Study of Australian Multi-Campus Universities

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Abstract

This study investigates whether Australian multi-campus universities are distinctive in terms of their student profile by field of education (FOE), funding and expenditure profiles, and learning and teaching outcomes, and identifies the implications for higher education policy and funding. Both parametric and non-parametric techniques are used to explore links between various measures of profile and performance for 38 Australian universities. The results show that Australian multi-campus universities have different educational and funding profiles to the rest of the sector, including a lower total revenue per student. Differences in cost profiles across universities are more strongly associated with their age than with their campus structure. No statistically significant differences in performance related to learning and teaching are found between multi-campus and other universities. The study concludes that multi-campus universities are achieving similar performance outcomes with fewer resources and that an objective measure of the extent of multi-campus university operations should be recognised and used in government funding allocation formulae.

Keywords: Multi-campus universities, educational profile, funding, expenditure, performance

There is a body of contemporary studies, writings and debates on consistency of quality and standards in Australian higher education. Among the range of factors that are identified as being pertinent to equivalence of quality across institutions, the multiple-campus

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organisation of some universities has become a focus of increasing attention (Abbott & Doucouliagos, 2003; Blunden, 2002; Bundy, 1998; Calvert, 2001; Davis, 2005; Elson-Green, 2006a; Gamage & Mininberg, 2003; Harman, 2006; Harman & Harman, 2003; Wimshurst, Wortley, Bates, & Allard, 2006, etc.).

The ways in which higher educational institutions are geographically organised can be classified into three categories: (a) the single-campus university; (b) the university with a main campus and one or more small satellite campuses; and (c) the multi-campus university comprising multiple geographically dispersed campuses, each with a substantial student load. In the multi-campus model, academic services, resources and support facilities are not concentrated on any one site, but are typically dispersed and often replicated across campuses and managed through a centralised administrative system (American Association of University Professors, 2006; Harman & Harman, 2003; French, 2003; Willoughby, 2003).

More precisely, in this study multi-campus universities are defined as institutions with three or more campuses, which have at most 60% of their total student load on the largest campus. There are ten such universities in Australia. This measure, suggested by Griffith University (2005), captures the notion that 'multi-campus' means having more than two campuses, none of which are small satellite campuses. It can provide a continuous independent variable for statistical analysis — the percentage of student load on the largest campus — and a way of identifying genuinely multi-campus universities. A more stringent definition of multi-campus might include only universities with 50% or less of total student load on the main campus. Six Australian universities meet this test.

This article investigates whether Australian multi-campus universities, as defined above, are distinctive in their educational profile, funding and expenditure profiles and outcomes; and discusses the implications for higher education policy and funding.

Why bother undertaking a comparative analysis of multi-campus versus other universities? There are several reasons for this. A review of the literature indicates that universities have differing missions with regard to student access and equity. Many authors, for example, point to an access and equity mission and a community or regional engagement focus as distinguishing features of multi-campus universities. Examples include: managing diversity while serving students with different social, cultural and residential backgrounds; helping overcome inequity in access to higher education in rural and isolated areas; and optimising the life chances of those who are first in their family to attend university (Elson-Green, 2006a, 2006c; French, 2003; Harman, 2006; Harman & Harman, 2003; Lynch, 2003; McIlveen, Everton, & Clarke, 2005). This study has sought to determine whether there are other distinctive features of multi-campus universities — other than their access, equity and engagement missions — as to date there has been little systematic research and analysis of the profiles and characteristics of these institutions.

The current Australian Federal Education Minister's focus on specialisation versus comprehensiveness in higher education also appears to have specific implications for multi-campus universities. The minister has indicated that a number of highly specialised institutions could co-exist with a smaller number of large, comprehensive universities (Elson-Green, 2006b). This somewhat differs from an earlier government viewpoint that a consolidation of small, specialised institutions to create fewer, but larger and more comprehensive, multi-campus universities 'would achieve greater breadth and depth of course offerings, and hence greater diversity of course and subject choice' (James, 2004, p. 64). But of course, many multi-campus universities have already been through this process as an outcome of the Dawkins amalgamations in the late 1980s. Thus this study seeks to determine if differences actually exist in academic and professional fields of education between current multi-campus universities and other Australian universities.

In spite of the increasing focus on diversity, all Australian universities are treated in essentially the same way when it comes to the funding models applied to higher education. Except for the additional funding made available to rural regional universities, the same funding model applies equally to a large single-campus institution and a geographically-dispersed institution with four or five medium-sized campuses. Several institutional papers and reports have described the objective challenges — academic, administrative and financial — experienced by multi-campus universities compared to others These challenges include, for example, delivering the same subjects, programs and courses with equivalent quality on several campuses (Freeman, 1998; Goussal & Lezcano, 2003); provision of equivalent, affordable and accessible facilities and resources across campuses (Bundy, 1998; Crevald, 2001; Lynch, 2003); and the significant costs to students, staff and faculties of such teaching and administrative replication (Freeman, 1998; Naidoo, 2000). At the same time, some have noted that many multi-campus universities are less well-resourced than the older, traditional, single-campus universities. This study therefore explores whether the funding and expenditure profiles of multi-campus universities differ from those of other providers. It investigates the links between the extent of multi-campus university operations and total university income per Equivalent Full-Time Student Load (EFTSL), the proportion of government versus self-generated revenue, and staff versus non-staff costs.

In 1987, John Dawkins, the Minister for Employment, Education and Training, initiated a radical restructuring of Australian tertiary education (Dawkins, 1987). In the Dawkins reforms of 1989–90, a total of 88 Australian universities, colleges of advanced education and institutes became 36 universities. One of the primary objectives of the reforms was to reduce the burden on government finances of higher education by increasing the cost efficiency of Australian universities (Harman, 2004; Harman & Harman, 2003; Murray & Dollery, 2004). It was expected that larger institutions would be better equipped to survive

and prosper than numerous smaller institutions. This was believed obtainable through widening participation and expanding student numbers, economies in administration and other overheads, savings in purchasing, estate management, student services and information technology provision (Abbott & Doucouliagos, 2003; Harman, 2004; Murray & Dollery, 2004).

There is little doubt that small autonomous institutions were less efficient than the merged multi-campus universities (French, 2003; Harman & Harman, 2003). At the same time, however, multi-campus universities would appear to be less efficient than similarly large, but predominantly single-campus providers. Furthermore, most multi-campus institutions tend to be newer universities, less advantaged by their reputation, historical resource base and long-term investments in teaching, research and facilities than single-campus, older institutions. This raises a question of whether it is the 'multi-campusness' of these universities, their youth, funding constraints, or an interaction of these factors, that may influence their performance, as compared to other (predominantly single-campus) universities' performance.

In this connection, consideration should also be given to the inputs, indicators and outcomes of the Learning and Teaching Performance Fund (LTPF). The fund was established by the Commonwealth Department of Education Science and Training (DEST) in order to financially reward institutions 'demonstrating excellence in teaching and learning' (Commonwealth Department of Education Science and Training, 2006b). The LTPF ranking is based on measures that do not control for 'multi-campusness' along with other concurrent factors, such as age of the institution, geographical location, or gross income per student EFTSL (Moodie, 2005; Sheil, 2006). Of the 14 universities successful in the LTPF in 2006, 12 (86%) were single/main campus providers and 2 (14%) were multi-campus providers. Yet

the 10 universities identified here as multi-campus comprise more than one quarter of the eligible pool.

The LTPF score is largely based on graduate satisfaction and self-report outcome measures in the Course Experience Questionnaire (CEQ) and the Graduate Destinations Survey (GDS). However, higher administrative and educational challenges and budgetary constraints of multi-campus and 'new' universities, compared to single-campus and 'old' universities could affect students' experiences and satisfaction. Thus, rewards may be allocated to universities initially advantaged by their single-campus operation and historical resource position. The consequence of this may be that the advantaged become more advantaged and the disadvantaged, including multi-campus universities, become more so, as they have less funds with which to improve. The LTPF indicators such as graduate employment status or starting salaries could be connected to the mission, educational profile and geographical location of institutions — factors that, as previously mentioned, may contribute to the distinction between multi-campus and other universities. This gives the rationale for exploring the associations between the LTPF score and its key components and 'multi-campusness' alone or in combination with other potentially relevant variables.

In summary, this study examines: (1) the distinctiveness of Australian multi-campus universities in terms of their FOE profile, funding and expenditure profiles, and outcomes; (2) the relative contribution of campus structure and age of university in prediction of educational profile, funding, expenditure, and performance measures; and (3) the possible implications of the above analysis results for higher education policy and funding. Significant differences in educational profile, funding, expenditure, and performance of multi-campus versus other universities were anticipated. A statistically significant predictive relationship was also expected between the percentage of student load on the largest campus and various continuous response variables.

Method

Participants

The study examined 2004–2005 data on 38 Australian universities available on the DEST website (Commonwealth Department of Education Science and Training, 2006a). These included 10 multi-campus universities, as defined above, and 28 universities with either a single or main campus structure.

The multi-campus universities were:

- Australian Catholic University
- Charles Sturt University
- Deakin University
- Edith Cowan University
- Griffith University
- Monash University
- Queensland University of Technology
- University of South Australia
- University of Western Sydney
- Victoria University.

Additional data were obtained from the Australian Education Network website (Australian Education Network, 2006).

Variables and statistical procedures

Two categorical and two continuous independent variables were defined, reflecting the essential and concurrent attributes of the multi-campus versus other universities:

- Campus category (multiple vs. single/main campus university)
- Age group (pre/post 1987—as per the Dawkins reforms)
- Student load on the largest campus (% of total load)
- Age of institution (since accreditation) in years.

The dependent (response) variables were all continuous and included:

- Student load in broad FOE (% of total student load,10 variables)
- Total revenue per student EFTSL
- Self-generated income (% of total income)
- Academic staff expenses (% of total expenditure)
- General staff expenses (% of total expenditure)
- Operating (non-salary) expenses (% of total expenditure)
- LTPF score
- Explicit overall satisfaction measure of the CEQ, 2004 (% scoring 4 or 5)
- Explicit overall satisfaction measure of the CEQ, 2005 (% scoring 4 or 5)
- Explicit good teaching measure of the CEQ, 2005 (% scoring 4 or 5).

Analyses of variance (ANOVA) and covariance (ANCOVA) were used to test the main and interaction effects of the categorical independent variables on the continuous dependent variables, controlling for the effects of extraneous variables if required. All continuous dependent variables were tested for normality of distribution, homogeneity of variance and covariance, and, with two exceptions, allowed for parametric tests. These exceptions were: total revenue per student EFTSL and the proportion of students in the Education FOE, both with positive skewness and high kurtosis. Data of these two variables were logarithmically transformed to a normal distribution for all parametric tests. The nonparametric Mann-Whitney test was also used to re-examine the effects of the categorical independent variables on revenue per EFTSL and the proportion of students in Education.

The level of significance for all tests was set at $p < .05$. The continuous dependent variables were assessed by stepwise multiple regression analysis with the percentage of student load on the largest campus and age of institution as predictors. This strategy was employed to remove 'weak' candidate predictors from the models and identify 'stronger' predictors, if any existed.

Results

*Student profiles by FOE of multi-campus **versus** other universities*

The proportions of students per broad field of education (FOE) were analysed using a one-way ANOVA, with campus category as a two-level factor. The Education FOE variable was preliminary transformed to a normal distribution. Two FOEs of 10 were significantly different on the basis of single/main versus multi-campus university structure. Multi-campus universities had a smaller proportion of students studying Natural and Physical Sciences ($F(1, 36) = 8.20$, $p = .007$); and a larger proportion of students in the Education FOE ($F(1, 36) = 6.00$, $p = .019$). Being controlled for age of institution using a univariate one-way ANCOVA, the effects of campus structure on the proportions of students in both FOEs remained significant: Natural and Physical Sciences ($F(1, 35) = 4.50$, $p = .041$), and Education ($F(1, 35) = 4.34$, $p = .045$). Table 1 presents descriptive statistics for the two subsamples and the *F*-value results of ANOVA and ANCOVA.

Table 1

Descriptive Statistics: Multi-campus versus Other Universities Subsamples. F-values of Between-group ANOVA and ANCOVA (Controlled for Age of Institution)

Response variables	Multi-campus ($n = 10$)		Others ($n = 28$)		*F*-value	*F*-value
	M	**SD**	**M**	**SD**	**ANOVA**	**ANCOVA**
FOE Profile[1]						
Students in Natural and Physical Sciences (%)	4.64	2.75	8.95	4.44	8.20**	4.50*
Students in Education (%)	15.06	10.43	8.46	5.91	5.69*	4.34*
Students in Health (%)[2]	13.50	3.37	5.70	3.79	14.19**	10.43**
Funding Profile						
Total revenue per EFTSL[3]	15353	2751	20977	9471	4.51*	1.54
Self-generated income (%)	37.14	9.39	39.14	10.14	.30	
Expenditure Profile						
Academic staff expenses (%)	32.68	5.10	30.72	3.79	1.64	
General staff expenses (%)	29.29	2.74	27.11	2.95	4.15*	2.06
Non-employee expenses (%)	38.07	4.36	42.18	4.83	5.59*	3.31
Outcomes						
LTPF score	1741	403	2025	686	1.50	
Explicit overall satisfaction 2004	66.71	5.68	70.01	6.41	2.07	
Explicit overall satisfaction 2005	68.51	4.28	70.45	6.09	.85	
Explicit Good Teaching 2005	48.02	4.28	50.91	4.89	2.74	

*$p < .05$ **$p < .01$

A two-way ANOVA with all FOEs as the dependent variables, and campus category along with age group as factors was conducted to discover if campus category by age group interaction had an effect on student profiles by any FOE. The only significant interaction was found for Management and Commerce ($F(1, 34) = 7.87$, $p = .008$). There were significantly different proportions of students in this field for single/main-campus post-1987 universities versus single single/main-campus pre-1987 universities, with intermediate results for multi-campus universities of both age groups.

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[1] Only significant FOE results are included.

[2] 'Genuine' multi vs. single campus universities data are compared (20 vs. 80 percentile, $n = 6$ vs. 6).

[3] Data of Total revenue per EFTSL and % Students in Education were transformed to a normal distribution for all parametric tests.

As the Education FOE variable was not originally normally distributed, the nonparametric Mann-Whitney test was used to re-examine the effect of campus category on this variable. The test revealed a significantly larger proportion of students studying Education disciplines in multi-campus universities ($z(n1 = 28, n2 = 10) = 2.04, p = .041$). All FOEs were assessed by stepwise multiple regression analysis that included student load on the largest campus (%) and age of institution as the predictor variables. The percentage of student load on the largest campus significantly predicted the proportion of students in Natural and Physical Sciences (positively and stronger in combination with age) and Education (inversely and weaker in combination with age).

Funding profiles of multi-campus **versus** *other universities*

The nonparametric Mann-Whitney test showed a statistically significant difference in total revenue per student EFTSL between multi-campus and other universities ($z(n1 = 28, n2 = 10) = 2.05, p = .040$) with lower revenue for multi-campus universities. A strong effect of age group on revenue per student EFTSL was also evident ($z(n1 = 20, n2 = 18) = 4.71, p < .001$). Neither main nor interaction effects of campus category and age group on the proportion of self-generated income were found through a two-way ANOVA. A univariate one-way ANCOVA, with the revenue variable logarithmically transformed to a normal distribution and age as a covariate, showed a weaker effect of campus category on revenue (Table 1).

These outcomes were verified by stepwise multiple regression analysis where student load on the largest campus and age of institution were the predictor variables. The results, reported in Table 3, indicated that both the percentage of student load on main campus (or 'single-campusness') and age of institution significantly contributed to the prediction of total revenue per student EFTSL (in a positive relationship). These two variables accounted for

more variation in revenue when combined than individually. Although age was a more powerful predictor than load, it was important that both variables were selected by the procedure. Neither age of institution, nor student load on main campus significantly predicted the proportion of self-generated income.

Relationships between student load on the largest campus, selected FOEs, age of institution, revenue per student EFTSL and self-generated income

To examine whether the extent of multi-campus organisation in combination with distinctive educational profile and/or age of institution was associated with funding profile, Pearson product-moment correlations were calculated between student load on main campus (%), the proportions of student load in Natural and Physical Sciences and Education, age of institution, revenue per EFTSL, and the proportion of self-generated income. Table 2 reports statistically significant positive correlations between student load in the Natural and Physical Sciences and revenue ($r(38) = .76$, $p < .001$); age and revenue ($r(38) = .64$, $p < .001$); and the percentage of student load on main campus and revenue ($r(38) = .45$, $p = .005$). Significant negative correlations were found between student load in Education and both revenue ($r(38) = -.35$, $p = .03$) and self-generated income ($r(38) = -.36$, $p = .026$).

Table 2

Correlations of Student Load on Main Campus, Proportions of Students in Selected FOEs, Age of Institution, Total Revenue per EFTSL, and Proportion of Self-generated Income

Variables	1	2	3	4	5
1. Students in Natural and Physical Sciences (%)	—				
2. Students in Education (%)	-.42**	—			
3. Total revenue per EFTSL	.76**	-.35	—		
4. Self-generated income (%)	.10	*-.36	.05	—	
5. Student load on main campus (%)	.50**	*-.30	.45**	.01	—
6. Age of institution	.65**	-.18	.64**	.12	.30

*$p < .05$ **$p < .01$

The stepwise regression procedure tested whether revenue or self-generated income could be influenced by any combination of student load on main campus (%), age of institution and student load in two selected FOEs. Due to the limited sample size, two predictor variables at a time were tested for their effect on each response variable consecutively. As shown in Table 3, the proportion of student load in Natural and Physical Sciences appeared the most powerful autonomous predictor of revenue (R^2 (1, 36) = .58, $p < .001$), which can be understood in terms of the government's higher funding per student for this FOE. No other potential predictors were selected by the procedure alongside this variable. The next strongest predictor of revenue was the combination of student load on the largest campus (%) and age (aggregate R^2 (2, 35) = .48, $p < .001$). The only variable inversely predicting self-generated income was the proportion of student load in Education (R^2 (1, 36) = .13, $p = .026$).

Table 3

Stepwise Regressions of Total Revenue per EFTSL and Proportion of Self-generated Income on Age of Institution, Load on Main Campus and Proportions of Students in Selected FOEs

Criteria/predictor variables	R^2	R^2 change	F	p
Revenue per EFTSL				
1. Student load in Natural and Physical Sciences (%)	.578	.578	49.344	.000
Revenue per EFTSL				
1. Age of institution	.412	.412	25.227	.000
2. Student load on main campus (%)	.484	.072	30.124	.000
% Self-generated income				
1. Student load in Education (%)	.130	.130	5.361	.026

Expenditure profiles of multi-campus versus *other universities*

A one-way ANOVA was used to test differences in the proportions of academic and general staff expenses, and operating (non-staff) expenses of multi-campus versus other universities. The results of this analysis are reported in Table 1. No significant difference was found for academic staff expenses ($F(1, 36) = 1.64$, $p = .208$). Multi-campus universities spent more than other universities on general staff ($F(1, 36) = 4.15$, $p = .049$), and less on infrastructure, facilities and other non-staff items ($F(1, 36) = 5.59$, $p = .024$). However, once controlled for age, both of the above results lost their significance ($F(1, 35) = 2.06$, $p = .157$; $F(1, 35) = 3.31$, $p = .077$). The interaction of campus category by age group was tested using a two-way ANOVA and was also not significant for either expenditure category. There was a main effect of age group on the proportions of general staff expenses (larger for post-1987 universities), and non-staff expenses (larger for pre-1987 universities).

The regression analysis confirmed the above results showing that only Age of Institution significantly predicted the proportion of general staff and non-staff expenses, while student load on main campus (%) was not selected by the stepwise procedure as a predictor.

Performance measures of multi-campus versus other universities

The results of a one-way ANOVA which examined the effects of campus structure on a set of university outcomes are presented in Table 1. The ANOVA revealed no significant difference in any of the outcome variables (i.e., Learning and Teaching Performance Fund [LTPF] and CEQ measures) based on campus structure. Age group, however, had a significant association with LTPF score ($F(1, 36) = 4.18$, $p = .048$), and with explicit overall satisfaction ($F(1, 36) = 4.85$, $p = .034$). A two-way ANOVA using campus category and age group as factors also showed no significant main or interaction effects on the outcome variables. The consistent finding was that the regression analyses did not reveal any relationship between student load on main campus (%) and any of the outcome variables.

Educational profile, funding and expenditure profiles, and outcomes of multi-campus versus single-campus universities by strict definition

A tighter definition of single and multi-campus status was then used to test the data. Six multi-campus and six single-campus universities were selected as those below the 20th percentile and above the 80th percentile of the student load on the largest campus variable (50% and less for multi-campus vs. 98% and more for single-campus). The proportions of student load per FOE were compared for these subsamples using a one-way ANOVA. Multi-campus universities had a smaller proportion of student load in Natural and Physical Sciences ($F(1, 10) = 6.20$, $p = .032$) and considerably larger proportion in Health ($F(1, 10) = 14.20$, $p = .004$). When controlled for age of institution, only the proportion of students in Health remained significantly different based on campus structure.

No significant differences in total revenue per student EFTSL (transformed to a normal distribution) or the proportion of self-generated income were found between the six multi-campus versus six single-campus universities. Both mean values were slightly higher for single-campus universities.

The only significant expenditure difference between the two groups was a higher proportion of non-staff costs for single-campus universities. However, it became not significant once controlled for age of institution. Slightly higher means of single-campus universities on all performance measures, including the LTPF score, were not found to be significantly different from those of multi-campus universities.

Discussion

The study's findings, combined with the review of recent research and writing on diversity, equity and quality in higher education, provide evidence that Australian multi-campus universities have a number of characteristics that identify them to be a distinctive group. Firstly, many have a unique mission as community-focused institutions serving students from a wide diversity of social, cultural and location backgrounds that include a high proportion of 'first generation' students and those from rural and isolated areas. Secondly, they are distinctive in their educational profile by field of education covering such fields as Education and Health to a larger extent and Natural and Physical Sciences to a smaller extent than other universities. Thirdly, they have significantly lower total revenue per student EFTSL than other institutions.

The second and third of the above findings are interrelated, as the proportion of students in Natural and Physical Sciences will influence the level of revenue per student. There is also an indication in the data that the amount of self-generated income depends inversely on the proportion of students in Education. This is consistent with the fact that there are very few full fee-paying students in the Education field (Commonwealth Department of Education Science and Training, 2006a). Since multi-campus universities have a significantly larger student load in this field, they are more dependent on public funding than other providers.

It is important to note that the best prediction of total revenue per student EFTSL was achieved by the proportion of students in Natural and Physical Sciences as an autonomous prognostic variable. The combination of student load on the largest campus (or 'single-campusness') and age of institution emerged as the second and almost equally strong predictor of revenue, while student load on main campus alone (and controlled for age) had a slightly weaker but still significant effect on revenue. Thus, it may be concluded that comparatively lower income per EFTSL is associated with at least three features of multi-campus universities: their specific student profile by FOE, their relative youth (seven of 10 are post-1987) and the multi-campus operation itself.

It was found that the proportions of academic, general staff, and non-staff expenses were not different for multi-campus as compared to other universities. There are effects of 'multi-campusness' on expenditure profiles, but these effects are not straightforward — they depend on age of institution more than on campus structure, with the proportion of general staff expenses being larger for post-1987 universities, and the proportion of non-staff costs being larger for the older pre-1987 universities. These findings disagree with the assumption that, since the operating costs of multi-campus institutions must be higher than those of single/main campus universities, the non-staff expenses of multi-campus providers have to be proportionally larger. One explanation for this apparent contradiction is that multi-campus institutions would spend much more on non-staff items such as learning support and general facilities if they had the same financial flexibility as the less resource-constrained single-campus providers. Whereas in the current situation, by having to distribute their scarce resources between staff and non-staff costs, multi-campus universities may have to sacrifice a certain amount of the latter in order to maintain the required level of investment in staff.

There are no significant differences in outcomes of multi-campus versus other universities based on performance measures examined. From a statistical perspective, the

results suggest that multi-campus universities, being disadvantaged by funding constraints and their historical resource position (as compared to other universities), still maintain equivalent quality standards across the sector. However, the DEST performance assessment framework does not employ statistical techniques while comparing institutional performance in learning and teaching. Because of this, the focus on simplistic ranking at the university level may imply greater difference between universities than actually exists. Further, several meaningful characteristics of many institutions that could influence their ranking positions, such as multi-campus operation or age, are not controlled for in the DEST performance measures.

The LTPF funding outcomes for 2006 lend support to these ideas. Of all universities rewarded by LTPF almost 86% were single/main campus and only 14% were multi-campus providers. Of all multi-campus universities only 20% were rewarded, while of single/main campus universities 43% were rewarded. This approach to funding may mean that most multi-campus universities, which, as this study shows, perform at statistically equivalent level across all measures, do not receive the resources necessary for them to develop, improve and continue to meet their university missions. This seems to contradict the government's desire to ensure consistency of quality and standards across higher education in Australia and encourage both diversity and sustained quality. Critiques of the LTPF have led to changes in the calculation of the LPTF measures to be used for 2007 funding with a new approach focusing on reward at the level of broad FOE by university, rather than on one score for the whole university (DEST, personal communication, September 29, 2006). The findings of this study support this improvement in the LTPF methodology.

Conclusion and implications

In summary, the main messages from this study are that Australian multi-campus universities are a distinctive group of institutions, maintaining equivalent quality standards to other universities while being under a greater financial burden than many of their single-campus counterparts.

Consequently, a more flexible and equitable funding policy framework that would recognise and use objective measures in the funding allocation formula, such as percentage of student load on the largest campus, could help multi-campus universities sustain their mission with less severe budgetary constraints. The funding model in current use does not acknowledge that (as suggested by the literature reviewed above) the operating costs of multi-campus institutions are considerably higher than those of single/main-campus providers of comparable sizes. If a university has six campuses then its resources such as libraries, student laboratories, network infrastructure, student centres and other services must be replicated, or distributed in new ways known to be effective if quality is to be consistent. This requires a higher level of both staff and non-staff expenditure to assure equivalent quality to students wherever they study. Nevertheless, apart from rural regional universities, the federal government treats such a university in the same way as a centralised one-campus university by allocating student load funding on the basis of discipline-based funding clusters.

One could argue that, since multi-campus universities are performing at a statistically equivalent level to other institutions in terms of the LTPF and CEQ measures, as found in this study, there is no need to reassess the current funding framework. We, however, see two good reasons for a reassessment. First, all performance measures examined indicated slightly poorer outcomes for multi-campus universities compared to other universities. The differences are not statistically significant, but in view of this tendency and with no action

taken, they may likely become significant in the future, especially given the lower revenue profiles of multi-campus institutions. Second, if the government continues to rank institutional outcomes in learning and teaching without appropriate statistical approaches, a more equitable funding model might lead to a change in the LTPF ranking positions of multi-campus universities, and thus improve their chances in competition with other providers for both reward funding and student recruitment.

Funding for tertiary education is a combination of self-generated income and public funding for universities that varies by discipline. The funding model differentially weights the various disciplines of study. The disciplines and courses determined by the government as being more expensive to deliver receive the greatest funds on a per student place basis. Traditionally, disciplines such as science, engineering and medicine receive the most funding, while those in humanities, business and commerce receive the least funding. We have seen in this study that multi-campus universities receive proportionally less funding, in part because they have a higher proportion of student load in lower-funded disciplines. If a coefficient which increased public funding to those universities with a smaller percentage of student load on their largest campus was included in the model, it could balance both the greater operating costs of multi-campus institutions, and also their proportionally smaller student load in the higher funded FOEs and larger load in the lower funded FOEs.

The findings of this study provide some support for DEST's changes to the LTPF for rewarding quality in teaching and learning. Allocating funds according to institutional-level average outcomes could mean that many high quality courses and units within an institution are unfairly deprecated. Allocating funding at a combined broad field of education level, and not at a university level (as DEST is now proposing for 2007), helps to overcome this to some extent, albeit at a very aggregated level. Second, state-of-the-art statistical methods should be used when comparing the performance of universities by FOE in order to show whether those

university FOEs receiving rewards are really performing at a demonstrably and genuinely

higher level than those that do not receive funding. Finally, it is recommended that variables

— such as the percentage of student load on the largest campus or age of institution — that

might influence the outcomes are controlled for in the LTPF analysis.

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