Introduction: Australian Higher Education as an Industry

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Abstract

This article provides an introduction to the contributed articles in the Forum through an overview of the structure of higher education in Australia

1. Preamble

A nation values higher education for its contribution to economic development, both directly through the training of a skilled work force and research, and indirectly through its contribution to personal development and the promotion of a civil society. The three outputs of the sector, student learning and training, research, and external engagement, are valued, albeit different stakeholders place different weights on the importance of types of output. Governments value the contribution of higher education to economic growth, through both the provision of a skilled workforce and research which enhances productivity. Domestic students value higher education for personal development and improved job prospects; international students have the extra demand for international experience and, for some, the possibility of resettlement. Employers want staff with both generic skills and skills specific to an industry, and research that can assist in raising productivity and in the development of new products. The article begins with an overview of the scope and size of the higher education sector. This is followed by a summary of the demand and supply for education and then for research. The article concludes with a discussion of productivity in the sector.

2. Industry Snapshot

The Australian higher education system comprises 37 public universities, 3 private universities, 2 overseas universities, 1 'university of specialisation' and 130 other providers. Under the Constitution education is a State matter, but since the mid-1970s most public funding for universities has been provided by the federal government, and other powers have been ceded overtime. Some state involvement remains, including selection of some Council members and auditing. The structure of the system is determined by the federal government. What defines a university and other higher education providers is defined by the Higher Education Provider Category Standards. The model for categorisation has been largely unchanged for nearly 20 years but is now being reviewed (Coaldrake 2018). Competition between providers is driven by the desire to attract international students and the best domestic students, including research students. Overseas universities provide little competition as few domestic students choose to enrol in overseas universities, at least at the undergraduate level. Overseas students are large in number and an important source of

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revenue. International rankings are particularly important for Australian universities as they influence the destination choice of international students, both directly and indirectly by governments in developing countries specifying the international universities that scholarship winners can attend. Because the international rankings are largely based on research performance they encourage all Australian universities to raise their research profile. The model is one where income from international students helps to fund research, the output from which improves international ranking which in turn helps to attract more international students. The net result is a continual expansion in student enrolments for most institutions: seven universities now have over 50,000 enrolments. The main threat to the model is a reduction in the flow of students from abroad, particularly China which currently accounts for 38 per cent of international enrolments.

In 2017, 1.5 million students were enrolled of whom 90 per cent were in the public universities (Department of Education and Training, 2018b). Some 34 per cent of the labour force has a bachelor's degree or higher (OECD, 2018, Table A1). The factors determining these attainment rates over time are examined by Andrew Norton in the first contributed article in this Forum.

Total revenue in 2017 was \$32 billion of which 23 per cent was fee income from overseas students. (Department of Education and Training 2018a). International students represent 29 per cent of enrolments and consequently the sector is a major export earner. In 2017-18 higher education exports amounted to \$22.2 billion: 45 per cent from fees and 55 per cent from expenditure (ABS, 2019). Exports contributed 5 per cent of the Australian total. Excluding casual appointments, universities employed 122 thousand staff in 2018, of whom 30 per cent taught and 14 per cent were research only (Department of Education and Training 2018c).

Expenditure on research and development by Australian universities amounts to 0.6 per cent of GDP and represents 31 per cent of national research expenditure (OECD 2019).¹

Research training is an important function of universities: PhD completions are around 9,000 per year.

3. Education

In education by coursework there are essentially three markets: domestic undergraduate, domestic postgraduate and international.² The supply of domestic undergraduate places in higher education is ultimately determined by the federal government, either directly through public institutions or indirectly by government policy towards the establishment of private institutions. In his Forum article, Andrew Norton sets out in considerable detail how places have been allocated over the last 30 years, and critically evaluates recent policy. He documents the changes and explains the effects of moving from capped undergraduate places in public universities, to uncapped, and then effectively back again. In contrast, the supply of places in the other two markets (graduate domestic places and international) is determined by institutions.

Domestic undergraduate places in public universities are financed by a mix of federal government funding and private contributions through an income-contingent loans scheme. In 2017, the federal government provided around \$7 billion under the Commonwealth Grants Scheme compared with the liability incurred by current students of \$4.5 billion. Thus, the price paid by domestic students is around 40 per cent of the cost.³ Insofar as student loans are not fully repaid, the average price is lower. The quantity of education provided to domestic undergraduates can be greater than the joint funding by students and government if the higher fees charged to international students are used to cross-subsidise domestic students.⁴ In practice, the evidence seems to be that teaching is undertaken at the domestic income rates (Lomax-Smith et al 2011; Deloitte Access Economics, 2016) and where cross-subsidisation takes place it is from international student fee income to research.

At the discipline level the subsidy to domestic undergraduates varies greatly: from 16 per cent for Law and Commerce to around 70 per cent for Agriculture and Medicine. Historically, the method used to allocate domestic undergraduate places across disciplines is unclear, although there was some recognition of demand changes as evidenced by the growth in Law studies. In his article, Norton provides examples of institutions changing their discipline mix under the uncapped funding model. He notes that 'Rapid enrolment increases in less-vocational fields such as science contributed to an increased mismatch between qualifications and jobs'. Changes in demand for postgraduate coursework study, which approximates a free market, are quickly reflected in places.

In the current emphasis on STEM disciplines (Science, Technology, Engineering and Mathematics) there is a tendency to undervalue the importance for economic development of transparent, well-functioning legal and finance systems, a numerate and literate workforce, and a degree of social cohesion. These objectives mean that education in Arts, Law, Business and the Social Sciences are also important. The contribution to society of graduates in the Humanities is spelled out in the second contributed paper in the Forum by John O'Mahony, Rohan Garga and Michael Thomas. They propose a framework for measuring the value of the Humanities across six social and economic criteria. The role of the humanities is spelled out in general terms and illustrated with particular examples. Some quantitative estimates of the positive effect on wages and labour force participation are provided.

4. Research

Research is mainly funded by the federal government and student fees. Direct federal government funding (30 per cent of total) is provided through block research grants, consultancies, and project funding allocated by the Australian Research Council (ARC) and the National Health and Medical Research Council (NHMRC). Funding from general university funds accounts for 56 per cent of expenditure. This indirect funding for research is sourced from the Commonwealth Grant for domestic student places, from domestic and international students through a component of tuition fees, and from investment income – in 2016 around 29 per cent of these general university funds were spent on research.⁵ State governments fund 4 per cent of research. All other forms of funding (business, not-for-profits, donations and foreign) account for only 10 per cent of expenditure by universities on research and development (ABS 2018), a low share by international standards (Williams 2016). Research training is funded by a block federal government grant to institutions plus fee income from overseas students.

The type of research undertaken is linked to funding. Income derived from student places, either government funding or fees, is used to fund curiosity driven research and to supplement project funding by government. This research is supply driven. At the other extreme, demand driven research is project research funded by business, not-for-profits and in response to tenders called by governments, both federal and state. In between lies project funding provided by the federal government. There is no systematic allocation of government project funding across disciplines. The ARC and NHMRC even come under separate government departments and over the last decade or so medical funding has increased at a much faster rate than funding for STEM disciplines.

5. Productivity

Finally, we turn to the question of how efficient is the Australian Higher Education sector? To what extent does efficiency vary across institutions? The difficulty with measuring productivity is common to the service sector: higher education produces a range of outputs and their value is difficult to measure. In addition, productivity of individual institutions is determined in part by the regulatory environment in which they operate, so international comparisons are difficult. The most common measures of output are student throughputs

(enrolments and graduates) and research publications. These needed to be related to inputs which can be measured in money terms, such as income for teaching and learning, and for research. A measure of research quality is citations. Quality measures are less likely to be included for teaching because of both conceptual and measurement problems.

A simple measure of research productivity is to compare funding with publications and citations. In the *Universitas21* ranking of national systems of higher education, out of the 50 leading research countries, Australia ranks tenth on higher education expenditure, both as a share of GDP and per head of population, fourth on publications per head of population, and twelfth on standardised citations per publication (*Universitas 21* 2019). On the quantity measure, at least, Australia shows above average research productivity. These research productivity measures can also be applied at the institutional level. But it is much more difficult to measure total productivity of an institution.

In the third contributed article in the Forum, Kenneth Moore, Gwilym Croucher and Hamish Coates review approaches to productivity measurement in higher education. In their survey of twenty existing studies, they find in total that six research output variables have been used and nine education output variables. Moore, Croucher and Coates critically examine the various approaches that are used to measure institutional productivity: Data Envelope Analysis (DEA), Stochastic Frontier Analysis (SFA), econometric estimation of production functions, and index measures. The authors' particular contribution is to measure productivity using the Törnqvist Index. Estimates for selected Australian universities using the Törnqvist method are compared with those obtained using DEA. They conclude by noting that policymakers typically prioritise a particular aspect of performance with simple indicators, but such performance schemes are rarely effective. A transparent, whole of institution approach, is to be desired.

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¹For international comparisons see Williams (2016).

² Some graduate places are provided under the Government grant scheme; for example in Law and Medicine.

³ The data in Department of Education and Training (2018a) have been adjusted slightly to include non-university providers in the student liability and to exclude some grants to universities that are for other purposes, such as equity.

⁴ Costs are higher for international students owing to selection costs and the provision of additional student services.

⁵ In 2016, research funding from general university funds was \$6.08 million (ABS, 2018). In 2016 general funds from the Commonwealth Grants Scheme (\$7.46 billion), domestic students (\$6.43 billion), overseas students (\$6.25 billion) and investment income (\$0.96 billion) totalled \$21.10 million (Department of Education and Training 2018a). In addition, an unknown proportion of other funds totalling \$1.89 billion may fall under the ABS definition of general funds.

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