Monitoring Australia’s Scientific Research: Partial Indicators of Australia’s Research Performance.

Implications for the University of Western Australia.

Linda Butler of the Research Evaluation and Policy Project, Research School of Social Sciences, Australian National University, has recently published, under the auspices of the Australian Academy of Science, a report entitled Monitoring Australia’s Scientific Research: Partial Indicators of Australia’s Research Performance. This study builds on and extends an earlier study by Paul Bourke and Linda Butler published in 1993 entitled “A Crisis for Australian Science?”. Both studies are based upon Australian publications indexed since 1981 by the Institute for Scientific Information (ISI).

The Executive Summary of this report is attached and copies of the report are available through the Academy of Sciences web site at www.science.org.au/butter. In the following I have attempted to extract from the report the findings which appear to me to have the most significance for UWA.

At a national level the most worrying aspect of the Butler analysis is that while Australia’s share of the publication output has increased over the 1990’s our share of the world’s citation pool continues to lag behind most of the OECD. At the same time there is evidence of increasing international collaboration between Australia’s scientists and the rest of the world which generally leads to an increase in citation share. This does not appear to be happening.

The Butler analysis appears to be direct evidence of an Australian trend towards increasing output but at the expense of impact. Since the point at which the universities’ output started to increase correlates well with the introduction of the composite index, Butler concludes that this increase has been a response to the introduction of volume based measures in the allocation of research funding.

As she notes it is not just in Australia that the effects of increased evaluation show up in the citation literature. A similar increase has been observed in the UK with the impact for the change also plausibly due to the introduction of a system-wide institutional evaluation scheme—the Research Assessment Exercise (RAE). However unlike in Australia the UK’s relative citation impact does not seem to have been as negatively affected presumably because the RAE is not volume based and includes an explicit quality assessment aspect.

Turning to the performance of UWA, the table on the next page summarises UWA’s share of the publications indexed by the Butler study. The fields analysed are mathematical sciences, physical sciences, chemical sciences, earth sciences, biological sciences, engineering, agricultural sciences and medical sciences. Note that the biomedical sciences have been divided between three high impact subfields—biochemistry, cell biology and genetics—and the other lower impact subfields to try and to take account of the great variation in relative citation impact across the biological field. On a volume basis UWA ranks where we would generally expect producing approximately 5% of all scientific publications with a notably higher percentage in the mathematical and chemical sciences.

With respect to the impact of these publications as measured by citations a somewhat less satisfactory picture emerges. Attached are copies of a series of figures from the Butler study which compare institutional performance in each of the designated fields of research. The figures are based upon an interesting method of analysis developed originally by herself and Paul Bourke. This method compares the average number of actual citations obtained by an institution over all its publications in a particular field to the average expected number of citations predicted from the impact factors for the journals in which the articles were published.