provides an initial list.

Figure 5.2

COMPOSITE MODEL

Source: The Allen Consulting Group

For those universities adopting project based costing, there is a need to agree on methodologies for assigning indirect costs to teaching or research. The approach generally used in other countries is the ratio of the sum of salary costs attributable to research, to all academic salary costs. This requires a method for establishing a split between teaching, research and other activities for research-active staff — usually based on sample surveys of the time spent by university staff. It would be useful to develop a standard methodology for these surveys that is accepted by all parties.

Payment of indirect costs can be made retrospectively, or they could be the subject of quarterly progress payments based on forecasts. While the latter approach would result in a need for subsequent adjustments to reflect actual competitive grants received, there would be a one-time benefit to university cash flows.

The findings of this report suggests that there is a case for re-examining the policy issues around the leverage requirements of competitive grants. This issue has recently been discussed in the Cooperative Research Centres Review (O’Kane, 2008) but needs to be considered across the spectrum of competitive grant schemes.

5.4 Areas for further investigation

1. Models of Full Economic Costing

While this report has largely focused on the accounting and attribution mechanisms for determining the direct and indirect costs of research, it has clearly highlighted the need for further developing the models necessary to meet the full economic cost of university research.

Such development will require further exploration of the value of research to the Australian economy and society, the practical implementation of new models, and their relationship to mission-based compacts. It may also be necessary for funding agencies to make an ‘in principle’ commitment to fund the full cost of research that is in line with most other OECD countries. This will need to be followed by the development of compacts between the government and universities through a separate process.

Improve the ability of University Accounting Systems to track Project Revenues and Costs

Stakeholders have drawn attention to the need for improvements in the way in which universities collect and report data on the cost of competitive research, before full economic costing is implemented. This study has found considerable variation in the collection and reporting of data occurs, and recommends that universities are assisted to develop their accounting systems to better track the costs associated with research projects. Most OECD countries have assisted universities to achieve this through one-off cash injections for accounting infrastructure.

While this study has proposed a list of eligible indirect costs, this list will need to be refined for those universities who wish to undertake project based costing. This will need to be done before universities make changes to their accounting systems. Such a measure will be important in ensuring that project-related costs are consistently collected and reported on throughout the sector. It will also provide much needed guidance to universities that are seeking to identify their project costs in an efficient and effective way. Consideration will also need to be given to developing a formula, or a fixed percentage, to cover the indirect costs of those universities which prefer this simpler approach.

2. Increase Needed in Block Grant Funding

This study shows that the international benchmark for funding indirect costs relating to research projects is 50 per cent of the original grant value. There is a case for RIBG to be increased from 2009 to a level that will provide grants that approximate 50 per cent of the competitive grant funding. Estimates suggest that for the year 2006 this would have required an additional 26.5 per cent of RIBG or approximately \$286m. Any funding increase below this benchmark has the potential to place the sustainability of Australia’s publicly funded research effort at risk.

3. Further Analysis of Funding for Research Training

This report sought data on the costs of research training however was unable to arrive at robust conclusions about the adequacy of research funding. In order to address the information deficit it will be necessary to undertake further analysis of HDR training in Australian universities. Such analysis will assist stakeholders in better understanding the relationship between revenues and the costs of training, and whether current funding mechanisms encourage high-level training outcomes in Australian universities.

5.5 Concluding comments

This report has highlighted that indirect costs are a major under funded component of competitive research. This under funding could be readily addressed by raising RIBG to 50 per cent of funding from competitive grants. In addition, it is desirable that universities be given the flexibility to make the case for alternative funding for direct costs, if operating in high cost areas for research. International experience has demonstrated that these are the minimum requirements necessary to achieve a sustainable research effort.

Finally while not making a recommendation that CI salaries should be funded by competitive grant schemes, it is important to note that the cost of CIs will still need to be met by universities on an ongoing basis.

Appendix A

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Appendix B

Stakeholder consultations and project steering group

The stakeholders listed in Table B.1 below were consulted through meetings, by email and/or by telephone. The Project Steering Committee is shown in Table B.2.

Table B.1

STAKEHOLDERS CONSULTED

| Institution | Name |
|--|--|
| ABS | Kirsty Rothenbury |
| ANU | Professor Ian Chubb, Vice-Chancellor Professor Lawrence Cram, Deputy Vice Chancellor (Research) Peter Shipp, Deputy Director and Chief Accountant, Finance and Business Services Dr Ian McMahon, Director, Research Office |
| ARC | Professor Margaret Sheil, Chief Executive Officer Leanne Harvey, General Manager, Quality and Evaluation Penny Knox, Director, Policy Coordination and Secretariat |
| Charles Darwin University | Professor Helen Garnett, Vice Chancellor Ken Suter, Chief Financial Officer |
| Griffith University | Daina Garklavs, Acting Director, Office for Research |
| Group of Eight | Michael Gallagher, Executive Director Tim Payne, Deputy Executive Director |
| Innovative Research Universities Australia | Lenore Cooper, Director |
| La Trobe University | Professor Tim Brown, Deputy Vice Chancellor (Research) |
| Monash University | Professor Edwina Cornish, Deputy Vice Chancellor (Research) Reynold Dias, Director, Financial Resources Management Division |
| NHMRC | Tony Krizan, Executive Director, Program Management |
| University of Ballarat | Dr Joel Epstein, Director Institute for Regional and Rural Research and Innovation |
| University of NSW | David MacPherson, Director, Institutional Analysis & Reporting |
| University of South Australia | Dr Mark Hochman, Director, Research and Innovation Services Kim Davidson, Deputy Director, Research & Innovation Services Chris Jolley, Manager, Financial Projects, Finance & Resources Sally Carpenter, Manager, Research Performance Monitoring, Research & Innovation Services Paul Beard, Executive Director, Finance & Resources |
| University of Wollongong | Damien Israel, Deputy Vice Principal (Finance and IT) |

Table B.2

PROJECT STEERING GROUP

| Member | Affiliation |
|--------------------------|---|
| Dr Anne Byrne (Chair) | General Manager, Research Policy & Compacts Taskforce Branch, DIISR |
| Dr John Wellard | Research Policy & Compacts Taskforce Branch, DIISR |
| Dr John Bell | Allen Consulting Group |
| Dr Alex Gash | Allen Consulting Group |
| Andrew Calder | Australian Research Council |
| Professor Elim Papadakis | National Health and Medical Research Council |
| Tony Krizan | National Health and Medical Research Council |
| Dr Glenn Withers | Universities Australia |
| Dr Carolyn Allport | National Tertiary Education Union |
| Paul Kniest | National Tertiary Education Union |
| Professor Barney Glover | Innovative Research Universities Australia |
| Lenore Cooper | Innovative Research Universities Australia |
| Professor Lawrence Cram | Group of Eight |
| Michael Gallagher | Group of Eight |
| Professor Ross Milbourne | Australian Technology Network of Universities |
| Vicki Thomson | Australian Technology Network of Universities |

Appendix C

Calculation of RTS and RIBG 2008 grants

Process for determining RTS grant amounts

The Department of Innovation, Industry, Science and Research (DIISR) determines grant amounts for eligible higher education providers (HEPs) under the Research Training Scheme (RTS) in two steps. The first step is the calculation of a pre-safety net grant amount using the formula at paragraph 2.2 for 2008. For the determination of pre-safety net grants, an RTS performance index is calculated for all HEPs (see below).

The second step is the application of a safety net to minimise adverse impacts. The application of the safety net is described below.

For 2008, the pre-safety net grant is determined by:

- A = each HEP's 2005 grant amount indexed to 2008 prices
- B = each HEP's 2006 grant amount indexed to 2008 prices
- C = each HEP's 2007 grant amount indexed to 2008 prices
- D = Total RTS Pool 2008 x 0.25
- Each HEP's pre-safety net grant is determined by:

$$(A \times 0.25) + (B - (0.75 \times A)) + (C - (B - (0.75 \times A)) - (0.5 \times A)) + (D \times \text{HEP's specific performance index})$$

RTS performance index

The RTS performance index includes completions, research income and publications data, where:

- HDR student completions are weighted at 50 per cent;
- Research income is weighted at 40 per cent; and
- Research publications are weighted at 10 per cent.

HDR student completions are weighted by level of course (i.e. Doctorate or Masters degree by research) and/or by course cost (i.e. whether the course is identified as a high cost course or a low cost course).¹¹ HDR student completions data are averaged over the two most recent years for which they are available.

For RTS grant amounts, completions comprise 50 per cent of the performance index and are weighted by level of course and by cost of course, as follows:

- High Cost Doctorate Degree by Research weighted at 4.7
- High Cost Masters Degree by Research weighted at 2.35
- Low Cost Doctorate Degree by Research weighted at 2.0

¹¹ For information on which subjects are categorised as high or low cost see http://www.dest.gov.au/sectors/research_sector/programmes_funding/programme_categories/professional_skills/research_training_scheme.htm

- Low Cost Masters Degree by Research weighted at 1.0

Research income and research publications are described in, and collected through, the Higher Education Research Data Collection (HERDC).

Research income is collected in four categories under the HERDC:

- Category 1: Australian Competitive Grants Income;
- Category 2: Other Public Sector Research Income;
- Category 3: Industry and Other Research Income;
- Category 4: Cooperative Research Centres Research Income,

and is unweighted.

Publications are collected in four categories under the HERDC: Books, Book chapters, Journal articles and Conference papers with books weighted by a factor of 5 and the other three categories weighted by a factor of 1.

Data for all components of the RTS performance index are averaged over the most recent two years for which data is available.

Where one or more HEPs are unable to provide or confirm data in the time available to calculate grant amounts, DEEWR may determine interim grant amounts and then revised (final) grant amounts when DEEWR has satisfactory datasets.

Safety net

To minimise adverse impacts on HEPs, a safety net is applied to ensure that no HEP's RTS grant will fall below 95 per cent of its previous year's RTS grant amount indexed to current prices.

The pre-safety net grant amount is used to determine whether a HEP has lost or gained funds from their previous year's indexed RTS grant. All gains are placed in a pool from which funds are drawn to provide a safety net for HEPs that have realised a loss greater than 5 per cent from their previous year's RTS grant. The funds remaining in the pool are then returned to HEPs that gained, based on their percentage contribution to the pool.

Process for determining RIBG grant amounts

The first step is to calculate each institution's share of the RIBG performance index, which comprises Category 1 Australian Competitive Grants research income and uses data averaged over two years:

- institution's total average 2005 and 2006 Category 1 Australian Competitive Grants research income divided by the sum of institutions' total average 2005 and 2006 Category 1 Australian Competitive Grants research income).

Each institution's final 2008 RIBG grant amount is determined by taking the institution's share of the RIBG performance index and multiplying by the RIBG total funds available for 2008.

Appendix D

Rationale for examining university level data

D.1 Monash University data

Data for the year 2004 has been used to determine the direct and indirect costs of undertaking research at Monash University. This data represents a period in university administration that is highly comparable to other Go8 universities. This precedes an organisational restructure of the universities financial arrangements in which many of the university's administrative functions were centralised and purchasing agreements with each faculty were established. Hence, the accounting arrangements mirror those of traditional faculty based administrations.

Table D.3

SOME ASSUMPTIONS USED IN DETERMINING REVENUES AND COSTS FOR MONASH UNIVERSITY 2004

| Revenue/ expenditure category | Example | Assumption |
|-------------------------------------|--|---|
| Revenues from competitive grants | ARC, NHMRC | <ul style="list-style-type: none"> The average competitive grant revenue for 2001 and 2002. The assumption is that all funds received are spent |
| RIBG | | <ul style="list-style-type: none"> The average competitive grant revenue for 2001 and 2002. The assumption is that all funds received are spent. |
| Competitive research grant costs | Project related salaries, direct research costs, travel and conferences | All revenues are expended on research related activities |
| Research grant preparation | ARC, NHMRC | Includes the preparation of the grant application by the CI. It is assumed that this equates to 4 weeks work of CIs |
| CI and support costs | <ul style="list-style-type: none"> CI salary and on-costs. Charges for space, IT support, HR services and financial services. | This includes the cost of the CI that is not included directly against the grant. It does not include the CI for research fellowships. The calculation is based on the CI's time based on an analysis of a sample of grant applications. Support costs relate to a figure based on CI FTE. |
| Departmental and faculty overheads | <ul style="list-style-type: none"> Research support staff | <ul style="list-style-type: none"> Assumed average of 20% with an adjustment for a laboratory that is based on the AVCC 1996 multiplier (e.g. a lab-based overhead is calculated at 20% x 1.25, while a non-lab overhead is calculated at 20% x .092. Overheads are based on estimates by faculty managers of the number of staff working at the faculty on research support. Support costs are based on the competitive research grant activity on the total research activity (as per IGS). |
| Central costs | <ul style="list-style-type: none"> Library services, research support services, animals for research, IT support for staff, Provide corporate services, HR services, financial services, space. | <ul style="list-style-type: none"> Library, IT, corporate and HR services are based on a rate per FTE. Research support is based on the proportion competitive research revenue on total research revenue for each faculty. Animals are based on 96% of total costs apportioned to competitive research revenue on total research revenue for each faculty. Space is based on the average faculty space usage rate per FTE. Adjustments have been made for Lab based faculties. |

Source: Monash University 2004.

Moreover, Monash University is considered to be comparable to other Go8 universities in its proportion of research active staff to total staff. Table D.4 highlights considerable convergence between the Go8 universities in the percentage of total staff devoted to research. Unsurprisingly the table demonstrates the research intensity of the ANU relative to other Australian universities, hence those conclusions drawn for other Go8 universities would be conservative estimates for the ANU.

Table D.4

NUMBER OF FULL TIME STAFF AND FRACTIONAL STAFF IDENTIFIED AS UNDERTAKING RESEARCH BY GO8 UNIVERSITIES 2007

| University | Research only | | Teaching and research | | Total staff |
|-------------------------------------|---------------|---------------------------|-----------------------|---------------------------|-------------|
| | Staff | Percentage of total staff | Staff | Percentage of total staff | |
| Monash University | 1 446 | 22.3 | 1 822 | 28.1 | 6 472 |
| University of Sydney | 1 169 | 19.2 | 1 768 | 29.1 | 6 057 |
| The University of NSW | 1 312 | 19.5 | 2 550 | 38.0 | 6 707 |
| The University of Melbourne | 1 505 | 22.3 | 1 741 | 25.8 | 6 734 |
| The University of Queensland | 1 468 | 23.8 | 1 639 | 26.5 | 6 164 |
| The University of Western Australia | 707 | 20.2 | 949 | 27.1 | 3 499 |
| The University of Adelaide | 739 | 26.3 | 828 | 29.5 | 2 803 |
| The Australian National University | 1 394 | 36.4 | 636 | 16.6 | 3 820 |

Source: DEEWR 2007, 'Staff 2007: Selected Higher Education Statistics', accessed on 13 August 2008, www.deewr.gov.au.

D.2 University of South Australia data

The University of South Australia constructed whole of university data for the year 2007 for this project. The data was mirrored on the data provided by Monash University, but also extended to show the breakdown of the full cost of research for a science-based institute. A sample of the main assumptions is contained within Table D.5.

Table D.5

SOME ASSUMPTIONS USED IN DETERMINING REVENUES AND COSTS FOR THE UNIVERSITY OF SOUTH AUSTRALIA 2004

| Revenue/ expenditure category | Example | Assumption |
|-------------------------------------|---|---|
| Revenues from project grants | <ul style="list-style-type: none"> • ARC, NHMRC grants, etc. | <ul style="list-style-type: none"> • Revenue is project based for 2007. • The assumption is that all funds are spent. • Consultancy revenue has not been included. • RIBG is included in the revenue figures, but IGS and RTS is excluded. • Consultancy revenue has not been included in the figures. |
| Direct research grant costs | <ul style="list-style-type: none"> • Salaries from grants | <ul style="list-style-type: none"> • Only salary directly relating research grants have been included in the calculations. • Includes deferred costs. |
| Departmental and faculty overheads | <ul style="list-style-type: none"> • Grant preparation. | |
| Central costs | <ul style="list-style-type: none"> • Library • HR • Financial • Space | <ul style="list-style-type: none"> • Costs mainly worked out on an FTE basis. |

Source: University of South Australia 2008.

The University of South Australia was chosen to participate in this study because of its comparability to other Australian Technology Network of Universities in its research composition. The percentage of research only and research and teaching staff to total staff for each ATN University is provided in Table D.6.

Table D.6

NUMBER OF FULL TIME STAFF AND FRACTIONAL STAFF IDENTIFIED AS UNDERTAKING RESEARCH BY ATN UNIVERSITIES 2007

| University | Research only | | Teaching and research | | Total staff |
|-------------------------------------|---------------|---------------------------|-----------------------|---------------------------|-------------|
| | Staff | Percentage of total staff | Staff | Percentage of total staff | |
| University of South Australia | 282 | 11.6 | 814 | 34.8 | 2 412 |
| Curtin University of Technology | 220 | 7.7 | 801 | 28.3 | 2 825 |
| RMIT University | 173 | 6.2 | 941 | 33.8 | 2 782 |
| University of Technology Sydney | 156 | 7.3 | 755 | 35.5 | 2 124 |
| Queensland University of Technology | 349 | 10.0 | 1 148 | 32.9 | 3 489 |

Source: DEEWR 2007, 'Staff 2007: Selected Higher Education Statistics', accessed on 13 August 2008, www.deewr.gov.au.

D.3 Other universities

Data on the salary component were supplied by the University of NSW to highlight the extent of salary cross-subsidisation occurring in Go8 universities with a high proportion of research active staff.

Appendix E

University research revenues for 2007

Table E.1

RESEARCH REVENUES FOR AUSTRALIAN UNIVERSITIES 2007

| University (grouped by State) | Competitive grants \$s (2004) ¹ | IGS \$s (2007) | RIBG \$s (2007) | RTS \$s (2007) |
|--|---|-------------------|--------------------|-------------------|
| NSW | | | | |
| Charles Sturt University | 3 093 056 | 1 849 147 | 1 107 007 | 3 185 307 |
| Macquarie University | 11 437 196 | 5 829 009 | 3 438 184 | 10 996 611 |
| Southern Cross University | 1 732 425 | 1 591 934 | 348 351 | 3 441 718 |
| University of New England | 7 091 246 | 3 265 328 | 1 583 842 | 7 700 108 |
| University of NSW | 63 086 642 | 23 070 982 | 16 652 755 | 46 905 743 |
| University of Newcastle | 19 030 231 | 7 478 359 | 5 336 427 | 13 715 357 |
| The University of Sydney | 88 466 013 | 33 434 537 | 24 526 809 | 58 534 746 |
| University of Technology Sydney | 8 840 740 | 5 190 483 | 2 788 664 | 9 054 252 |
| University of Western Sydney | 4 434 800 | 3 124 656 | 1 294 280 | 7 642 732 |
| University of Wollongong | 13 036 531 | 5 873 922 | 3 851 278 | 12 087 110 |
| VIC | | | | |
| Deakin University | 8 744 977 | 4 273 216 | 2 193 763 | 9 453 804 |
| La Trobe University | 10 659 490 | 5 330 524 | 2 544 903 | 12 133 073 |
| Melbourne College of Divinity | 0 | 215 578 | 0 | 574 860 |
| Monash University | 52 352 899 | 23 581 588 | 17 954 700 | 42 738 965 |
| Royal Melbourne Institute of Technology | 6 690 471 | 5 223 518 | 1 649 788 | 13 963 070 |
| Swinburne University of Technology | 4 692 971 | 2 433 691 | 1 158 615 | 6 041 212 |
| University of Ballarat | 770 854 | 838 667 | 210 317 | 1 802 222 |
| The University of Melbourne | 93 264 300 | 36 915 207 | 27 095 313 | 66 370 836 |
| Victoria University | 2 845 357 | 1 965 758 | 596 093 | 5 068 170 |
| QLD | | | | |
| Bond University | 99 703 | 139 949 | 36 888 | 446 470 |
| Central Queensland University | 489 663 | 1 339 186 | 270 412 | 2 467 357 |
| Griffith University | 9 832 360 | 5 978 309 | 2 505 358 | 13 037 903 |
| James Cook University | 6 927 280 | 3 997 137 | 1 825 136 | 8 483 803 |
| Queensland University of Technology | 9 297 053 | 6 269 511 | 3 301 793 | 13 044 533 |
| The University of Queensland | 73 057 643 | 29 120 717 | 21 359 168 | 54 096 102 |
| University of Southern Queensland | 915 904 | 995 951 | 423 019 | 2 147 727 |
| University of the Sunshine Coast | 216 636 | 272 887 | 34 825 | 632 611 |

| University (grouped by State) | Competitive grants \$s (2004) ¹ | IGS \$s (2007) | RIBG \$s (2007) | RTS \$s (2007) |
|---|---|--------------------|--------------------|--------------------|
| WA | | | | |
| Curtin University of Technology | 7 721 298 | 6 437 670 | 2 365 708 | 13 289 977 |
| Edith Cowan University | 2 271 027 | 1 922 930 | 458 096 | 4 334 913 |
| Murdoch University | 10 081 922 | 5 099 262 | 2 311 299 | 9 403 466 |
| The University of Notre Dame Australia | 0 | 124 028 | 17 996 | 296 619 |
| The University of Western Australia | 52 742 515 | 16 988 641 | 14 359 070 | 31 238 891 |
| SA | | | | |
| The Flinders University of South Australia | 10 552 109 | 5 975 820 | 2 943 988 | 10 389 454 |
| The University of Adelaide | 50 919 803 | 16 232 038 | 13 640 873 | 28 126 820 |
| University of South Australia | 6 065 232 | 5 309 636 | 2 145 288 | 10 019 370 |
| TAS | | | | |
| University of Tasmania | 20 925 956 | 8 428 534 | 5 670 725 | 14 650 722 |
| NT | | | | |
| Batchelor Institute of Indigenous Tertiary Education | 0 | 123 293 | 0 | 167 901 |
| Charles Darwin University | 5 485 500 | 2 056 091 | 1 474 626 | 2 851 007 |
| ACT | | | | |
| The Australian National University | 63 832 472 | 17 499 014 | 17 881 023 | 30 824 261 |
| University of Canberra | 1 782 430 | 1 605 026 | 478 475 | 2 574 710 |
| Other | | | | |
| Australian Catholic University | 564 810 | 674 266 | 150 145 | 1 440 487 |
| <i>Totals</i> | <i>734 201 364²</i> | <i>308 076 000</i> | <i>207 985 000</i> | <i>585 375 000</i> |

Source: ABS 2004 and ABS 2007 'Research Income Data reported by Institutions under the Higher Education Research Data Collection', DIISR Database.

Note: 1. The 2004 data was used because it was the latest available data.

2. Total includes \$ 149 849 for the Australian Maritime College, Tasmania.

Appendix F

Australian Competitive Grants Register 2008

Commonwealth Schemes (by portfolio)

Agriculture, Fisheries & Forestry

Australian Centre of Excellence for Risk Analysis
 Australian Egg Corporation Limited - Egg Industry Research and Development Program
 Australian Pork Ltd.
 Australian Wool Innovation
 Cotton Research and Development Corporation
 Dairy Australia
 Fisheries Research and Development Corporation
 Forest and Wood Products Australia Ltd.
 Grains Research and Development Corporation
 Grape and Wine Research and Development Corporation
 Horticulture Australia Ltd – General Call
 Land and Water Australia – Innovation Call
 Meat and Livestock Australia - Research Program
 Rural Industries Research and Development Corporation
 Sugar Research and Development Corporation

Attorney-General's Department

Criminology Research Council - Criminology Research Fund

Broadband Communications and the Digital Economy

Telecommunications Research Grants

Defence

Army History Unit - Army History Research Grants Scheme

Education, Employment and Workplace Relations

National Centre for Vocational Education Research Ltd (NCVER)
 - National Vocational Education and Training Research and Evaluation Program (NVETRE)
 - Adult Literacy Research Program

Environment, Water, Heritage and the Arts

Australian Biological Resources Study – National Taxonomic Research Grants Program
 Australian Antarctic Division
 - Australian Antarctic Science Grants
 - Australian Centre for Applied Marine Mammal Science (ACAMMS) Grants
 Commonwealth Environment Research Facilities (CERF)
 Marine and Tropical Sciences Research Facility (MTRSF)
 The Great Barrier Reef Marine Park Authority – Science for Management Award

Families, Housing, Community Services and Indigenous Affairs

Social Policy Research Service Agreements

Foreign Affairs and Trade

Australian Centre for International Agricultural Research (ACIAR) – R&D Programs
 AusAID - Australian Development Research Awards

Health and Ageing

Anti-Doping Research Program
 Australian Centre for Hepatitis and HIV Virology Research

Cancer Australia

- Priority Driven Collaborative Cancer Research Scheme
- Support for Cancer Clinical Trials – Existing National Cooperative Oncology groups
- New National Co-operative Oncology Groups
- National Drug Law Enforcement Research Fund (NDLERF)
- National Health and Medical Research Council (NHMRC)
- A Healthy Start to Life for Aboriginal & Torres Strait Islander Children
- Ageing Well, Ageing Productively
- Australian-European Union Health Research Collaboration
- Australian Health Ministers Advisory Council – Priority Driven Research program
- Capacity Building in Population Health Research
- Career Development Awards
- Centres for Clinical Research Excellence
- Dementia Research Grants
- Development Grants
- Electromagnetic Energy Research
- General Practice Clinical Research Program
- Health Services Research Program
- International Collaborative Indigenous Health Research Partnership
- International Collaborative Research Grant
- National Asbestos Centre
- NICS Fellowship
- Oral Health
- Palliative Care
- Post-doctoral Fellowships for Palliative Care Research
- Practitioner Fellowships
- Preventative Healthcare and Strengthening Australia's Social & Economic Fabric
- Program Grants
- Project Grants
- Research Fellowships
- Special Program Grants in Type 1 Diabetes
- Training Fellowships
- Urgent Research – Pandemic Influenza
- Primary Health Care Research, Evaluation and Development (PHCRED) Strategy – Research Fellowships

Innovation, Industry, Science and Research

- Australian Institute of Aboriginal and Torres Strait Islander Studies (AIATSIS) - Research Grants
- Australian Research Council
- ARC Centres of Excellence
- Discovery - Federation Fellowships
- Discovery - Indigenous Researchers' Development
- Discovery - Projects
- Linkage - International
- Linkage - Projects
- Special Research Centres
- Thinking Systems
- CSIRO
- Flagship Collaborative Research Program - Clusters
- Flagship Visiting Fellowship

Infrastructure, Transport, Regional development and Local Government

- Australian Transport Safety Bureau - Road Safety Research Grants Program

Prime Minister & Cabinet

- National Security Science and Technology Unit - Research Support for Counter Terrorism (RSCT) Program

Non-Commonwealth

Alcohol Education and Rehabilitation Foundation - AER Research Grants

ANZ Trustees

- Judith Jane Mason & Harold Stannett Williams Memorial Foundation
- The J.O. & J.R. Wicking Trust
- Arthritis Australia (Arthritis Foundation of Australia) - National Research Program
- Australian Coal Research Ltd - Australian Coal Association Research Program (ACARP)
- Australian Housing and Urban Research Institute (AHURI) - Research Funding Scheme
- Australian Institute of Nuclear Science and Engineering - AINSE Awards

Australian Primary Health Care Research Institute

- Stream 3
- Stream 4
- Stream 5
- Stream 6
- Australian Rotary Health Research Fund
- Australian Stem Cell Centre - Australian Stem Cell Centre Grants Scheme
- Brain foundation - Annual Research Awards
- Cystic Fibrosis Australia - Australian Cystic Fibrosis Research Trust
- Dairy Innovation Australia Limited – Dairy Innovation Processes and Products
- Diabetes Australia Research Trust - Awards and Research Grants
- Diabetes Vaccine Development Centre - Programs
- Kidney Health Australia - Medical Research Program

Juvenile Diabetes Research Foundation

- Research Grants
- Islet Transplantation Program in Australia
- Leukaemia Foundation - National Research Program
- Multiple Sclerosis Research Australia – Investigator Project Grants

National Breast Cancer Foundation

- Collaborative Breast Cancer Research Grant Program
- Concept Awards
- Project Grant (Formerly known as Kathleen Cunningham Research Grant)
- Pilot Study Grants
- National Food Industry Strategy – Food Centres of Excellence

National Heart Foundation of Australia

- Fellowships (Biomedical, Clinical, Public Health, Overseas, Career Development)
- Grants-In-Aid (Biomedical, Clinical and Public Health)
- Ophthalmic Research Institute of Australia Research Grants

Pfizer Australia

- Cardiovascular and Lipid Research Grants
- Neuroscience Research Grants
- Pfizer Australia Research Fellowships

Other

- Pharmacy Guild of Australia - Investigator Initiated Grants
- RANZCO Eye Foundation - National Collaborative Project
- Sea World - Research & Rescue Foundation
- Sylvia and Charles Viertel Charitable Foundation - Medical Program
- The Australian and New Zealand College of Anaesthetists – ANZCA Research Grants
- The Financial Markets Foundation for Children
- The Garnett Passe & Rodney Williams Memorial Foundation - Project Grants
- The Geoffrey Gardiner Dairy Foundation - Innovation and Biotechnology Program
- The Hermon Slade Foundation

*Appendix G***Funding of ARC Discovery Grants**

Table G.2

ARC DISCOVERY GRANTS 2003-2007

| Year | Requested in Funded Projects | Rolling Average | |
|---------|---------------------------------|---------------------|-----|
| | | Funding Provided | % |
| 2003-05 | \$453,754,818 | \$269,691,595 | 59% |
| 2004-06 | \$495,682,320 | \$281,965,335 | 57% |
| 2005-07 | \$510,084,981 | \$283,050,254 | 55% |

Note:

1. While the above data shows the overall proportion of funds awarded by the ARC, it should be noted that, depending on the ranking of a proposal, up to 100% of the requested amount has been awarded.
2. 'Requested' is the amount of direct costs requested from the ARC by researchers in research proposals;
3. The information shown above is limited to that which was current at the time research proposals were approved for funding and accordingly excludes any post-award variations that may subsequently have been approved. Actual amounts paid to Administering Organisations against approved research projects will vary from the original approvals shown here due to indexation of payments and other post award funding variations.