Research and Research Training Administrators
Monash University
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An ARC Perspective
on
Research Collaboration

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Overview

• Federal Government agency supporting all R&D
  ▪ except medical and dental research
  ▪ competitive, peer-reviewed proposals by investigators
  ▪ limited strategic direction in specific fields

• Annual funding to University sector ~$600m (FY08/09)
  ▪ about 10% of total Federal spend on R&D
  ▪ assess >5,500 proposals per year
  ▪ 35 Centres of Excellence, Special or Co-funded Centres
  ▪ 25 Research Networks

• Mission
  ▪ to advance Australia’s research excellence to be globally competitive and
to deliver benefits – public good and commercial – to the community
NCGP Competitive Funding

All Schemes

Dollars (million)

Year

01-02 02-03 03-04 04-05 05-06 06-07 07-08 08-09 09-10 10-11 11-12 12-13

est est est est

Powering Ideas

BAA 1

BAA 2

est est est est est

Research in the national interest — enabling the future

Australian Government
Australian Research Council
ARC Project-based Schemes

Steady increase in numbers and competitiveness

Discovery Projects

Linkage Projects
Research Performance
ARC DP and LP Schemes

ARC Schemes 2001 to 2007

- Proxy for quality and sector

Relativities
- declining trend for EE
- steady increase for MIC
## Research Performance
### ARC DP and LP Schemes

<table>
<thead>
<tr>
<th></th>
<th>Funded Dollars</th>
<th>No of Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$million 2001</td>
<td>$million 2007</td>
</tr>
<tr>
<td>BSB</td>
<td>57.6</td>
<td>86.5</td>
</tr>
<tr>
<td>EE</td>
<td>49.8</td>
<td>75.4</td>
</tr>
<tr>
<td>HCA</td>
<td>27.9</td>
<td>51.8</td>
</tr>
<tr>
<td>MIC</td>
<td>33.9</td>
<td>57.4</td>
</tr>
<tr>
<td>PCG</td>
<td>61.7</td>
<td>76.6</td>
</tr>
<tr>
<td>SBE</td>
<td>39.2</td>
<td>83.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>270.1</td>
<td>430.7</td>
</tr>
</tbody>
</table>

**Totals**
- $2.6 billion
- 36,948 proposals
ARC Project-based Schemes
Average Grant Size

Year

LP Scheme
DP Scheme

Dollars (thousands)
NCGP Competitive Funding
All Schemes

Dollars (million)

Year

BAA 1

BAA 2

Powering Ideas
ARC Funded Projects
Proportion with International Collaboration
2002-2008

700 to 800 projects per year propose international collaboration
ARC Funded Projects
Distribution of International Collaboration
2002-2008

- USA, 23.4%
- UK, 14.7%
- Germany, 8.0%
- Canada, 5.7%
- France, 5.7%
- Japan, 5.1%
- China, 3.5%
- NZ, 3.1%
- N’lands, 2.5%
- Italy, 2.6%
- Other, 25.6%
ARC Funded Projects
Predominant Research Fields – International Collaboration
2002-2008
Importance of Co-Funding

• Co-funding is a “revealed preference”
  – confirmation of research need
  – “pre-selection” process

• Co-funding is quantifiable
  – $ARC + $co-funder = $project

• Happy co-funders are influential spokespersons
  – to whom others really listen
# Research Partnerships

## Competitive Schemes

<table>
<thead>
<tr>
<th></th>
<th>CRC Programme</th>
<th>ARC Centres of Excellence</th>
<th>ARC LP Scheme</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Duration (years)</strong></td>
<td>Min: 7 Max: ~14</td>
<td>Min: 5 Max: 8-9</td>
<td>Min: 1 Max: 5</td>
</tr>
<tr>
<td><strong>C’wlth $/Centre</strong></td>
<td>$2m to $4m per year</td>
<td>Min: ~$1m/yr Max: ~$3m/yr</td>
<td>Min: $20k/yr Max: $2m/yr</td>
</tr>
<tr>
<td><strong>No of Industry Partners</strong></td>
<td>Required Av: 7-9 per CRC</td>
<td>Not Required Av: 4-6 per CoE</td>
<td>Required Av: 2 per grant</td>
</tr>
<tr>
<td><strong>Focus</strong></td>
<td>programmatic, thematic</td>
<td>programmatic, thematic</td>
<td>project, thematic</td>
</tr>
<tr>
<td><strong>Call Frequency</strong></td>
<td>2 years</td>
<td>2-5 years</td>
<td>6 months</td>
</tr>
<tr>
<td><strong>Success Rate</strong></td>
<td>10%-20%</td>
<td>&lt; 10%</td>
<td>40%-50%</td>
</tr>
<tr>
<td><strong>C’wlth $/year</strong></td>
<td>~$200m</td>
<td>~$65m</td>
<td>~$120m</td>
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</table>
ARC Research Centres
Materials Oriented

1997
**Subatomic Structure of Matter** (UAdel, Flind, UMelb, UTas, UNSW, ANU)

2000
Green Chemistry (Monash, UNewcastle, UWA)
**Particle and Material Interfaces** (UniSA)
**Particulate Fluids Processing** (UMelb)

2003
**Advanced Silicon Photovoltaics & Photonics** (UNSW)
**Quantum Computer Technology** (UNSW, UQld, UMelb, ANU)
**Solar Energy Systems** (ANU)
**Functional Nanomaterials** (UQld, UNSW, ANU, UWSyd)
Ultra-high Bandwidth Devices (USyd, ANU, UTS, MacquarieU, Swinburne, RMIT)

2005
**Anti-Matter Matter Studies** (ANU, Murdoch, Flind, UAdel, UWA, CDU, JCU, Open)
**Design in Light Metals** (Monash, Deakin, UQld, UNSW, USyd, UMelb)
**Electromaterials Science** (UWollongong, Monash)

Networks: Advanced Materials (ARNAM) and Nanotechnology (ARCNN)
ARC Centres Funding Profile

Materials related

Funding Year

$ millions

ARC
ARC Other
Other Cash
In-kind

2004 2005 2006 2007

Funding Year

$0.0
$10.0
$20.0
$30.0
$40.0
$50.0
$60.0
ARC Centres Funding Profile
Materials related

Leverage 4:1 to 8:1
Graeme Clark Research
Outcomes Forum
Linkage Projects

• **Primary aim**
  – Encourage and extend cooperative approaches to research by strengthening links within Australia’s innovation system and within innovation systems internationally
  – Economic, social, environmental, policy or scientific benefit

• **Participant roles**
  – Chief Investigator, Partner Investigator
  – APAI (Aust. Postgraduate Award, Industry)
  – APDI (< 3 years from PhD),
  – Linkage Industry Fellowships (LIF)

• **Partners**
  – Private sector; private non-profit organisation; a Govt org with funds not committed to internal research or any other purpose of research, evaluation and/or consultancy.
  – Does not fund medical and dental research & training
ARC Collaborative Projects
(All Fields)

Funding Year
No of Applications

All Applications
Funded Applications

LP Scheme
SPIRT
Collab+APAI


Funding Year
No of Applications
Partner Organisation Commitment
(Cash + In-kind)

- Total PO Pledged
- Total PO Funded
- Total ARC Funded

Dollars (millions)

Funding Year

- 1999
- 2000
- 2001
- 2002
- 2003
- 2004
- 2005
- 2006
- 2007
- 2008
- 2009
Partner Organisation Profile
2005-2008

LP Scheme
Partner Organisation Cash Commitments

Funding Year:
- 2005
- 2006
- 2007
- 2008

Cash Commitments:
- 0%
- 10%
- 20%
- 30%
- 40%
- 50%
- 60%
- 70%
- 80%
- 90%
- 100%

Sources:
- Private-Australian
- Private-International
- Government-Commonwealth
- Government-International
- Government-State & Local
- Nonprofit-Australian
- Nonprofit-International
## Partner Organisation Contributions
### 2005-2008
(millions)

<table>
<thead>
<tr>
<th></th>
<th>Cash</th>
<th>%</th>
<th>In-kind</th>
<th>%</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Private Sector</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Australian</td>
<td>$89.8</td>
<td>36.5%</td>
<td>$164.5</td>
<td>37.1%</td>
<td>$254.3</td>
<td>36.9%</td>
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<tr>
<td>Overseas</td>
<td>$46.9</td>
<td>19.1%</td>
<td>$68.6</td>
<td>15.5%</td>
<td>$115.6</td>
<td>16.8%</td>
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<tr>
<td><strong>Sub-total</strong></td>
<td>$136.7</td>
<td>55.6%</td>
<td>$233.1</td>
<td>52.6%</td>
<td>$369.9</td>
<td>53.7%</td>
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<tr>
<td><strong>Government Sector</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Australian</td>
<td>$17.2</td>
<td>7.0%</td>
<td>$21.3</td>
<td>4.8%</td>
<td>$38.5</td>
<td>5.6%</td>
</tr>
<tr>
<td>State &amp; Local</td>
<td>$58.9</td>
<td>23.9%</td>
<td>$126.1</td>
<td>28.5%</td>
<td>$184.9</td>
<td>26.8%</td>
</tr>
<tr>
<td>Overseas</td>
<td>$5.1</td>
<td>2.1%</td>
<td>$5.1</td>
<td>1.2%</td>
<td>$10.2</td>
<td>1.5%</td>
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<tr>
<td><strong>Sub-total</strong></td>
<td>$81.2</td>
<td>33.0%</td>
<td>$152.4</td>
<td>34.4%</td>
<td>$233.7</td>
<td>33.9%</td>
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<tr>
<td><strong>Non-Profit Sector</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Australian</td>
<td>$23.7</td>
<td>9.6%</td>
<td>$50.9</td>
<td>11.5%</td>
<td>$74.6</td>
<td>10.8%</td>
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<tr>
<td>Overseas</td>
<td>$4.3</td>
<td>1.8%</td>
<td>$6.5</td>
<td>1.5%</td>
<td>$10.9</td>
<td>1.6%</td>
</tr>
<tr>
<td><strong>Sub-total</strong></td>
<td>$28.1</td>
<td>11.4%</td>
<td>$57.4</td>
<td>13.0%</td>
<td>$85.5</td>
<td>12.4%</td>
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<tr>
<td><strong>Totals</strong></td>
<td>$246.0</td>
<td>100.0%</td>
<td>$443.0</td>
<td>100.0%</td>
<td>$689.0</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

Total ARC Commitment: $467.5m
Partner Organisation Participation
Linkage Projects Scheme

*New Partners: first occurrence as Partner Organisation on any project (since 1995)
Total for Period: 3,118 (funded)
Partner Organisation Participation
Linkage Projects Scheme

![Graph showing Partner Organisation Participation]

- Repeat Customers-Funded
- New Customers-Funded
- Repeat Customers-All
- New Customers-All

Number of Partners vs. Funding Year
Partner Organisation Participation
Linkage Projects Scheme
Partner Organisation Views: Why Use LP Scheme?

- Chance of success is reasonably high: 47% Important, 10% Not Important
- Possible to obtain larger grants: 76% Important, 2% Not Important
- Access to highly skilled research personnel: 88% Important, 2% Not Important
- Opportunity to build long-term relationships with uni researchers: 92% Important, 2% Not Important

Worthington Di Marzio Research Pty Ltd, 2006
Linkage Projects Scheme
Multiple Partnerships

Universities ~ 39
P Orgs in 1999 ~ 1,400
P Orgs in 2008 ~ 6,600

Building Capacity
Summary

• Centres of Excellence Scheme
  ➢ highly competitive and collaborative
  ➢ end-user engagement; mutual associations
  ➢ typical leverage 4x; excellent outcomes

• Linkage Projects Scheme
  ➢ 50%-60% of total PO cohort is private sector
  ➢ 20%-25% of total PO cohort is international
  ➢ > 3,000 new POs in R&D between 2000–2008
  ➢ repeat business >30% for past seven years

• Factors in Research Partnerships
  ➢ roles and responsibilities – academic; industry
  ➢ long-term strategic R&D & commitment
  ➢ relationships – building, maintaining and enhancing
Thank You