The Research Performance of Universities – Another Perspective

by
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Introduction

The release of the report to DEETYA on the 'Concentration of Research in Australian Universities', by Paul Bourke and Linda Butler of the Australian National University[1], has generated debate in university circles. The interest of the sector and passion of some of the responses have been stirred not only by the indicators used and the research league table subsequently generated, but by knowledge of the current DEETYA consideration of an alternative formula to allocate the limited Commonwealth research infrastructure funding to universities.

It is not surprising that the Bourke-Butler university research league table (and the earlier 'Brennan index'[2]) have the older, larger Australian universities at the top and the post-1987 universities towards the bottom. The research indicators employed by Bourke and Butler included the DEETYA research quantum funding to universities, research publications produced, citations by others of university publications, and total expenditure by each university on research, and academic staff were all included, whatever the nature of their relation to the business of research.

This paper employs the same data to illuminate a less remarked-upon aspect of Australia's higher education research endeavour, the importance for the research performance of any university of the output of its 'teaching and research' staff. A later paper will explore the differential role of industrial and community funding for research in the university sector, and the implications that these differences have for research activity in the new century.

Context

The DEETYA publication 'Selected Higher Education Staff Statistics' for Australian Universities [3] confirms the significant concentration of 'research only' staff in the older universities and the concentration of 'teaching only' staff in the post-1987 universities. But these are relatively small groups, containing 8,601 and 1.587 people respectively. The majority of academic staff, 26,354 people, are classified as 'teaching and research', and on the evidence of university statistical collections are on average engaged in teaching and collegial duties for around 70 percent of their time, and in research or other scholastic endeavours for the remaining 30 percent of their time.

If 'teaching and research' staff are the backbone of the modern university, and if the supposedly 'inextricable' link between teaching and research actually exists, then it is these staff who represent that fusion at its most potent. It should follow that the more research they conduct, the better their teaching and the better the overall quality of education at their universities. From this perspective, research institutes attached to universities, and

'research only' staff, will provide much the same contribution to university teaching as do the staff of the CSIRO, or a private corporation — yes, there is some involvement in teaching, but it is statistically irrelevant, because otherwise the staff would not be defined as 'research only'. The best measure of the research performance of a university, as distinct from the work of its research institutes or 'full time' research staff, would thus be the research performance of its 'teaching and research' staff.

The reasons will be intuitively obvious. It is these staff who do the bulk, in some cases the entirety, of undergraduate teaching, and it is in undergraduate classes that the teaching/research linkage can be most effective. Honours and postgraduate students, after all, are engaged in research to a large degree anyhow. Undergraduates make up some four-fifths of all university students in Australia, and those who teach them, if they are themselves engaged in research, will be potent conveyors of the importance of research in teaching. Those who are not so engaged cannot convey the importance of research at other than a rhetorical level.

Methodology

While the DEETYA data contain anomalies (for example, ACU appears to have almost no 'teaching and research' staff), they are the best that we have for our system. The data can be used to compare universities across a dimension in which the research activity of 'teaching and research' staff is given its due weight. This is done in the accompanying Table by weighting each 'teaching and research' staff member at 0.30 and each 'research only' staff member at 1.00. These categories are then summed in each university to produce a new category of staff called 'Full-Time Equivalent Research staff', or FTER. This construct then represents each university in the analysis of its research performance, using some familiar DEETYA categories — earned research income, publications, and postgraduate completions.

Analysis

The first column (A) in the Table displays the research income of each university (Column E), divided by its full-time equivalent research staff (Column D). The University of New South Wales tops this list, with $137,000 per FTER, followed by Melbourne ($124,000) and Adelaide ($120,000). But then come UNE and Macquarie, with Northern Territory hard on the heels of Western Australia. Wollongong and Flinders are ahead of Queensland, Newcastle ahead of Monash. Canberra slips in ahead of James Cook, Griffith and La Trobe. This doesn't look like the Bourke-Butler league table or the Brennan league table. But it is telling us something.

The same spread can be seen if the performance indicator is publications, using the DEETYA definitions (Column F divided by Column D = Column B). The top of the table is UNE, whose FTER staff produced an average of 2.6 publications, while Wollongong is again up there with UNSW, and ahead of Melbourne and Adelaide. La Trobe is also a conspicuous performer, but Sydney and Monash are not. Canberra is ahead of both of them, and ahead of Western Australia too.

In the area of postgraduate completions (Column G divided by Column D = Column C) there is a more diverse spread. UNE (1.6 postgraduate completions per FTER) and Wollongong (1.3) are way out in front, with UNSW and Melbourne next. Swinburne pips Adelaide, as Monash does Macquarie — but these last four only achieve half the performance level of UNE. And after Macquarie come another fifteen universities before some kind of limit is reached at the level of the University of Newcastle, with just over half a postgraduate completion for each FTER staff member (unlucky UTS just falls under this entirely artifical limit).

Indeed, what is interesting about the rankings is not only that it shows much greater diversity across the system than would be expected from the Bourke/Butler or Brennan rankings, but that in each domain there is much similarity in the middle of the field. In the publications area, for example, 15 universities scored between 1.25 and 1.75 publications per FTER, and they include Monash, Sydney, Western Australia and Queensland, as well as Murdoch and Griffith, plus nine of the post-1987universities. In research income, twenty universities earned between $30,000 and $90,000 per FTER, and there was a comparable spread across the categories, as there was in postgraduate completions, with 19 universities scoring between 0.4 and 0.8 of a postgraduate completion per FTER.

Discussion

In short, comparing the output of the universities' FTER staff shows that the older universities gain through age and size, but not necessarily in performance. There is something of a 'Matthew effect' in research activity: the longer you have been involved in it, as a university, the more you get to do. But if one's gaze is on the output of staff, and 'teaching and research' staff, the backbone of every university, are given their due weight, then it can be seen that in some respects the research activity of some of the older universities seems to be rather separate from their teaching activities. They contain by far the largest proportion of 'research only' staff, but are not necessarily always the top performers in research outputs. It is in some of the newer universities that research performance, andthe link between teaching and research seems, on the evidence, to be strongest.

Finally, the research output of the universities in the three areas surveyed seems to have a small top, a large middle and a small tail — something like a normal distribution, in fact. The tail consists of post-1987 universities, the top consists of a mixture of older and newer universities, and the middle consists of all three types, and is much the largest group. One strong message from these data is that the higher education research endeavour is widespread throughout the university system, and that no obvious public benefit would be gained by differentially funding one group of universities at the expense of the others.

REFERENCES

1 Bourke P, and Butler L., 'The Concentration of Research in Australian Universities: Six Measures of Activity and Impact', (Higher Education

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3 DEETYA, 'Selected Higher Education Staff Statistics, 1996', (Higher Education Division, Department of Employment, Training and Youth Affairs), Canberra: AGPS, 1996

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