

2012: A brave new world

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Submitted to the *Journal of Institutional Research*, December 2011, accepted for publication May 5 2012.

Abstract

The Australian Government decision in response to the Bradley review to introduce a demand-driven funding model for undergraduate university places from 2012 was met with mixed reaction across the higher education sector. The removal of caps without subsequent fee deregulation is considered by some to be unsustainable. Opinions suggest that deregulation will favour popular institutions and courses at the expense of regional campuses, niche courses and some that are critical in meeting skills shortages. It is also believed by some that quality could be compromised. Despite the differing opinions, it is generally agreed that deregulation of the undergraduate market will increase the level of competition within the sector and with this competition there may be increased risk, for some institutions more so than others. This article explains how historical Victorian state tertiary admission data has been used to develop a model to assess the likely risk to selected courses within the Faculty of Science and Technology at Deakin University from 2012. The model uses applicants' preference combinations and Australian Tertiary Admissions Rank (ATAR) score rankings to predict the likely impact to the Clearly-IN ATAR (cut off score) for a given faculty course and to identify other Victorian competitor courses. Sensitivity analysis is applied assuming different intakes and varying levels of competition within the sector, thereby providing a range of possible outcomes. The article explores how the outputs from the model have been used by the faculty in preparation for deregulation of the undergraduate market in 2012 by helping to identify, assess and plan for the changes and the anticipated risk associated with these.

Keywords: *Higher education, demand-driven funding, market deregulation, risk assessment, competition, change*

The Changing Higher Education Sector in Australia

With 37 public universities, two private universities (Department of Education Employment and Workplace Relations [DEEWR], 2010) and numerous other providers, the higher education sector in Australia is more complex and challenging than ever before. A more discerning prospective student and the need for institutions to satisfy a broad range of stakeholders—including government, industry and society—have contributed to the complexity that is being experienced globally (McClung & Werner, 2008). Codling and Meek (2006) identify several key factors that have shaped the higher education sector that

This paper was first presented at the Annual Conference of the Australasian Association for Institutional Research, *Let the sunshine in*, Gold Coast, 9–11 November 2011.

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include the environment, competition, ranking and government policy and reform, in particular of funding.

In March 2008, the recently elected Rudd Labor Government engaged Emeritus Professor Denise Bradley to lead a panel to undertake a comprehensive review of higher education in Australia. The terms of reference for the review included a full examination of the future direction of the higher education sector, its fitness for purpose in meeting the needs of the Australian community and economy and the options for ongoing reform. Key requirements the review panel were charged with included an assessment of the current status of the Australian higher education system in relation to international best practice and its ability to contribute to innovation and productivity gains necessary for long-term economic development and growth and prepare professionals for labour market needs.

The final report released in December 2008 and commonly known across the sector as the 'Bradley review' identified a higher education system deficient in many areas. Among its findings, the report found that Australia was at risk of falling outside of the top ten group of Organisation for Economic Co-operation and Development (OECD) nations in the quality and performance of tertiary education, having already fallen from 7th to 9th place in the last 10 years in the proportion of the population aged 25–34 years with bachelor degree qualifications (Bradley, Noonan, Nugent, & Scales, 2008). The Bradley review also identified a higher education system that is biased against groups of the population who are disadvantaged through circumstances acquired at birth: these include Indigenous people, those with low socioeconomic status and those from regional and remote areas (Bradley et al., 2008).

The panel recommended a number of reforms to the current system including national education and equity targets, increased financial support for students and increased institutional teaching funding. To meet the proposed target of 40% of 25–35-year-olds to attain at least a bachelor degree by 2020, the Bradley review recommended that all qualified students be given a 'voucher' entitling them to Commonwealth-subsidised funding that follows them, and that institutions be funded for the number of students that they enrol rather than a fixed quota beyond which no funding is provided (Bradley et al., 2008).

Response to the Review of Higher Education

In response to the Bradley review, in March 2009 the then Minister for Education, Employment and Workplace Relations and now Prime Minister, Julia Gillard endorsed a number of key recommendations from the review including the introduction of demand-driven funding with undergraduate enrolment caps to be fully removed from 2012. The decision has been met with mixed response from vice-chancellors, higher education organisational bodies, analysts and consultants and opinions widely reported in the media. The removal of caps without subsequent fee deregulation is considered by some to be unsustainable (e.g., Harrison, 2009; Schwartz, 2008). Opinions suggest that deregulation will favour popular institutions and courses at the expense of regional campuses, niche courses and some that are critical in meeting skills shortages (e.g., Tomazin & Perkins, 2009). Some also believe that quality could be compromised (e.g., Holmes & Alexander, 2009; Trounson, 2010).

Despite the differing opinions it is generally agreed that deregulation of the undergraduate market will increase the level of competition within the sector and with this competition there may be increased risk, for some institutions more so than others (e.g.,

McCarthy, 2009; Tomazin & Harrison, 2008). Indicators that institutions are prepared to enrol and self-fund undergraduate students in excess of already expanded quotas (Lane, 2011; Trounson & Hare, 2011) suggest that the anticipated increased competition is likely to transpire.

Student Choice, Reputation and Risk in a Competitive Environment

Henderson (1983, p. 8) draws on Charles Darwin's theories to reason that 'the more similar competitors are to each other the more severe their competition'. Competition is healthy in so far as it promotes diversity and innovation witnessed, for example, in the higher education sector through an expansive range of study programs and multiple modes of study (Clark, 2009). However, Marginson and Considine (2000, cited in Codling & Meek 2006, p. 44) contend that competition between Australian universities has actually resulted in a level of convergence rather than divergence, predominantly because ample resourcing has been available for institutions to essentially be able to imitate one another.

In the current competitive environment in Australia students have multiple study options, as well as multiple potential providers from which to choose. Extensive research has shown that many factors influence student choice of what and where to study. Attainment of a job or a better job is a prime motivating factor for applicants in deciding what to study; however, this is not the only reason. Interest and ability in the subject, as well as likelihood of getting a place, are also factors that are considered in deciding between institutions and courses (James, Baldwin, & McInnis, 1999) and this can be influenced and limited by choice of subject in Year 12 and type of secondary school attended (Calderon, Dobson, & Wentworth, 2000). Numerous other studies cited in Shanka, Quintal and Taylor (2006) have shown that academic reputation, variety of courses, costs, campus location, class schedules and the opinion of others are all factors that potential students consider in the decision-making process. Different factors are more important to different cohorts. For example, while school-leaver students are generally more influenced by study programs, costs, availability of financial aid, job prospects following graduation and the quality of teaching and facilities, adult students are more influenced by convenience factors such as class times and locations (Broekemier, 2002). International students are highly influenced by one or more of proximity of institution to home country, quality and variety of courses, costs—including both tuition fees and living costs, where friends are studying, family recommendations and safety (Shanka et al., 2006).

A collective finding of such research is the importance of reputation and perceived quality in influencing student choice of institution (Broekemier, 2002; Holdsworth & Nind, 2005; James, Baldwin, & McInnis 1999; Kern, 2000; Shanka et al., 2006). A comprehensive Australian study undertaken by James et al., (1999) determined that course entry scores are commonly used as a surrogate measure of course quality by prospective domestic students and that they subsequently become an overall measure of an individual institution's status. This link between entry scores, perceived quality and reputation is not unique to the Australian higher education sector. For example, in both the United States and Canada institutions have raised entrance scores and subsequently raised their reputations by selecting top students and rejecting many qualified students (Davies & Hammack, 2005). Relaxation of the centrally regulated admission system in Germany has fostered fierce competition between German institutions for the 'best students' (Mayer & Ziegele, 2009, p. 65). In the United Kingdom (UK) institutions have found the need to balance entry scores and fees as they compete for as many applicants as possible (Anderson, 1999; Clark, 2009).

The Bradley review advocates that a range of criteria should be used in selection and admission processes in Australia, either in conjunction with or in place of current processes that rely heavily on students' final ranked score and tend to favour students from higher socioeconomic status backgrounds (Bradley et al., 2008, p. 38). It is not the intent of this article to address the debate between the use of alternative measures such as aptitude tests versus entry scores in student selection and the equity agenda. Recent media attention (Rowbotham, 2011; Trounson, 2011), conflicting findings on the use of and success of such measures (Palmer, Bexley, & James, 2011) and research showing that academic performance in later university years is not necessarily dependent on students' final secondary school results (Murphy, Papanicolaou, & McDowell, 2001) suggest that this debate will be ongoing. In the absence of any clear indications that other measures will be uniformly adopted from 2012 it is not unreasonable to suggest that institutions will continue to endeavour to attract and enrol as many highly ranked students as possible. As Baldwin and James (2000, p. 141) note, in Australia a 'competitive impulse operates even when the system does not allow for it' as institutions to date have been funded for filling their quotas, not for their final entry score.

The enrolment caps have, to some degree at least, provided a safety net for institutions. What happens then when the safety net is removed? How can the potential risk to institutions in the new and challenging world of higher education in Australia be managed? Effective risk management involves identifying, understanding and assessing risks (Buehler, Freeman, & Hulme, 2008; Csizar, 2008; Paladino, 2008). Although frameworks exist, there is not necessarily a uniform approach to risk management; instead it should be adapted to suit the organisation and use the best information available (Baker, 2011). Gibbs and DeLoach (2006) and Paladino (2008) contend that risk management is most effective when fully integrated with strategy development, as both are interrelated and often need to change as the environment in which an organisation operates also changes.

Challenges from a Faculty Perspective

The Faculty of Science and Technology is one of four faculties at Deakin University situated in Victoria. The faculty offers a range of undergraduate courses within five broad fields of education (FOE): Natural and Physical Sciences, Information Technology, Engineering and Related Technologies, Architecture and Building, Agriculture and Environment Related Studies. Various courses are offered across each of Deakin's metropolitan and regional campuses— the Melbourne Burwood Campus, Geelong Waurn Ponds Campus, Geelong Waterfront Campus and the Warrnambool Campus—and comprise a mixture of generalist courses and niche specialty courses at the undergraduate level.

In Victoria the majority of undergraduate applicants seeking to study at a Victorian tertiary institution apply through the Victorian Tertiary Admissions Centre (VTAC). Collectively, undergraduate preferences across all institutions for the five FOEs that the faculty competes in account for just less than one quarter of total preferences through VTAC (Figure 1).

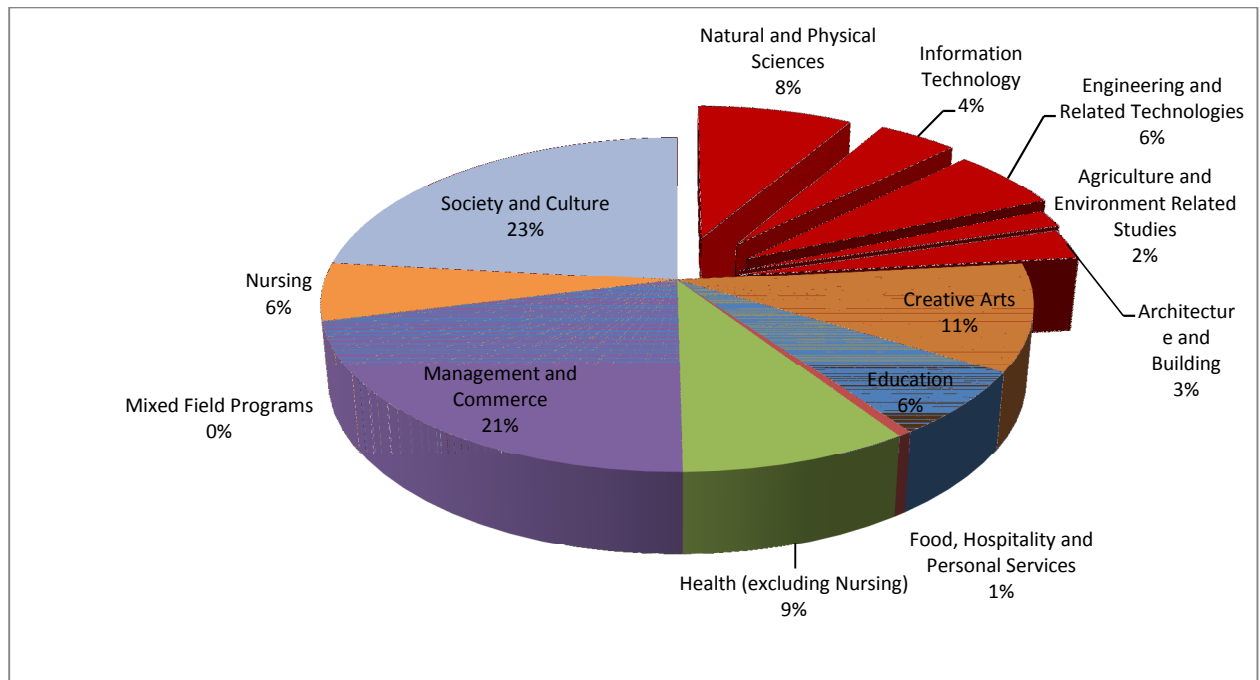


Figure 1. Victorian undergraduate preferences by FOE 2008–2010.

The other seven Victorian universities similarly offer a range of undergraduate courses across these five FOEs and, like Deakin, most offer a mixture of generalist and specialist courses. All current Victorian-based institutions offer undergraduate programs with study options in the Natural and Physical Sciences, Information Technology and Engineering and Related Technologies FOEs. All except two offer such programs in the Architecture and Built Environment FOE and all except three in the Agriculture and Environment related studies FOE. With so many options available to prospective students competition is intense, even in an environment where quotas exist.

In preparation for deregulation of the undergraduate market, in 2010 the faculty initiated a project called ‘Operation Caps Off’. Stage one of the project involved a comprehensive risk assessment of each of the course and campus offerings to identify where the faculty is vulnerable and at risk of losing applicants to other institutions.

The Model and Outputs

To assist in the risk assessment of the faculty’s courses, a model was developed using historical VTAC applicant data. Applicants through VTAC in any given year for tertiary entrance the following year are classified as current Year 12 or non-Year 12, depending on their school status in the year of application. Current Year 12 applicants are assigned an Australian Tertiary Admissions Rank (ATAR) that is an overall percentile ranking of their performance in their final year of secondary school relative to other students in the same year. Non-Year 12 applicants are assigned an equivalent rank. VTAC applicants can nominate up to 12 different course preferences in order of choice. Detailed VTAC data containing individual applicant complete course preferences and their enrolment status is available to institutions later in the year for which applicants applied for entry.

The model is constructed under the premise that all applicant preferences for a given course can be classified in one of three ways pending their final status at the end of the admission period for a given year:

- *Offered:* These applicants were offered the Deakin course. They are further classified as ‘safe’ if the Deakin course was their first preference or potentially ‘at risk’ if it was not their first preference.
- *Lost:* These applicants were offered a course that was a higher preference than the Deakin course. They are already lost to their higher preference and are excluded from further analysis.
- *Prospects:* These are applicants offered a course that was a lower preference than the Deakin course or not made any offer so they could be offered the Deakin course. The higher ranked their preference for the Deakin course is, the more likely they are to be able to be made an offer.

Under a scenario where there are no quotas, for any selected Deakin course non-first preference applicants offered the Deakin course could potentially be lost to their higher preference course. These at risk applicants could be replaced with prospects; however, this will result in a diminishing Clearly-IN ATAR (which is the cutoff/entry score) for the given course. Any increase in offers will also result in a diminishing Clearly-IN ATAR as more prospects are made an offer.

Three possible scenarios are modelled to reflect three hypothetical levels of competition for a given course:

- *No competition:* Additional offers made to applicants for the Deakin course but no other institution increases its offers. This is the ‘best case’ scenario and the easiest environment in which the course can expand its intake with minimal impact.
- *Some competition:* Applicants offered the Deakin course where it was not their first preference are subsequently offered a course that is a higher preference. Under this scenario there is competition for higher ranked applicants and these are lost to their higher preference course and replaced with lower ranked applicants. Growth is possible but it will come from the lower ranked prospects.
- *Intense competition:* All institutions offer to as many eligible applicants as possible (therefore mainly first preference applicants are available to any institution). This is the ‘worst case’ scenario and the most difficult environment in which to compete and grow.

The model provides an estimate of the likely impact to the Clearly-IN ATAR (cutoff/entry score) assuming a proportional increase in the number of offers made to the course. Figure 2 provides an example of the model output for a fictitious course.

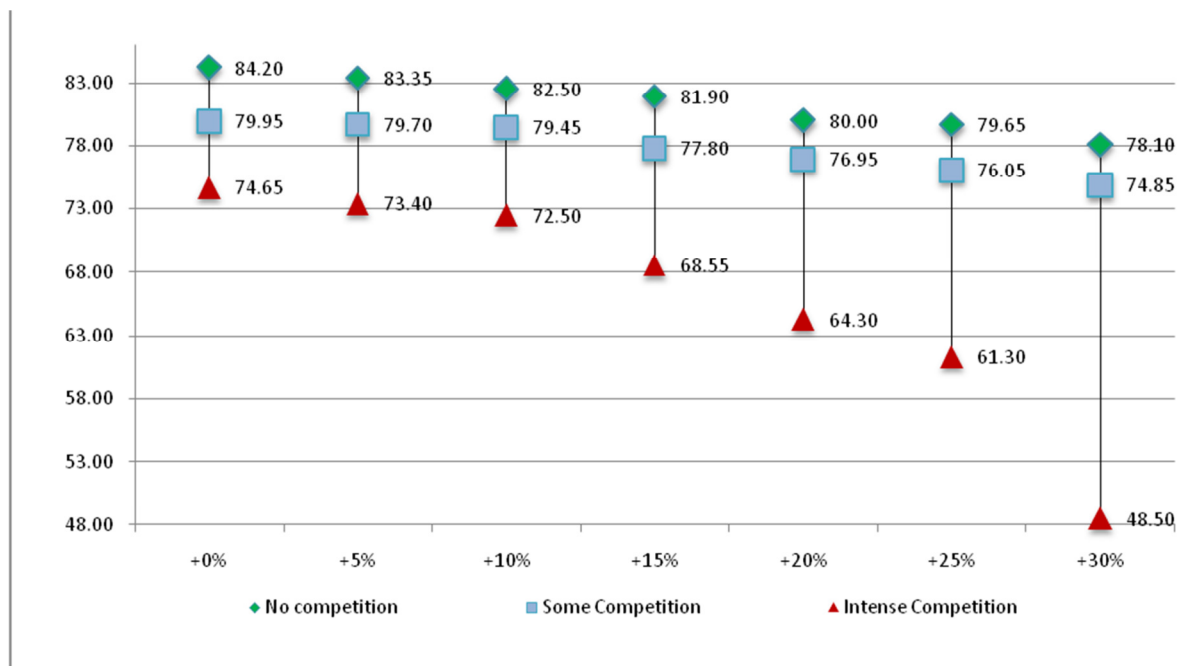


Figure 2. Estimated Clearly-IN ATAR.

Using the Model Outputs for Planning

The model and subsequent analysis undertaken has provided a detailed assessment of the impact to the Clearly-IN ATAR score to a given course if it expands its intake and as other institutions similarly expand their intakes for courses that applicants include in their preference combinations with this course. The model predicts the likely range that the Clearly-IN ATAR will lie within under various levels of competition and assuming a progressively increased commencing intake. The output from the model has been used by the faculty to consider the growth potential for each course, competitor courses, course interrelationships and campus factors. Each of these points is discussed further.

Growth potential. The model has enabled an analysis of the proportion of safe applicants (i.e., offered their first preference) and at risk applicants (i.e., potential losses to a higher preference) for each faculty course and the proportion of prospects—both first and nonfirst preference. This analysis was undertaken for both the current Year 12 and non-Year 12 cohorts to better understand where each faculty course has potential to grow, given that the Clearly-IN ATAR is calculated only for the current Year 12 cohort.

Competition. By identifying courses placed higher than Deakin courses, the model has provided a more concise understanding of both current competitor courses and courses that could become competitors in the future if the institutions that offer them choose to expand their intakes. Given the large number of similar courses offered by other institutions, this has helped to identify those courses that are competing directly with Deakin courses and drawing quality applicants away from them.

Course relationships. As well as identifying competitor courses offered by other institutions, the model has provided a better understanding of the relationships between the faculty's own suite of courses. This has helped to assess the likely impact on these faculty courses if the intake for a particular faculty course increases.

Campus aspects. Some of the faculty courses are offered across multiple campuses and the model has been able to identify similarities and differences between campus offerings in growth potential, competitors and interrelationships.

The actual impact that 2012 will have on institutions' individual course offerings is unclear. It is not known to what extent institutions will seek to expand their intakes beyond the increases that have already been experienced, as the overenrolment caps have been extended in preparation for full market deregulation. It is possible that, in the future, some institutions will choose to increase intakes in some disciplines and courses while maintaining current intakes or even reducing intakes in others. It is unclear if demand-driven funding will lead to more of a mass market approach or more segmented niche markets with different institutions choosing to serve selected smaller markets and disregarding others. What is also unclear is how students, as the consumers of the products that institutions offer, will react to and potentially drive the new marketplace or if they even understand how it might affect them. Demand, resourcing and desired strategic direction are just some of the factors that might be considered by institutions in deciding if, where and how to grow. Not surprisingly, few institutions are willing to share their future plans.

A better understanding of the different opportunities and risks facing each course has been valuable to the faculty and has provided a basis from which an overall future strategy can start to be developed. In modelling a number of different scenarios the faculty has been able to better understand what its position might be in the new environment with respect to other Victorian institutions. The knowledge gained has been used to inform the faculty's enrolment planning, marketing planning and contingency planning. It is difficult for institutions to plan in a changing environment where there are many unknowns and having detailed information available to inform and assist in decision-making is one way that the faculty can better manage the risk associated with the impending change.

Limitations of the Model

The model is based on a number of assumptions and its application is limited by these assumptions. Firstly, the model is constructed using historical VTAC data and the outputs reflect the pool of applicants in a given year, their ATAR scores and the distribution of applicant preferences that have occurred according to the courses available at the time. Any significant changes in available courses—for example new or cancelled courses, changes in applicant quality and the distribution of applicant preferences across institutions—could result in different outputs.

Secondly, the model assumes that all non-Deakin Victorian institutions are likely to increase their intakes consecutively and largely at the same rate and therefore all nonfirst preference applicants are considered to be equally at risk. The accuracy of the model could be improved by adjusting for different growth rates for different institutions and/or different courses offered by different institutions. The impact of this assumption could also be reduced by introducing a more detailed classification of at risk applicants that takes into account the probability of them being offered their higher preference course based on their current ATAR score, or potentially reclassifying some at risk applicants as safe if they are extremely unlikely to be offered their higher preference course. These refinements would help to narrow the predicted range of Clearly IN-ATAR scores that the model provides, making it a more useful tool.

Thirdly, the model is based on current admission and selection processes in Victoria that rely on ranked applicant lists based on ATAR scores. The model would need to be adjusted to account for any future changes in admission and selection procedures if it were to be applied to future years VTAC data.

Conclusion

State tertiary admissions data is widely available to institutions and provides a wealth of information regarding the relationship between applicant's preference for course of study and institution. This article has provided an example of how such available data can be used to assess individual courses by providing an assessment of the growth potential of each course and detailed competitor analysis. The information provided by the model and subsequent analysis has been used by the faculty to inform and contribute to the development of strategy that takes into account the changing environment and potential risk associated with it. Such analysis is valuable to institutions in an increasingly competitive environment to help them to better understand and target applicants. A number of limitations have been discussed that need to be considered in using the information that the model provides and future refinements identified to improve the predictive capabilities of the model.

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