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## Chapter 13: Funding research in tertiary education

Government funding of research via Vote Education increased in 2007. The phasing-in of the Performance-Based Research Fund was completed in 2007 with the final winding-up of payments via research top-ups.

Research contract income in the universities increased in 2006, both in total and as a percentage of total university revenue.

Estimated university expenditure on research and development increased in 2006, with the largest increases taking place in the subject areas of knowledge-general and health. The largest proportion of research and development expenditure in the universities was estimated to be on basic research.

Included in this chapter is a study examining the changes in research funding that have resulted from the introduction of the Performance-Based Research Fund. The study considers whether this has resulted in any 'undue' concentration of funding.

### 2008 year

In 2008, payments for the Building Research Capability in Strategically Relevant Areas fund began. This fund is designed to build research capability in subjects where the Performance-Based Research Fund results revealed significant nationwide gaps in areas of strategic relevance to New Zealand's development. The government has identified three subject areas to be funded through this initiative: nursing and associated disciplines of primary health care, rehabilitation and health maintenance; veterinary and large animal science; and information and communications technology.

An independent strategic review of the Performance-Based Research Fund was carried out in 2008 by Dr Jonathan Adams of the British research consultancy firm Evidence Ltd. The review findings were that overall the fund has provided beneficial outcomes to the tertiary education research environment. Some of the findings from the review were that:

- the Performance-Based Research Fund has sharpened consciousness of the place of 'excellence' across academic activity

- there has been a desirable rebalancing from a system that over-emphasised teaching effort
- there is now more and better information about relative research quality at institutional and subject level
- there is some concern that the fund affects professional practice, user-related research and commercialisation
- the weighting of 25 percent for research degree completions may be unduly large given that they represent quantity rather than quality. This might be reduced to the same level as the external research income weighting – 15 percent – thereby raising the evidence portfolios from 60 percent to 70 percent of the quality evaluation, and
- there have been significant changes in the management of research, in research culture and awareness, and in the priority given to research activity. Interviews provide convincing evidence that the Performance-Based Research Fund is having a pervasive effect on the status placed on the research mission by staff and managers.

The independent review also recommended a number of changes to the Performance-Based Research Fund. Some of these were:

- using research groups – rather than individuals – as the unit of assessment to encourage the development of sustainable age and experience profiles
- changing the funding category weightings to ensure recognition of the best research
- changing the funding category weightings that make some subject areas more valuable than others, and
- reviewing the access to the fund of polytechnics and private training establishments.

### Reference:

Adams, J. (2008) *Strategic review of the Performance-Based Research Fund: the assessment process*, Wellington: Evidence Ltd and the Tertiary Education Commission.

### RESEARCH INCOME VIA VOTE EDUCATION<sup>1</sup>

Figure 13.1: Vote Education research funding in tertiary education organisations

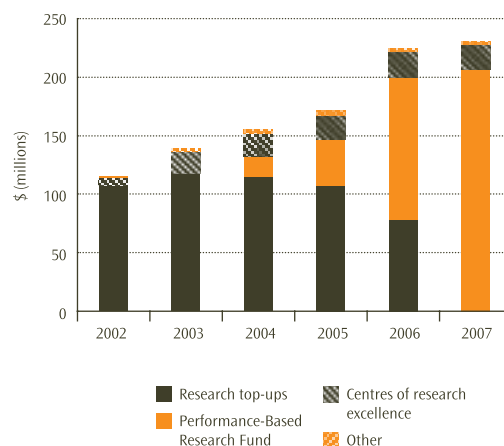
The total research income of tertiary education organisations, via Vote Education, increased in 2007. The Performance-Based Research Fund allocations increased as the phase-in of the Performance-Based Research Fund was completed, while as part of the funding switch-over research top-ups ceased.

#### Research income of tertiary education organisations, via Vote Education, in 2007:

	\$ (millions)	
Total	231	(up 2.8% on 2006)
Research top-ups	0	(\$78 million in 2006)
Performance-Based Research Fund	206	(up 69% on 2006)
Centres of research excellence	21	(up 0.5% on 2006)
Other	3	(down 0.9% on 2006)

**Note:** 'Other' includes tuition subsidies for international research students and for Building Research Capability in the Social Sciences Fund.

**Source:** Ministry of Education and Tertiary Education Commission.



### DISTRIBUTION OF RESEARCH INCOME

Figure 13.2: Distribution of Vote Education research funding in tertiary education organisations

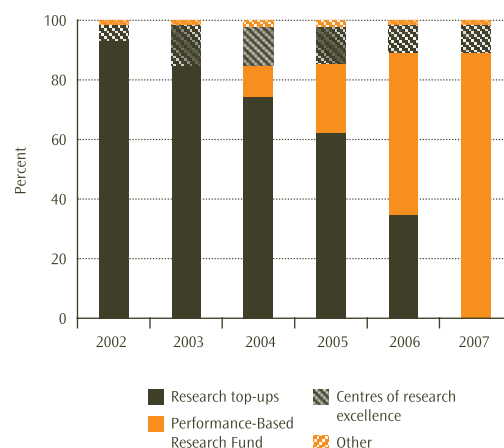
In 2007, the Performance-Based Research Fund was the largest single source of research income of tertiary education organisations from Vote Education.

#### The percentages of research income of tertiary education organisations, via Vote Education, by type in 2007:

Research top-ups	0%	(35% in 2006)
Performance-Based Research Fund	89%	(54% in 2006)
Centres of research excellence	9.3%	(9.5% in 2006)
Other	1.3%	(1.4% in 2006)

**Note:** 'Other' includes tuition subsidies for international research students and for Building Research Capability in the Social Sciences Fund.

**Source:** Ministry of Education and Tertiary Education Commission.



### RESEARCH INCOME IN UNIVERSITIES

Figure 13.3: University research income by source

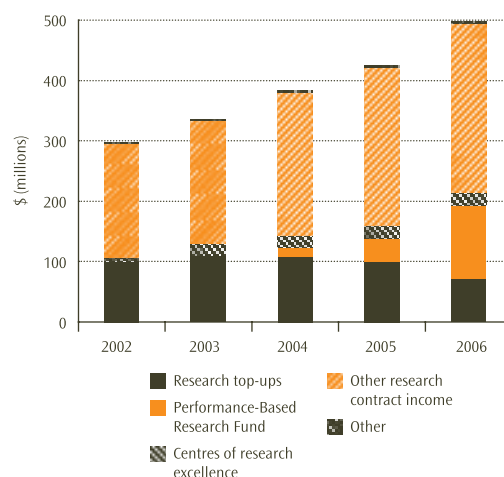
Research income continued to grow in the universities in 2006, with the fastest growth occurring in the Performance-Based Research Fund. However, research contract income continued to be the single largest source of research income for the universities in 2006.

#### University research income by source in 2006:

	\$ (millions)	
Total	\$497	(up 17% on 2005)
Research top-ups	\$73	(down 27% on 2005)
Performance-Based Research Fund	\$120	(up 207% on 2005)
Research contract income	\$301	(up 6.6% on 2005)
Centres of research excellence	\$21	(up 0.4% on 2005)
Other research contract income	\$280	(up 7.1% on 2005)
Other	\$3	(down 17% on 2005)

**Notes:** 'Other' includes tuition subsidies for international research students and for Building Research Capability in the Social Sciences Fund.

**Source:** Ministry of Education and Tertiary Education Commission.



1. The revenue and expenditure are exclusive of goods and services tax. Data for the colleges of education has been included with the universities' data. Research contract income data for 2007 is not yet available.

### DISTRIBUTION OF RESEARCH INCOME IN UNIVERSITIES

The largest source of research income for the universities was contract income in 2006. This was a decrease from 2005, which was caused by an increase in the appropriation for the Performance-Based Research Fund.

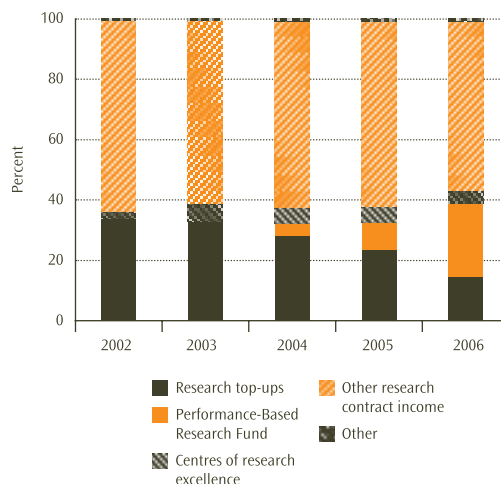
**The percentage of university research income by source in 2006:**

Research top-ups	15%	(23% in 2005)
Performance-Based Research Fund	24%	(9.2% in 2005)
Research contract income	61%	(66% in 2005)
Centres of research excellence	4.3%	(5.0% in 2005)
Other research contract income	56%	(61% in 2005)
Other	0.6%	(0.9% in 2005)

**Notes:** 'Other' includes tuition subsidies for international research students and for Building Research Capability in the Social Sciences Fund.

**Source:** Ministry of Education and Tertiary Education Commission.

Figure 13.4: Distribution of university research income by source



### UNIVERSITY RESEARCH CONTRACT INCOME

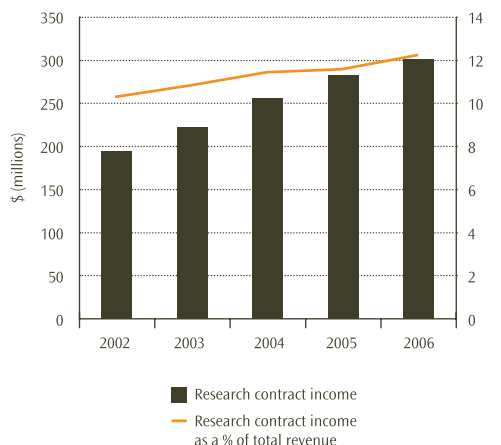
University research contract income continued to increase as a percentage of total university revenue in 2006.

**University research contract income in 2006:**

Total	\$301m	(up 6.6% on 2005)
As a % of total university revenue	12%	(11% in 2005)

**Source:** Ministry of Education and Tertiary Education Commission.

Figure 13.5: University research contract income



### UNIVERSITY RESEARCH INCOME BY SOURCE

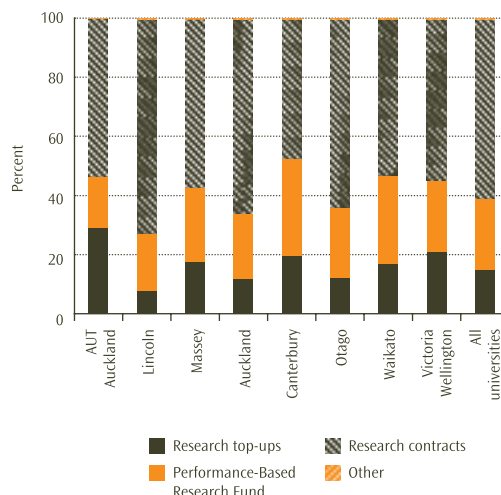
The main source of research income for most universities was external research contract income in 2006. Lincoln University, the University of Auckland and the University of Otago received more than 60 percent of their research income from this source, while the University of Canterbury received less than half their income from external research contracts.

**The proportions of university research income by source in 2006:**

	Research top-ups	Performance-Based Research Fund	Research contracts	Other
Total	15%	24%	61%	0.4%
Auckland University of Technology	29%	17%	53%	0.2%
Lincoln University	8%	19%	73%	0.4%
Massey University	18%	25%	57%	0.5%
University of Auckland	12%	22%	66%	0.3%
University of Canterbury	20%	33%	47%	0.5%
University of Otago	12%	24%	64%	0.3%
University of Waikato	17%	30%	53%	0.4%
Victoria University of Wellington	21%	24%	55%	0.3%

**Source:** Ministry of Education and Tertiary Education Commission.

Figure 13.6: University research income in 2006 by source



## UNIVERSITY RESEARCH EXPENDITURE

The estimated research expenditure of universities continued to rise in 2006, while it remained unchanged from 2004 as a percentage of gross domestic product.

### University research and development expenditure in 2006:

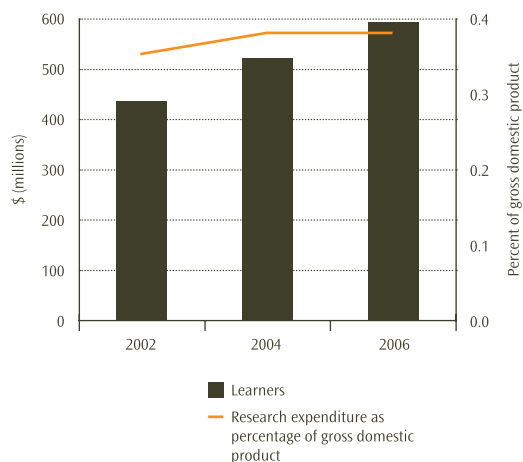
Total	\$593m	(up 14% on 2004)
As a % of gross domestic product	0.38%	(0.38% in 2004)

**Notes:**

1. This excludes colleges of education data where they were not already merged with universities.
2. This data is collected biennially by Statistics New Zealand and the Ministry of Research, Science and Technology.

**Source:** Ministry of Research, Science and Technology and Statistics New Zealand.

Figure 13.7: University research and development expenditure



## UNIVERSITY RESEARCH EXPENDITURE BY TYPE

In 2006, the largest type of expenditure on research and development in universities was on basic research. The universities were responsible for 52 percent of all New Zealand's expenditure on basic research.

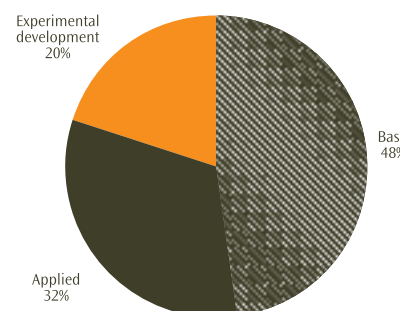
### The distribution of university research and development expenditure in 2006:

Basic	48%
Applied	32%
Experimental development	20%

**Note:** This excludes colleges of education data where they were not already merged with universities.

**Source:** Ministry of Research, Science and Technology and Statistics New Zealand.

Figure 13.8: University research and development expenditure in 2006 by type



## UNIVERSITY RESEARCH EXPENDITURE BY PURPOSE

The largest category of university research and development expenditure is knowledge-general, followed by health.

### The distribution of university research and development expenditure in 2006:

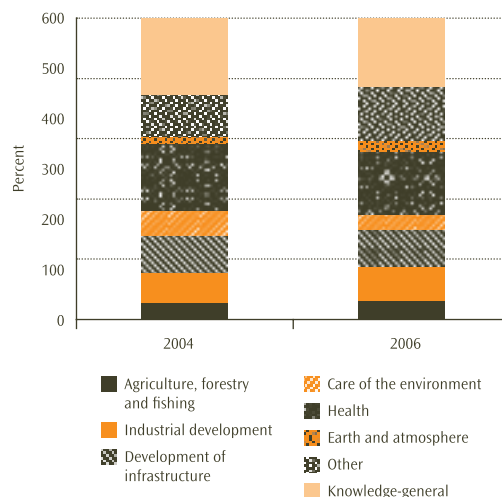
Agriculture, forestry and fishing	6.2%	(5.5% in 2004)
Industrial development	11%	(10% in 2004)
Development of infrastructure	12%	(12% in 2004)
Care of the environment	5.0%	(8.3% in 2004)
Health	21%	(22% in 2004)
Earth and atmosphere	3.5%	(2.4% in 2004)
Other	18%	(14% in 2004)
Knowledge-general	23%	(25% in 2004)

**Notes:**

1. This excludes colleges of education data where they were not already merged with universities.
2. 'Other' expenditure includes spending in energy, social development and services, defence and other research purposes.
3. 'Knowledge-general' includes spending on research that is undertaken by universities and that does not relate to a specific area or purpose.

**Source:** Ministry of Research, Science and Technology and Statistics New Zealand.

Figure 13.9: University research and development expenditure in 2006 by purpose



## The concentration of New Zealand and Australian university research funding

Some people argue that a country should concentrate a large share of its research funding in a relatively small number of research-intensive universities. According to this argument other universities would then face reduced expectations in research and would be free to focus on other activities. The reason for this view is that concentrating research resources will allow a small number of universities to build critical mass of researchers and thus to excel in research. One consequence of this is that those research-intensive universities would build their international standing, be internationally competitive and score well in international rankings. Research performance is considered the most effective way to improve international standing because several international university ranking systems – the Times Higher Educational Supplement system and the Shanghai Jiao Tong University system in particular – are heavily dependent on measures of research performance (Marginson, 2007). While all experts are highly sceptical of the value of those ranking systems and question the narrowness of their focus, for many people, research performance measures have become highly influential in establishing a university's reputation.

When it introduced the Performance-Based Research Fund in 2004, the New Zealand government took a balanced view of the value of concentrating research funding in a few research-intensive universities. Its aim was to align the allocation of the funding for research with research performance as a means of increasing the quality of the research conducted in the sector (Tertiary Education Commission, 2004). By aligning research funding with research performance, we would expect to see concentration of a larger share of research funding in the best performing institutions – some level of concentration of funding in higher performing institutions was an inevitable consequence of the policy change. But the government also identified that excessive concentration of funding in a few institutions could pose the risk of eroding research capability in some tertiary education organisations, given the requirements in the Education Act that degree teaching should be largely undertaken by people active in research so Cabinet expressed a wish to avoid 'undue' concentration of funding (Ministry of Education and Transition Tertiary Education Commission, 2002).<sup>2</sup>

This article explores how far research funding has been more heavily concentrated in a smaller number of universities in New Zealand following the introduction of the Performance-Based Research Fund. It also looks at the extent to which, if at all, the concentration is 'undue'. It then compares that with the situation in Australian universities.

### Methodology

The approach taken to the analysis of the concentration of research funding in New Zealand universities is to compare the funding allocated to the highest performing of the universities with the average of the seven established universities.<sup>3</sup>

2. The other four stated aims were: to ensure that research continues to inform and shape the teaching and learning of degree and postgraduate students; to ensure funding is provided to support postgraduate research students and new researchers; to improve the quality of information on research output; and to underpin the existing strengths in tertiary education research. There is some comment in this paper on the linkage between research funding and research strengths. The other aims are not explored in this paper.

3. The term 'established university' refers to the seven older New Zealand universities, i.e. excluding the Auckland University of Technology (AUT). AUT is a newer university working to build its research capability from its polytechnic origins. While the performance of AUT in the Performance-Based Research Fund grew strongly between the quality evaluations of 2003 and 2006, the results are still somewhat short of those achieved in the seven longer-established universities.

In most of the tabulations, the funding is normalised to compensate for the differences in the size of the university – mostly by using the number of Performance-Based Research Fund-eligible full-time equivalent staff in the university as an index of the size of an institution's research effort.

The paper uses two main measures of performance: the amount of education research funding won in the Performance-Based Research Fund and the amount of external research contract income.

### The Performance-Based Research Fund

The Performance-Based Research Fund measures research performance on three dimensions:

- research quality, as determined by peer assessment in the periodic Performance-Based Research Fund quality evaluations (60 percent of the measure)
- the amount of external research income earned (15 percent of the measure), and
- the number of research degree completions (25 percent of the measure).

The details of how these three measures are calculated are set out in Tertiary Education Commission (2007).

### Has there been concentration of funding?

#### Which universities have gained funding?

Analysis by the Ministry of Education (Smyth, 2008) shows that five of the seven established New Zealand universities increased their share of the total pool of Vote Education research funding<sup>4</sup> as a result of the shift to the Performance-Based Research Fund from the former research funding system – where research funding was delivered as a supplement added to tuition subsidies, called a 'research top-up'.

4. Excluding funding for the centres of research excellence.

That analysis showed that Lincoln, Otago, Auckland, Waikato and Massey increased their shares of the research funding pool – in order of the scale of increase. If one were to discount for the effects of the government’s additional funding for the Performance-Based Research Fund – and compare what would have happened had the Performance-Based Research Fund been implemented without extra funding injections – then Lincoln would have increased its research funding from this source by 35 percent or nearly \$7,600 per full-time equivalent staff member, representing nearly 2 percent of annual revenue. Otago’s increase, at 26 percent, would also represent about

2 percent of its total revenue. The Auckland, Waikato and Massey increases in this source of revenue would have been 18 percent, 12 percent and 7 percent, respectively.

In 2007, the University of Auckland gained \$37,884 in Performance-Based Research Fund funding per full-time equivalent staff member, the highest of any university. The second-placed university, Otago, won 94 percent of Auckland’s earnings, while the average of the seven established universities was 83 percent of the Auckland performance.<sup>5</sup> The data are set out in Table 13.1.

**Table 13.1: PBRF indicative funding (2007) Per full-time equivalent staff member (2006) \$**

	Performance-Based Research Fund indicative funding (2007) per full-time equivalent staff member (2006) \$	Rank	As a percentage of average
Auckland	37,884	1	121
Otago	35,635	2	113
Lincoln	31,531	3	100
Canterbury	28,481	4	91
Massey	27,618	5	88
Waikato	26,184	6	83
Victoria	23,083	7	73
Average of the seven established universities	\$31,429		

*Source:* Tertiary Education Commission and Ministry of Education.

**Notes:**

1. All data is presented assuming the universities had merged with the colleges of education for the entire period.
2. The full-time equivalent in this analysis refers to Performance-Based Research Fund-eligible full-time equivalent staff members.
3. The data in this table is presented on a goods and services tax-exclusive basis.

The leading universities by this measure – Auckland and Otago – both have balanced performance across all three dimensions of the Performance-Based Research Fund – the quality assessment, research degree completions and external research income. By contrast, the third-ranked university, Lincoln, performs above the average only on external research income. Canterbury performs well on the research quality assessment but its earnings are affected by its below-average external research income.

Lincoln, a small specialist university with an unusual profile, has gained significantly from the Performance-Based Research Fund. The extent of its gain is due to two main factors.

First, much of Lincoln’s current and historical research excellence is in areas related to land-based industries. While these fields generate much of Lincoln’s Performance-Based Research Fund quality assessment funding, they tend to attract relatively fewer enrolments and hence they generated relatively lower funding under the old research top-up system. Much of Lincoln’s Performance-Based Research Fund funding has come from applied sciences such as agriculture and environmental sciences, fields with higher Performance-Based Research Fund discipline weightings. In other words, the discipline weightings used in the Performance-Based Research Fund formula have boosted Lincoln’s funding. If the

discipline weightings were removed, Lincoln’s position in the ranking of Performance-Based Research Fund funding per full-time equivalent would have fallen from third to fifth (Smyth, 2008). Second, Lincoln is the university that dominates the external research income dimension of the Performance-Based Research Fund. Lincoln won \$76,000 per full-time equivalent in external research income in 2005, 17 percent above Auckland, 36 percent above Otago, more than double what Massey and Waikato earn and more than triple the earnings of Canterbury and Victoria. Lincoln’s performance on this dimension boosts their research earnings in total, and also increases their Performance-Based Research Fund earnings.

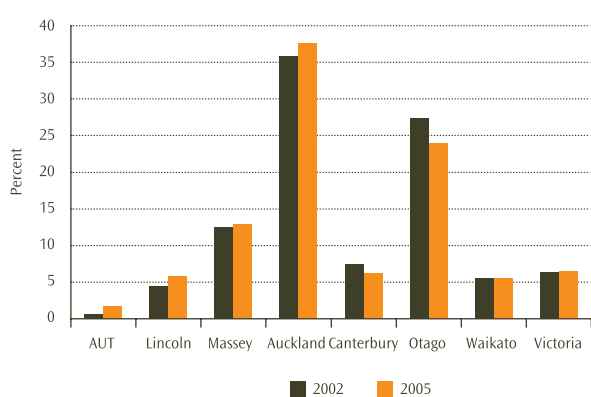
#### External research income

External research income contributes to research funding concentration in two ways. First, external research income is used as a measure in the Performance-Based Research Fund and hence higher external research income generates higher Performance-Based Research Fund income. Second, external research income is an element of each university’s research revenue overall.

5. An alternative approach to normalising the earnings would be to use the number of equivalent full-time students in degree-level qualifications and above. Under this analysis, Auckland – a larger institution – comes in third, behind Otago and Lincoln, but well ahead of the average of the seven established universities, which stood at 82 percent of the Auckland total.

As an emerging university, the Auckland University of Technology had very large growth in its Performance-Based Research Fund external research income between 2002 and 2005, but from a very low base. Lincoln's growth in Performance-Based Research Fund external research income between 2002 and 2005 was 78 percent, with its share of the total university Performance-Based Research Fund external research income growing from 4 percent to 6 percent. Auckland's earnings from this source grew by 42 percent over that period with its share growing from 36 percent to 38 percent. By contrast, Otago grew at a much lower rate (19 percent), meaning that its share of the component fell from 27 percent to 24 percent.

**Figure 13.10: Share of total university Performance-Based Research Fund external research income**



Source: Tertiary Education Commission and Ministry of Education.

**Table 13.2: New Zealand universities – inflation-adjusted Performance-Based Research Fund external research income**

	\$ (millions – in 2005 dollars)				Percentage change 2002-2005
	2002	2003	2004	2005	
Auckland University of Technology	1.3	2.1	3.1	4.8	266
Lincoln	9.2	13.7	18.1	16.4	78
Massey	25.9	32.9	34.6	36.4	41
Auckland	74.7	90.8	104.2	106.1	42
Canterbury	15.4	16.6	12.0	17.4	13
Otago	56.9	53.3	61.2	67.5	19
Waikato	11.5	13.3	14.8	15.6	36
Victoria	13.4	11.8	16.1	18.4	37
All universities	208.3	234.5	264.2	282.6	36

Source: Tertiary Education Commission and Ministry of Education.

**Notes:**

1. All data is presented assuming the universities had merged with the colleges of education for the entire period.
2. The data in this table is presented on a goods and services tax-exclusive basis.
3. The Consumers Price Index has been used to deflate the external research income data. The base is 2005.

In part, the growth at Lincoln and Auckland in this research component reflects the influence of the centres of research excellence. Government funding for these centres counts as external research income for Performance-Based Research Fund purposes. These centres can also act as 'magnets' for additional research contracts – either from agencies such as the Foundation for Research, Science and Technology or from business. Auckland has hosted four centres of research excellence and was a contributor to a fifth.<sup>6</sup> Lincoln hosts one. While Otago is a contributor to two centres, it is not a centre host.

#### Funding concentration in Otago and Auckland

There has been a shift of research funding to Auckland and Otago with the introduction of the Performance-Based Research Fund. Those two universities have increased their share of the total available funding and they earn considerably more from the Performance-Based Research Fund per full-time equivalent staff member than the average of the seven established universities.

There are three interconnected reasons for the concentration of Performance-Based Research Fund funding in these two universities. Most obviously, Auckland and Otago have consistently good performance on all of the dimensions of the Performance-Based Research Fund. In the 2003 Quality Evaluation, Auckland's quality score per full-time equivalent was first, a position attained by Otago in the second quality evaluation. Auckland is second (to Lincoln) on the external research income dimension of the Performance-Based Research Fund, with Otago third. Auckland has the best performance on the research degree completions measure, with Otago fifth (Smyth, 2008).

A second reason relates to the fact that both have medical schools. Analysis of university research performance in Australia indicates that the presence of a medical school is associated with higher levels of research performance (Abbott and Doucouliagos, 2004). In part this is because a medical faculty often provides a centre of high research performance. In part, research in medicine is fostered by high levels of external research contract income. For instance, in New Zealand, the two medical schools dominate funding distributed by the Health Research Council, and there is also considerable opportunity for commercial funding for medical research.

Third, Auckland and Otago both have expertise in a spread of disciplines, including those given higher weighting in the Performance-Based Research Fund funding formula. If the disciplinary weightings were to be removed from the Performance-Based Research Fund funding formula, both Auckland and Otago would lose funding, but, significantly, they would retain their positions as first and second in the amount of funding per full-time equivalent staff member (Smyth, 2008).

6. One of the four Auckland centres of research excellence is to be wound up over the next few years.

### Has the extent of concentration been 'undue'?

While there has been concentration of funding in Auckland and Otago and, to a lesser extent, Lincoln, the question arises as to the extent of concentration and whether there have been adverse effects from that shift of funding.

Since introducing the Performance-Based Research Fund, the government has made several additional injections of funding into the Performance-Based Research Fund, with these injections reaching an annual value of about \$41 million by 2007. One of the consequences of the additional funding is that it softened the severity of the impact of the transition to the Performance-Based Research Fund for the universities that lost funding share. For instance, while the University of Canterbury's share of research funding dropped from 12 percent in 2003 to 10 percent in 2007, the actual funding earned under the Performance-Based Research Fund was greater than Canterbury would have earned under the research top-ups system because the Canterbury share of the new funding injections was greater than their loss.

Only two universities lost funding – Victoria University of Wellington and the Auckland University of Technology. In Victoria's case, the share of funding would have been 11 percent in 2007, had the old system persisted; under the Performance-Based Research Fund, their 2007 share was 9.0 percent, while the funding itself was \$518,000 less than it would have been – or one-fifth of one percent of total institutional income (Tertiary Education Commission, 2007). There appear to be two main reasons for Victoria's income fall. The first is the very significant growth that university has had in bachelors-level enrolments – which would have generated extra research funding under the old system but doesn't under the Performance-Based Research Fund. The second is that Victoria's research strengths and specialisations lie in fields that are categorised in the low Performance-Based Research Fund funding group.

In the case of the Auckland University of Technology, the fall results from its evolution from a polytechnic to a university. At this stage in its development, the Auckland University of Technology has been very successful in attracting enrolments in bachelors degrees – all of which would have attracted significant research top-up funding. At the same time, the university has embarked on a substantial research capability development programme that has led to significant lifts in the university's Performance-Based Research Fund scores, but not yet to a point where it matches the other seven universities. This means that the money that would have been earned by Auckland University of Technology in research top-ups outweighs the Performance-Based Research Fund earnings. The Auckland University of Technology lost 20 percent of its revenue from this source or 2.1 percent of total institutional income.

So the data suggests that, with the possible exception of the Auckland University of Technology, the loss of the share of research funding should not have affected the capability of universities to a marked degree. That could be regarded as appropriate given the fact that the Performance-Based Research Fund quality evaluation appears to rate the seven established universities very closely, with the seventh university on that scale in the 2006 Quality Evaluation (Lincoln) scoring 74 percent of the highest ranked (Otago) and with the fifth-ranked university (Victoria) scoring 85 percent of the highest ranked.

The institutions that lost more are the polytechnics, where the Performance-Based Research Fund funding was \$9.2 million less than it would have been had the old research top-ups funding system continued – representing a little more than 1 percent of that sub-sector's total income.

### Australian university research funding concentration

Another way of looking at the extent of concentration of research funding in the New Zealand universities is to compare it with the extent of concentration elsewhere. So this section looks at the extent of research funding concentration in the Australian university system.

#### The Australian university system

There are 39 universities in Australia.<sup>7</sup> The university system is much more highly differentiated than in New Zealand, where differences in research intensity and performance are reasonably slight.<sup>8</sup> The Australian university system has a group of eight research-intensive universities (known as the G8). There is a range of universities established in the 1960s and 1970s many of which belong to a group called Innovation Research Universities Australia (IRU Australia) and a set of universities created in the late 1980s to the early 1990s from colleges of advanced education. Some of the newer universities belong to a group called the Australian Technology Network (ATN). This analysis looks at several of the G8 universities, three innovation and research universities (one of which has a medical school (Flinders)), two technology network universities and one other newer university (see Table 13.3).<sup>9</sup>

7. Including two private universities, Bond and Notre Dame.

8. Smyth (2008) notes that the Performance-Based Research Fund quality evaluation shows a relatively low level of difference in the research performance of the seven established New Zealand universities. The greatest variation in performance comes from the other dimensions of the Performance-Based Research Fund – research degree completion and external research income.

9. A table including the use of equivalent full-time students (instead of full-time equivalent) to normalise – is attached as an Appendix.

Table 13.3: Australian universities – 2005 research grant funding and external research income per full-time equivalent

	Group	Government education research grants per full-time equivalent staff member AU\$	As a percentage of all public universities	External research income per full-time equivalent staff member AU\$	As a percentage of all public universities
Adelaide	G8	49,729	193	84,805	194
Australian National University	G8	55,891	217	74,661	171
Melbourne	G8	36,949	143	80,341	184
Sydney	G8	37,696	146	64,380	147
Western Australia	G8	47,249	183	92,399	211
<b>G8 Average</b>		<b>38,152</b>	<b>148</b>	<b>69,108</b>	<b>158</b>
Flinders	IRU	28,994	113	46,623	107
La Trobe	IRU	16,689	65	16,104	37
Macquarie	IRU	40,587	158	52,571	120
Queensland University of Technology	ATN	11,974	46	24,098	55
University of Technology, Sydney	ATN	13,434	52	18,768	43
Central Queensland University	Newer university	9,479	37	13,800	32
<b>All Australian universities (excluding Bond and Notre Dame)</b>		<b>AU\$25,761</b>	<b>100%</b>	<b>AU\$43,774</b>	<b>100%</b>

Source: Australian Department of Education, Employment and Workplace Relations.

Note: The full-time equivalent in this analysis refers to academic full-time equivalent staff members.

As would be expected in a university system with high levels of differentiation, there is very significant variation among the Australian universities in their research income – from Central Queensland at 37 percent of the national average of research grants to the Australian National University at more than 200 percent.

While the G8 universities perform at a level above the other groups on these measures, there is still some variation among the G8 (see Table 13.4). The Australian National University is a special case – a university with a high proportion of postgraduates and a significant emphasis on research. At the other end of the scale, Monash appears not to measure up to the same extent on the indicators used here – it is actually behind two of the innovation research universities and close to the sector average.

In fact, there is more variation/concentration of research funding in the Australian G8 than in the seven established New Zealand universities.<sup>10</sup>

## Conclusion

The introduction of the Performance-Based Research Fund in New Zealand has led to some additional concentration of research funding in New Zealand universities. In particular, the seven established universities have gained funding at the expense of polytechnics. And within the universities, Auckland, Otago and Lincoln have gained more funding than the others. However, because the seven established universities are reasonably even across most measures of research performance, the extent of concentration and differentiation is reasonably slight. In particular, there is no evidence of the 'undue' concentration seen as a risk by government at the time the Performance-Based Research Fund was introduced, with six universities having gained funding with the introduction of the Performance-Based Research Fund and only one established university experiencing a very small funding reduction.

The Australian university system is highly differentiated, with at least four distinct university groupings. There is very significant concentration of research funding on the G8 universities while some of the other university groupings place much more emphasis on teaching. Even within the groupings, there is a reasonable amount of differentiation on measures of research funding.

10. In large part, the extent of the variation in the G8's performance on these measures is a consequence of the fact that Monash's measures are out of line. Removing Monash from the calculation shows a more homogeneous picture, closer to the extent of variation in the seven established universities in New Zealand. Without Monash, the Australian government's education research grants per full-time equivalent range from 89 percent (Melbourne) of the average of the seven to 134 percent (ANU). External research income would range from 86 percent (Sydney) of the average to 123 percent (Western Australia).

Table 13.4: Australian G8 universities – 2005 research grant funding and external research income per full-time equivalent

	Government education research grants per full-time equivalent staff member AU\$	As a percentage of G8 average	External research income per full-time equivalent staff member AU\$	As a percentage of G8 average
Adelaide	49,729	130	84,805	123
Australian National University	55,891	146	74,661	108
Melbourne	36,949	97	80,341	116
Monash	22,801	60	43,554	63
New South Wales	38,650	101	66,076	96
Queensland	39,234	103	74,173	107
Sydney	37,696	99	64,380	93
Western Australia	47,249	124	92,399	134
G8	AU\$38,152	100%	AU\$69,108	100%

Source: Australian Department of Education, Employment and Workplace Relations.

Note: The full-time equivalent in this analysis refers to academic full-time equivalent staff members.

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## Appendix: Australian university research funding

Table 13.5: Australian universities – 2005 research grant funding and external research income per full-time equivalent and equivalent full-time student

	Group	DEEWR research grants per full-time equivalent AU\$	As a percentage of all public universities	External research income per full-time equivalent staff AU\$	As a percentage of all public universities	DEEWR research grants per equivalent full-time student AU\$	As a percentage of all public universities	External research income per equivalent full-time student AU\$	As a percentage of all public universities
Australian National University	G8	55,891	217	74,661	171	7,813	479	10,438	377
Monash	G8	22,801	89	43,554	99	1,872	115	3,576	129
Adelaide	G8	49,729	193	84,805	194	3,994	245	6,810	246
Melbourne	G8	36,949	143	80,341	184	3,471	213	7,547	272
New South Wales	G8	38,650	150	66,076	151	3,058	187	5,227	189
Queensland	G8	39,234	152	74,173	169	3,451	212	6,525	235
Sydney	G8	37,696	146	64,380	147	3,008	184	5,138	185
Western Australia	G8	47,249	183	92,399	211	4,185	257	8,184	295
<b>G8 Average</b>		<b>38,152</b>	<b>148</b>	<b>69,108</b>	<b>158</b>	<b>3,335</b>	<b>204</b>	<b>6,042</b>	<b>218</b>
Flinders	IRU	28,994	113	46,623	107	1,988	122	3,196	115
La Trobe	IRU	16,689	65	16,104	37	1,137	70	1,098	40
Macquarie	IRU	40,587	158	52,571	120	1,132	69	1,467	53
Queensland University of Technology	ATN	11,974	46	24,098	55	659	40	1,326	48
University of Technology Sydney	ATN	13,434	52	18,768	43	712	44	995	36
Central Queensland University		9,479	37	13,800	32	228	14	332	12
All Australian universities (excl. Bond and Notre Dame)		AU\$25,761	100%	AU\$43,774	100%	AU\$1,631	100%	AU\$2,772	100%

Source: Australian Department of Education, Employment and Workplace Relations (DEEWR).

## Notes:

1. The full-time equivalent in this analysis refers to academic full-time equivalent staff members.
2. IRU = the Innovation Research Universities Australia.
3. ATN = the Australian Technology Network.