A compendium of statistics on higher education.

Any constructive debate about the future of higher education in Australia needs to start from an agreed basis of FACTS.

Unfortunately, much of the debate is absorbed by the proponents disputing one another’s facts.

The purpose of this paper is to present some key relevant statistics, trends and comparative data, collected from a variety of authoritative sources which hopefully will provide some valuable insight into higher education in Australia on both an historical and international comparative basis.

Some of the Commonwealth’s pronouncements on higher education efficiency remind me of the old joke about a time and motion study of a performance of Schubert’s Unfinished Symphony.

PROFESSOR GLYN DAVIS AC
Vice-Chancellor, Griffith University

in conjunction with

MR GAVIN MOODIE
Principal Policy Adviser, Office of the Vice-Chancellor

PRODUCING PRODUCTIVITY
IN THE HIGHER EDUCATION SECTOR:
WHAT DOES IT MEAN?

1. For a considerable period, the oboe players had nothing to do. Their number should be reduced and their work spread over the whole orchestra, avoiding peaks of inactivity.

2. All 12 violins were playing identical notes. This seems to be unneeded duplication, and the staff of this section should be cut. If a volume of sound is really required, this could be accomplished with the use of an amplifier.

3. Much effort was involved in playing the 16th notes. This appear to be an excessive refinement, and it is recommended that all notes be rounded up to the nearest 8th note. If this were done, it would be possible to use para-professionals instead of experienced musicians.

4. No useful purpose is served by repeating with horns the passage that has already been handled by strings. If all such redundant passages were eliminated then the concert could be reduced from two hours to twenty minutes.

5. The symphony had two movements. If Mr Schubert didn’t achieve his musical goals by the end of the first movement, then he should have stopped there.

In light of the above, one can only conclude that had Mr Schubert given attention to these matters, he probably would have had time to finish the symphony.
It is hard to respond to such comments beyond observing that the critic doesn’t understand the point of the exercise. However, satire is unlikely to persuade the Commonwealth there’s little scope for further efficiencies in Australian higher education, or that institutions are best managed by the elysian rather than through prescription by a Government official or agency.

33 per cent increase in productivity since 1995

The first substantive point to make is that Australian higher education has increased its productivity by 33 per cent. By 2001 the student-staff ratio had blown out to 20.1 and there is every indication that the trend has continued to deteriorate in 2002. Student/staff ratios have increased so much largely because institutions have funded salary increases at about the general rate in the economy (certainly no higher) by cutting staff, since the Commonwealth has failed to supplement grants adequately. Class sizes have increased, students have less access to staff, workloads have increased greatly and the sector’s staffing structure has hollowed out. As table 12 of the minister’s paper for the higher education review Higher education: crossroads: an overview paper shows, since 1991 the proportion of academic staff above the middle grade of senior lecturer has grown by 29 percent and the proportion of staff at lowest lecturer A level has grown by 21 percent, but the proportion of lecturer level B staff has fallen by 11 percent.

Changed work practices

The second substantive point to make is that Australian higher education work practices have changed substantially over the last half decade. In 1995 there were 46,187 full time equivalent students in our universities. By 2001 international student enrolments had increased to 112,342, a truly extraordinary growth of 140 percent in just over 5 years. Almost one third of international students – 32 percent – are studying off shore.

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Further major changes in work practices are being made with the introduction of on-line learning.

Year-round teaching or 2/3 staffing appointments

One is tempted to respond to the Commonwealth’s claim in Crossroads and repeated in subsequent issues that ‘most universities are fully operational for only 150 days a year’ (paragraph 320), that this is what is obvious the Australian Parliament is ‘fully operational’ for only 70 days a year. Parliamentary breaks often leave Parliament House idle, weekend use of Parliamentary facilities is minimal and shared use by community organisations or other providers in Parliamentary diversions of public staff. But again this doesn’t really meet the point. There is a pervasive perception in the community that universities have an extended break from December to February each year, as is evidenced by the common students’ Christmas break...expresses surprise that anyone would want to be taken to a university campus when it is on ‘holidays’.

An eloquent refutation of this to be introduced year-round teaching. Most if not all universities teach over a summer semester, of course, but this is rarely more than 5 percent to 10 percent of a university’s total student load. Summer semester load has to be from 20 percent to 30 percent of a university’s total student load to cause a sceptical Commonwealth to ‘consider’ the possibility of the fully engaged year-round. There are numerous difficulties with this, of course, not the least of which is persuading financially students to relinquish full time vacation jobs for a continuation of their mix of part time work and full time study throughout the year.

If year-round teaching is not feasible, the Commonwealth suggests relinquishing year-round employment for academic staff. Thus in its issues paper Meeting the challenge of the governance and management of universities, the Commonwealth suggests that year-round employment practices that could be considered include the engagement of academic staff for the full time academic year (that is, for around nine months), a practice common in the United States (US). US academics employed on this basis are able to conduct research, teach for an additional summer semester, take annual leave or undertake consultancy work for the remaining months of the year (paragraph 208). This is an intriguing suggestion. Assuming staff could adequately prepare, teach and assess two standard teaching semesters in 9 months and took annual leave in another month, 2 months could be released for other activities. One week’s salary was released for the governance of staff by 2 percent to 4 percent per annum. Since 2 months would be available for release under the Commonwealth’s suggestions’ scope for 4 to 8 years’ remuneration increase without significantly increased cash payments. But such a scheme would positively increase the financial cost. New subject materials have to be prepared and existing materials renewed, students selected, supplementary assessment set and administered. Additional housekeeping tasks normally done over summer would have to be paid for, presumably by contracting out the work to the staff. There is no doubt this would have done it as part of their normal duties. The scheme sounds bizarre, but it may appear less so in comparison with the conditions the Commonwealth recommends to avoid salary supplementation funds it offers following the Crossroads review.

US comprehensive institutions and 2-year colleges have much higher proportions of part time teaching staff, a much higher proportion of their full time academic staff are full professors and their academic pay rates are much lower than doctoral granting and research intensive universities. Together they enrol 64 percent of all US higher education institutions, so their lower academic staff conditions lower considerably the averages for all US higher education.

Small class sizes

In its issues paper on Diversity, the Commonwealth argues that there are too many units with small enrolments and suggests that this reflect inefficiency or at least a lack of resources. There is no reason to float a number of ideas for reducing the number of subjects with low enrolments. However, the Commonwealth’s dissatisfaction with the cause of the problem it perceives and hence does not identify a mechanism that would achieve the outcome it seeks. As Griffith University argues in its response to Crossroads, there are probably 3 causes of small enrolments:

1 supply factors such as maintenance of high priority but low demand areas such as physics honours, academic salaries are therefore about one third less than those of the United States taking into account purchasing power parity.

By raising US academics’ employment conditions the Commonwealth invites the obvious comparison of salary levels, which show that Australian academics are low compared to their US counterparts. In 2000-2001 average academic salary is about Aus$68,800 pa. Australian academic salaries are therefore about one third less than those of the United States taking into account purchasing power parity. Without such a detailed analysis it is not possible to conduct research, teach for an additional summer semester, take annual leave or undertake consultancy work for the remaining months of the year (paragraph 208).

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Largely because the Commonwealth has failed to supplement institutions’ operating grants for reasonable salary increases, universities are suffering cumulative cuts in funding per Government-supported student which have now reached about 10 percent of total budget. Universities have made savings in ways which protect their intrinsic goals and reflect funding incentives. Universities will continue to respond in this way – even to further funding cuts – while the Commonwealth retains its present policy and financing framework.

In Governance the Commonwealth also identifies several desired outcomes for the sector (para 187): better workforce planning – the need for senior university managers to have strong management skills (para 189); “careful consideration” of the sector’s age profile (para 190); more flexible employment terms; more flexibility in the ratios of continuing, fixed term contract and casual employment types (para 197); dissolving the distinction between academic and general staff (paras 201, 204); teaching-only positions (para 205); US-style teaching semester-only contracts (paras 208, 210); more streamlined organisational change and redundancy processes (para 213); improved performance management – streamlined unsatisfactory performance procedures (para 221); more discretionary pay for top performance (para 223); and faculty level bargaining – remuneration tied to revenue targets (para 225).

In addition the sector should aim to increase the proportion of women employed at lecturer level D and above and to increase the number of Indigenous Australians employed in continuing positions. These accountabilities are so numerous and detailed that the Commonwealth would need an army of university management auditors to check compliance. They would add to governments’ monitoring of inputs and processes rather than evaluation of outcomes. Griffith therefore argues in its response to Crossroads that the Commonwealth would achieve its goals more effectively by offering financial incentives for institutions to improve their outcomes, leaving it to universities to determine the most effective measures to achieve those outcomes. An institutional effectiveness fund could be awarded to institutions that achieved, say, 3 out of 5 targets set for the sector.

**The Griffith model**

An institutional effectiveness fund should be set within a financing and policy framework that supports the core goals that the community has for higher education and encourages other outcomes that the Commonwealth seeks – diversity amongst institutions and increased funding from business and other private sources. The Griffith model therefore has 4 parts.

1. A strong but streamlined role for the Commonwealth in planning public investment in higher education through HECS places.
2. Encouragement of institutions to develop new institutional types by establishing 3 contestable institutional performance funds:
   a) an institutional teaching performance fund of $271 m;
   b) an institutional community service and equity performance fund of $271 m;
   c) an institutional research performance fund of $271 m (replacing the institutional grants scheme).

Institutions would be allowed to compete for 2 but not 3 performance funds, for two reasons. It would ensure that different types of institution had a reasonable opportunity of attracting additional funds if their performance were sufficiently strong. This would be in contrast to the process conducted by the committee for quality assurance in higher education in all categories and which concentrated additional funding in a few institutions. Second, allowing institutions to compete in all 3 funds would result in their maintaining effort in all roles and thus not developing substantive diversity but merely different levels of performance in all roles. Allowing institutions to compete for only 2 funds would require them to choose one of 3 options to maximise their institutional performance:
   a) research and teaching;
   b) research and community service;
   c) teaching and community service.

All institutions would be tempted to continue competing for the institutional research performance fund because of the considerable prestige attached to research. However, the institutional rankings are well known, and if the differential for top performance were high enough many institutions would concentrate on the other areas in which they are better suited to performing strongly. This would encourage greater diversity in the sector, but it would be driven by institutions choosing their own areas of concentration informed by an external assessment of their relative strengths.

3. Financial incentives for institutions to improve their management outcomes, leaving it to universities to determine the most effective measures to achieve those outcomes.
4. A greater role in higher education financing for business and other sources of private funding through changes to the taxation and regulatory regimes.

**Conclusion**

Productivity is a slippery concept in higher education, as it is in health, policing, government and other sophisticated human activities. But even by the crudest measures of dollars per student and student:staff ratios, Australian universities have achieved very considerable productivity increases in the last half decade. Even in the more complicated area of work practices, the extraordinary increase in the number of international students studying in Australian universities, and the large numbers of students studying at our campuses off shore and through twinning and other flexible arrangements, are evidence of very considerable changes. So Australian academic staff seem as productive as their US counterparts, who the Commonwealth used as a model in two issues paper for its Crossroads review of higher education. Attempting to prescribe more detailed efficiencies through governance accountabilities would have the opposite of the effect intended by the Commonwealth, consuming vast amounts of time in accountability reporting and compliance monitoring. The better approach is for the Commonwealth to provide financial incentives for the productivity improvements it seeks, leaving it to institutions to devise the best means for achieving them. But such incentives should be located within a framework which balances instrumental productivity goals with institutions’ longer term and core goals. The Griffith model of financing therefore has 4 parts which support the multiple goals the community and the Commonwealth has for the sector.


If higher education is to lead the way, then this industry should perhaps be the leading industry (of the nation’s 465 industries) in terms of productivity growth. It is a basic test of cleverness and innovation. It is not enough, though valid and laudable, to prove higher education pays. A number of studies, including the recent Melbourne Institute research paper, have established this fact: there is a significant net benefit to individuals and society at large over the long term.

So, does the higher education industry have the nation’s highest productivity? No, but it is not disgraced. As the following exhibit reveals it ranks above the national average, although the same cannot be said for the education industry at large. It should be noted that “higher education” in this exhibit is not a whole industry division, but one of the nation’s 465 industry classes.

The overall education industry division had virtually no productivity growth over the past 11 years (0.1% p.a.). (Refer Chart 1, below left)

Productivity is measured as output per hour worked; and determining output of higher education is difficult compared with most other industries. Is the quantum and quality of higher education per student increasing? This being too difficult to judge, output for higher education is best measured by student-years per employee, both in FTE terms. (Refer Chart 2, Page 7)

The good ranking for higher education is mainly due to outstanding productivity growth in 2000 and 2001. Virtually all the productivity growth for higher education occurred in the five years after 1996. Indeed, productivity growth over the five years to 2001 was an astonishing 5.6% p.a. (cf. 2.4% p.a. for all industries). Is this due to needing the mother-invention as a result of Federal Government funding restraint? The average student/employee ratio has certainly edged up.

Where does higher education fit within the overall education industry? There is an hierarchy of levels in education: pre-school, primary, secondary and tertiary. Around 12% of the students in educational institutions are in higher education, but account for around 31% of the educational spending. In 2001, there were over 726,000 enrolled students, representing around 36% of the 18-24 year age cohort (after allowing for mature age students. This is a far cry from the 18% participation of 1980, let alone the 5% of 1960 and just 1.4% of 1920. At the beginning of the 20th Century, participation was almost invisible at around 0.4% participation. (Refer Chart 3, Page 8)

However, over the past several decades, there has been an informal quaternary level added. This quaternary level is occupied by university research and advanced degrees, but increasingly it is being occupied by the corporate sector and its focus on intellectual property, especially by the world’s giant international firms and smaller but very innovative new age enterprises. Of course, much of the “education” from those firms is osmotic rather than formal, but effective and valuable all the same.

Can universities be now viewed in the same light as yesterday, dating back to the 1st Millennium? Most certainly they cannot, for three reasons. Firstly, the current participation rate of the population in higher education suggests it is becoming the norm in the 21st Century rather than the elitist exception; just as high school became the norm rather than the exception in the 20th Century. Secondly, the emergence of a quaternary level of “education” is nudging universities into the penultimate rather than ultimate level of education. Thirdly, in the Information and ICT industry of today, education at large is experiencing a progressive dilution of its share of this growing sector of the economy which, in 2002, is estimated to represent around 13% of the nation’s GDP.

**Chart 1**

**Chart 2**

Producing a knowledge-rich society requires five mechanisms:

- The proliferation of ICT infrastructure and capability.
- A vibrant culture and values.
- A knowledge economy.
- A culture of innovation.
- A learning environment.

With higher education increasing its share of the education dollar, its share of the knowledge market is subject to less dilution. However, with a 7% share of the overall Information and ICT industry, it has plenty of competition from media, the Internet (including on-line information) and the growing intellectual property of the corporate sector which is often years ahead of the knowledge in higher education institutions. As will be raised again later, universities are adopting media and the Internet as new weapons in their armoury.

Knowledge itself is hierarchical, of course, which leads to the concept of the knowledge pyramid. (Refer Chart 4, Page 9)

In the Knowledge Pyramid, higher education is surely aiming for the upper reaches, at least to the expert opinion level if not some of the knowledge and getting of wisdom level, which is higher still. Indeed, through research activities, universities certainly reach into the unique intellectual property level.

Given this new arena and competition for higher education, what is its role in the 21st Century? An elitist role, let alone a monopoly role is gone forever.
Academic excellence and inter-institutional competition may not be enough to counter the cheque-book power of large corporates, increasingly specializing in narrower fields of industry and human endeavour, including what might traditionally be called the “classics”.

How does a higher education institution face this challenge, and lead the nation in productivity growth? Productivity growth is, of course, achieved by working smarter and more innovatively, not by longer hours, worry, frustration and nervous breakdowns. Too often the latter route is used first!

It might begin by reviewing the four core elements or roles of educational activity: custodial, tutoring, informing and researching. The first of these applies only up to the secondary level (adults being defined as 16+ years of age). Research applies only to the tertiary level (higher education). Common to all are tutoring and informing.

Arguably, the two most important elements of higher education are tutoring and research, given that information is increasingly more mass-producible, cheaper, more accessible and up to date from other sources, including the Internet. Tutoring and research are, of course, expensive. But the overall cost of higher education per student can be lowered in real terms by reviewing the products, assets, methodology and delivery mechanisms via the three core elements mentioned earlier.

Firstly, the product range. Have we reached an unsustainable if not absurd point where thousands upon thousands of subjects are offered, militating against any economy-of-scale considerations? If the range must continue to expand in the light of the world’s explosion of knowledge and human endeavour, should 80% of these subjects (probably applying to just 20% of the students) be delivered virtually rather than in expensive classrooms and expensive campuses. And the rationalisation of courses and subjects across the nation’s universities is also now timely.

The Higher Education ratio should be far better than the nation’s average. It is frightening to know that this industry has around $30 billion in assets to generate only $12 billion in revenue in 2002. It should be the other way around, freeing up (via lease-back or via virtual campuses) around $18 billion in capital that could be used for fast growth, high productivity and lower cost. Universities, above all industries, should have most of their assets in intellectual property rather than real (physical) assets but they don’t. Traditions – however comfortable, warm and fuzzy – are habits with use by dates. Perhaps it is time to review this millennium old habit of hallowed halls. This is not to suggest no campuses but that they are not owned by the institution, be smaller relative to student numbers, and be used at least twice as much in each year’s available 8760 hours. That won’t be easy: if home ownership became a motherhood issue in just one century, what about campus ownership over a millennium?

Methodologies used by Higher Education institutions should always be in constant change, if this industry is to spearhead a clever nation. To some extent they are. But more than ever, the roles of informing and tutoring, and their method of delivery need radical rethinking. The information explosion and distribution revolution (the Net) suggests that the role of informing is slowly slipping away from teachers. The virtual supply of information is becoming the new order.

But tutoring isn’t, yet. Learning to learn, learning to question and learning to value-add information to knowledge, opinion and intellectual property levels is a vital skill; perhaps the holy grail of universities. While a lot of this role too can be done via media, the Internet and video-conferencing, a lot of it cannot. This is particularly true in areas of tactile skills such as medicine, science and engineering. Such disciplines are, however, now the minority of courses in higher education. And research? It is not a delete option for institutions wanting to be clever or in the vanguard of knowledge and intellectual property. Increasingly, however, it may need to be separately accounted, with separate rules for cost-benefit analysis whilst still being accessible by students through both researchers and lecturers.

In the issue of pricing and who pays for higher education, the debate is fierce. In the market economy (rather than producer economy) of today, pricing must be flexible, and value-driven. Who pays? One option is higher taxes (or displacing government spending on other areas such as aged and health benefits). Another is to treat higher education as an investment (capital expenditure) by the individual who benefits most anyway. A third option involves varying ratio of tax funded and individual funded sources; the option most likely to prevail.

In summary, capping the supply of funds to Higher Education over recent times may prove to have been the catalyst for wholesale re-thinking about the productivity issue. But more than that, the definition and modus operandi of universities has been open to intense debate and soul-searching.

It was long long overdue. Productivity is now rising. Traditions are being questioned. And the role of this sector in the new fast-growing information & communications industry is being addressed.

There appears good reasons and new means by which productivity in Higher Education could be doubled if not trebled before the end of the first quarter of the 21st Century. That would really prove that this sector is clever and helping create a clever country.

References
1 New Estimates of the Private Rate of Return to University Education in Australia: Melbourne Institute Working Paper No. 14/02; ISSN 1328-4991; ISBN 0 7340 1538 0: Jeff Borlund, Dept of Economics and Melbourne IAESR, The University of Melbourne.
In addressing the question of productivity I wish to do so in the context of the Dr Nelson’s review of Australia’s higher education system – the first such review in fifteen years.

The review provides the opportunity to address the fundamentals of university financing such that the real productivity of the sector can seriously be improved.

The sector is under the fiscal microscope. But more than that, the higher education sector is being challenged to look closely at its performance in terms of outputs.

Is it providing the graduates required by Australia’s rapidly diversifying industry sector?

Are the pressure points of industry demand being identified soon enough by the higher education sector?

A diverse range of views has already been expressed as part of the review process – as they ought be.

Importantly industry is looking closely at the nexus between business and higher education.

As part of the review, the Business Council of Australia commissioned the Allen Consulting Group to investigate a new data framework as well as undertake international comparisons of the sector.

The Allen Consulting Group argues that there is a need for better performance indicators. The report claims that there is insufficient evidence to support the sectors’ call for an increase in the funding base to improve university outcomes.

The report suggests that the sector has a significant role in Australia’s development as a nation, both domestically and internationally – productivity.

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The review comes in the wake of wide-ranging consultations and submissions regarding the number of units with small enrolments offered by Australian universities. As is often the case the statistics do not tell the whole story: there are a number of common university practices which, while essential, also lead to some ambiguity in enrolment numbers. Out of necessity, universities may have several different codes for what is in fact the same unit. For example, some units are offered only in alternate years, and since they are not available all the time these units may be counted by students at different stages of their studies, so that in the one classroom there may be, for example, some second year students and some third year students hearing the same lectures, reading the same books but enrolled in different units.

Nevertheless the focus of Government is on removing units with small enrolments. Would this make us more productive by using the resources freed up elsewhere? Maybe. Or it could point to a rather simplistic view of productivity, one that focuses simply on collective outputs and not enough on the quality of the product – quality assessed both at the individual level (is that student well equipped for a particular profession) and at the collective level (do we have a desirable mix of students from across the professions and disciplines to meet Australia’s future needs)?

Staff-student ratios in Australian universities have increased from 12.9 students per university teacher in 1990 to 19.4 students per teacher in 2001. As a result, students now have less contact with staff and conversely it can be said that each staff member is more productive. What these figures do not begin to include is the increased non-contact burden that means staff have less time to attend to individual student needs, and less time to devote to their research – which in turn can have negative effects on the quality of their teaching.

... a substantial part of university budgets is trapped in an efficiency cycle that does not allow a balanced assessment of what productivity should be or how to improve it.

Under the present funding mechanisms a substantial part of university budgets is trapped in an efficiency cycle that does not allow a balanced assessment of what productivity should be or how to improve it.

Government funding is largely fixed, forcing a focus on efficiency. Even if a university enrols more students the additional funding is far below what is sensibly required – additional income is raised but the quality of product comes under further pressure. Universities can win additional research funding but it is only partly funding of the true costs – so again the remaining cost has to be found within existing resources.

This is not so true of universities’ private services. In these cases, they can negotiate the necessary fee for the service provided. But much of universities’ wider range of activity partly depends on their core teaching and research. International student fee paying students are taught alongside domestic Government funded students. It is not realistic for the former substantially to cross-subsidise the latter. The result is further focus on efficiency not quality.

These issues point to why universities, students, employers and parents should support more flexible and diverse funding arrangements for universities. How can we achieve this through the review?

The review comes in the wake of wide-ranging public comments by the Minister about a variety of issues including the role of the nation’s universities. Along with the new Departmental Secretary, Dr Peter Shergold, the Minister has frequently taken advantage of opportunities to meet representatives of the higher education sector. Both he and the Secretary have appeared genuinely interested in hearing what university academics and administrators have to say on the various challenges facing the higher education sector.

There is widespread consensus – within the higher education system in Government, and in the broader community – that the current funding and regulatory framework for universities is unsustainable that it is inhibiting institutional growth and diversification, and is beginning to have deleterious effects on the quality of education universities are able to offer. The one size fits all funding model presupposes that all universities will undertake essentially the same mix of teaching, research, and community engagement. This is not realistic.

The review issues papers present a range of views or options on the various issues covered, sometimes implying but never clearly presenting particular policy directions. Importantly the papers have raised various ways in which universities could provide better services – whether through ensuring staff are supported in how to teach, offering students courses in third semesters, opening campuses 24 hours a day, or better using information technology.

Each of these has its place. The AVCC has made clear in Quality through Diversity what productivity in the sector means.

Alongside consultations on National Research Priorities. The priorities raise another interesting challenge about productivity – is it more productive to produce research directed at nationally set priorities than to produce research in response to the marketplace? In both cases the outputs are fairly clear: we can see publications; there are patents and spin off companies.

In 2000 the AVCC’s vision for the nation’s universities sets out the ‘product’ we want universities to be measured by:

1. accessibility: all Australians will have access to post
degree education.
2. internationalisation: Australian educational exports will give the nation a pre-eminent place in the global educational revolution.
3. productivity: the economic contribution of universities will be maximised.
4. firm foundations: effective national investment in higher education will underpin the international quality of Australia’s universities.

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Positioning Australia’s Universities also proposes a ‘framework of choice’ that will encourage universities’ diversity and adaptability, and better position them to meet the needs of students, families, industry and business. Through this framework the productivity of the sector will be supported:

1. A shift from a rigid target for student places to a range, funded at appropriate per student rates. The present targets are essentially historical, and should be replaced with a range in which universities receive public funds based on the numbers of Australian, non-fee paying, HECS liable students.

2. Support for universities’ engagement with their communities, with a wide range of funding options. Universities must be properly funded for their regional activities. All universities have regional involvement but clearly there are some that devote more resources to such issues. Regional and rural Australia has much to gain from this element.

3. Appropriate funding for quality of learning, teaching and scholarship. Base funding per student must be increased, so that all universities have increased ability to provide the facilities students need.

4. Further investment in research and infrastructure. Increased funding is needed in basic research and teaching infrastructure. Commonwealth funding for university research activity should be based on measures of university research performance and international OECD indicators.

5. Capacity for universities to access additional income. Universities should have the option of greater flexibility with student HECS payments. This would involve any additional cost being covered by income contingent loans, repaid when, and only if, a student reaches a certain income level. Not all universities want to use this option. The AVCC does not support a deregulated fee system.

6. Greater participation in the international educational market. There is a need for a reduction in the barriers faced by international students in entering the Australian student market. These include rules concerning visas and work permits. Support for education exports by Government agencies is needed at a greater level than currently.

7. Support for universities’ engagement with their communities, with a wide range of funding options. Universities must be properly funded for their regional activities. All universities have regional involvement but clearly there are some that devote more resources to such issues. Regional and rural Australia has much to gain from this element.

The ‘framework of choice’ addresses the tension between calls for higher public investment in higher education, and the belief that a greater private contribution is needed. The eight elements of the AVCC’s framework operate as a whole, not as a series of discrete options, although each element will be of differing importance to each university, its staff and students.

Government can benefit through collaboration with the Higher Education sector when identifying national priorities such as particular fields of study. The ‘framework of choice’ addresses the tension between calls for higher public investment in higher education, and the belief that a greater private contribution is needed. The eight elements of the AVCC’s framework operate as a whole, not as a series of discrete options, although each element will be of differing importance to each university, its staff and students.

If universities had a financing system based on these elements then they would be able to address seriously the question raised by this BHERT news: what is the real measure of university productivity and how do we work to improve it further. Without significant change universities will remain trapped in an efficiency-seeking model. This would seriously undermine the long-term real productivity of Australia’s universities.

Opening and explanation

This paper has been unapologetically prepared from an engineering viewpoint, and is heavily biased toward this profession. Many of the opinions can, however, apply to other professions. It is written against a background of observation of a number of tertiary institutions both from the educational viewpoint as an employer of graduates and postgraduate engineers, but also from interaction with a number of institutions in research and development specific to industry needs.

While many of the opinions are of general nature, and may not apply to all tertiary institutions, there are influences today, not the least of which is diminution of public funding, that make improvements in productivity vital for the continuation of our tertiary institutions.

Education

This refers to the effectiveness of creating the desire to learn and research within the student body. This is not necessarily the same as good teaching, but must be measured against the understanding achieved and the satisfaction gained by the student compared with the time and monetary effort required to produce this result. The understanding without the satisfaction could result in exactly the reverse of what is desired, in that the student will become disillusioned and leave the area of study. It is a measure of academic efficiency that this air of excitement is continuously nourished.

Being an engineer requires that at least one equation appears in this paper. A colleague who is in fact an academic has suggested the equation

\[ P = U \times S \times t \]

where \( P \) = productivity, \( U \) is a measure of students’ understanding, \( S \) is a measure of satisfaction gained, and \( t \) is the time taken to achieve this. This profound formula will be the last in this paper.
 Outsourcing has been used successfully in industry for matters that are not core business. This could well be a model for universities, once the recognition and acceptance of the definitions of core business is agreed. Resource sharing becomes immediately attractive once outsourcing is embraced. An example of all experimental research could be outsourced to commercial laboratories, which would tend to price and time-line the research through the university. This removes the capital and labour intensive resource from the universities, and allows private industry efficiency to be applied to experimental research. Performance indicators tied to criteria would be self determining in the ongoing success of this model.

Finally the whole question of tenure for all staff needs revision. Tertiary institutions can no longer afford the luxury of an industrial flavour protective of employee status and conditions. Greater flexibility can be successfully applied as a result, evidenced by some very successful enterprise agreements in industry, with measured performance against target criteria changing the industrial scene. This must be a possible position for consideration in the benchmarks of productivity.

Again, productivity in running a business must be considered a vital part of reform of tertiary institutions.

It must be recognised that every dollar spent on administration and overheads is a dollar less for the core business...costs is a routine part of running a business. Universities need to develop the same philosophy as business in this regard.

It is probably impertinent for a consulting engineer working in the freedom of private industry with the associated risk to offer these comments in relation to institutions...it is a viewpoint for consideration by government in the important consideration of this topic during the current review.

Defining Productivity in Universities

Let us begin with three comments from the extended definition of productivity provided by the Productivity Commission.

- Productivity can have connotations of minimising the use of inputs – for example, reflecting efficient production processes that minimise waste. Equally, productivity can be defined as the extent to which emphasis is placed on maximising output – reflecting the use of resources in the production of goods and services that add the most value.

- Productivity is a ‘supply-side’ measure, capturing evidence of productivity growth usually means that better ways have been found to create more output from given inputs. For example, the introduction of new technologies means that inputs can be used in ways that generate a greater quantity of outputs or new, higher-value products.

The first step in mapping this definition onto the institutional context of higher education is to consider the appropriateness of inputs we will first consider them and their associated outputs. As already indicated, the social goals of universities are far beyond simply imparting knowledge...with industry which has already been along the road to productivity efficiency can only benefit the universities.

Outsourcing has been used successfully in industry, by some very successful enterprise agreements in industry, with measured performance against target criteria changing the industrial scene. This must be a possible position for consideration in the benchmarks of productivity.
resources but this does not necessarily mean that the university has become more productive. It is conceivable that the quality of the education these graduates received... performance data published by DEST include results of a pioneering attempt at coping with the value added dimension.

Once again quantitative indices such as number of papers and/or citations produced as a result of the input of a specific amount of academic effort cannot be accepted as valid... and qualitative data is, also, required in measurement of productivity in commercialisation of research results. In addition to numbers of patents and spin-out companies, measures of the economic impact of discoveries are required. This involves a... shared with any organisation, that the output measurement involved in LP calculation can be straightforwardly carried out.

On the input side of LP, data on hours of work of university general staff can be compiled. Traditionally, academic staff have largely determined the quantum of hours worked... currently being pursued by NTEU in the industrial arena. Success in this endeavour is unlikely to increase productivity.

A frequently preferred measure of productivity is production processes and firm organisation to improve productivity. In the context in which universities operate it may be enlightening to consider the problem of enhancing their productivity from this perspective.

Universities have, during the last decade, been stimulated... interstate and internationally. In the case of universities... the last includes access to a range of specialist advice, direct employment of community members, an economic boost from locally located, spin-off companies and a capital contribution through enhancement of real estate value in the vicinity. The last includes access to a range of specialist advice, direct employment of community members, an economic boost from locally located, spin-off companies and a capital contribution through enhancement of real estate value in the vicinity. The last includes access to a range of specialist advice, direct employment of community members, an economic boost from locally located, spin-off companies and a capital contribution through enhancement of real estate value in the vicinity.

Enhancing Productivity

If most of universities’ operations are so ill suited to application of economic concepts of productivity, how can we respond to legitimate requirements of governments and the community that productive application of their very considerable investment in universities be demonstrated? A recent study emanating from the Productivity Commission, (Parham, 2002), may offer a new solution. Its focus is on analysis of the determinants of a surge in Australia’s productivity in the 1990s. Although a complex, technical study the broad conclusions reach... both interesting and potentially relevant to our challenge.

LP and MFP growth have both accelerated by at least one percentage point since the early 1990’s. Competitiveness indicators include a higher... opportunities and that they have not yet come to terms with the full implications of the economic and business roles of universities.

Parham (2002) indicates that “Three mechanisms have been most important in linking policy reforms and productivity performance: increases in workforce skills and the use of industry and business linkages to enhance the economic value of infrastructure, both within and outside the university, and... of MFP rather than LP as an approach to productivity assessment in universities yields complexity compounded.

Legislation to prevent the use of students as pawns in industrial disputation is badly needed. Any meaningful attempt to measure the impact of reform on productivity growth in universities lies in the future. There is indirect evidence in Parham’s (2002) study that the overall effect is likely to have been positive and significant. Analysis of the sources of the 1990’s productivity growth in Australia on an industry by industry basis reveals that it was largely attributable to the performance of the service industries. In spite of numerous distinguishing characteristics, university

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economic and business operations clearly constitute a service industry. Productivity growth in service industries has been achieved through adjustment in the internal processes and organisation of firms. The last decade has seen significant change in the internal arrangements of every Australian university and in the nature and conduct of their relationships with external business organisations. It is comparatively straightforward to identify further process changes that, prime facie, appear likely to contribute to productivity growth. ‘Unpacking’ of the traditional teaching process to isolate the features which are critical for student learning has begun but offers further improvements in efficiency and effectiveness. At the systemic level, review and reorganisation of the relationship between universities and other tertiary institutions, particularly the vocational education sector, are likely to yield major productivity gains. In all of these endeavours continuing adoption of leading edge developments in ICT will facilitate change.

Conclusion

If something of an act of faith at present, acceptance of government policy as the major source of acceleration in productivity growth in Australia offers a means of dealing with the present problems of applying productivity concepts to universities. A possible way forward would be to adopt the current strategy of encouraging competition, openness and flexibility but fine-tuning and modifying their delivery to take account of the specific context arising from the special characteristics of universities. Measurement of productivity growth in universities will continue to be a challenge. Pending methodological advances, efforts and actual outcomes should continue although the level of success will vary widely across the range of university activities. This process will, however, indicate very clearly to universities the expectations and wishes of society. In conjunction with government policy, societal expectation will establish a framework within which the weight of talent and ability in the universities may be safely left to cope with the unique situations encountered in pursuit of productivity in each university.

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Commonwealth Department of Education Science & Training, August 2002, Meeting the Challenges – the governance and management of universities.

PRODUCTIVITY IN HIGHER EDUCATION

Introduction

The 21st century is a watershed in Australia’s tertiary education system. The system is currently undergoing significant change and unprecedented changes. In the past, universities were supported by public moneys and were mainly concerned with providing a high standard of tertiary education and being responsible for the places of research and learning. However, limits are being placed on public funding, leading to greater pressure on universities to fund for themselves financially. This is occurring when increasing numbers of people are seeking to enrol at universities and when they are expected to keep up with rapid technological advancements, increased internationalisation and maintain quality at a high level. At the same time there are calls for universities to improve accountability.

Two main strategies are held out as possible solutions, one is to raise more revenue; the other is to improve productivity. The sector has experienced rapid growth over recent years and revenues from various sources have increased, but in spite of this and perhaps because of it, calls for improved productivity have not abated. Interest in productivity in higher education follows a trend of applying private sector strategies to the public and not-for-profit sector. Hence higher education has followed the private sector in restructuring, in seeking ways to achieve “more with the same” or even “doing more with less”. Improving productivity has been a fundamental driver for many of the recent initiatives in higher education.

Maximising productivity is seen as important not only for the higher education sector itself but also for improving the productivity of the whole economy. This is because education and knowledge generation are recognised as major factors in promoting sustainable economic growth and improving the living standards of all Australians. However higher education is complex and multi-faceted. No consistent definition of productivity has been established. Definitions differ depending on the level of analysis.

As a result the concept is poorly understood and is sometimes viewed with outright hostility within the sector.

This note seeks to illustrate how productivity has improved in higher education over recent years but does so with strong caveats that any such assessment must be made relative to the underlying goals and objectives of the system. And these are not always clearly outlined or understood by various levels about which productivity assessments are sought. The illustration uses a qualitative rather than quantitative approach to productivity. Having reference to selected published data ranging from 1995 to 2000, on the basis of a small number of selected measures, it is possible to conclude that the productivity of higher education has increased significantly over this period.

Defining and clarifying productivity

Simply put, productivity is a ratio of the volume of goods and services (outputs) produced relative to the volume of inputs – including land, labour and capital – employed in producing those goods and services. In algebraic terms:

\[ P = \frac{O}{N} \]

Where \( P \) is productivity, \( O \) is the level of outputs and \( N \) represents the inputs.

Higher productivity means accomplishing more with the same amount of resources, or the same for fewer resources. From the public (taxpayers) point of view, productivity in higher education is how many quality graduates get from the higher education sector, given the amount of resources they invested in the sector. For example are the specifications of graduates and research publications at a constant or improving level of quality and at the same or reduced cost could constitute an improvement in productivity.

Higher education productivity embodies the concepts of efficiency and effectiveness. Theoretically, efficiency is achieved when outputs are provided with the lowest possible level of inputs. But this will not have much value if the outputs are not consistent with agreed objectives. In the case of higher education, output is valued by the ABS using predominantly weight enrolments and research criteria whereas the estimates for higher education are not separated from education as a whole. For example it would be possible to increase efficiency by cutting the number of students and excluding students with less chance of success. However this would also reduce opportunity for a significant number of prospective students. Consequently effectiveness, the extent to which the outputs achieve specified objectives, is also considered to be important. The current call is that in order to be productive, our higher education needs to be both efficient and effective. It needs to achieve specified objectives and outputs as economically as possible.

In order to illustrate some aspects of productivity in higher education the following parameters have been specified:

- focus is on outputs rather than inputs
- alternatives for referents including judgments of improvement against past performance, comparisons against higher performing institutions in other countries, comparative judgments against other industries in our economy and judgments against an ideal standard.
- time frame adopted in this study is 1995 to 2000 inclusive. The reason for choosing 2000 as the last year is that completions and research publications data are currently available until 2000 only. The commencement year of 1995 has been selected because the Commonwealth’s method for measuring weighted research publications changed between 1994 and 1995.

The emphasis is on objective rather than subjective data. The Productivity, Employment Science and Training (DEST) data is the major source for pragmatic reasons as it can be easily obtained and verified. However the illustration also uses the outcomes of the Graduate Careers Council of Australia’s Course Experience Questionnaire which contains subjective judgements as to the quality of higher education.

Within the confines of a brief note, it is necessary to select a small number of measures to construct productivity ratios and to be aware of the limitations of these measures. Further notes on the reasoning behind the inclusion or non-inclusion of measures is given below together with a list of the resulting ratios.

Output

Award Course Completions:

A key short-term measure of teaching output is award course completions at a certain level of quality. For the sake of simplicity the raw number of completions is used. This is an important measure as it is the value of human capital conferred by university teaching. Again this is beyond the scope of this illustration.

Course Experience Questionnaire (CEQ) Overall Satisfaction:

The Graduate Careers Council’s CEQ is a key measure of the quality of teaching. The measure of “overall satisfaction” gives the proportion of responses 3, 4 and 5 on a 5-point satisfaction scale.

Weighted Research Publications:

This is a key short-term measure of research output. The measure of “weighted research publications” includes the proportion of higher degree (ie higher value added) completions within the total is increasing. A key longer-term indicator, which is not included, is the value of human capital conferred by university teaching.

Again this is beyond the scope of this illustration.

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In the wider economy it is normal to calculate the productivity of an industry, specific company, or product using inputs such as capital, labour, and other resources. However, in higher education, this is not straightforward.

A major response to the difficulty in measuring the productivity of higher education is to use indicators such as the number of awards conferred or the number of research publications. Outputs that cannot be measured directly include the value added to students in terms of knowledge and competencies conferred through university teaching and other externalities such as the contribution of university research to society.

A further difficulty is that higher education is a service industry, some of which are difficult to measure. This is in contrast to the production sector of the economy where the outputs are easier to measure – for example in an industry producing goods such as motorcars it is relatively easy to obtain output figures. Outputs of higher education which can be measured directly include the number of awards conferred or the number of research publications. Outputs that cannot be measured directly include the value added to students in terms of knowledge and competencies conferred through university teaching and other externalities such as the contribution of university research to society.

A major response to the difficulty in measuring the productivity of higher education has been to use a range of performance indicators to track performance over a period of time. However although there has been a great deal of discussion as to an appropriate set of indicators for higher education there has been no real consensus reached.

One of the most contentious factors in measuring productivity is the appropriate method of measuring efficiency. The productivity of higher education is not straightforward and an appropriate assessment ideally includes informed judgements having reference to a range of performance data and knowledge of the trends and issues.

Productivity of Higher Education: Selected Measures

<table>
<thead>
<tr>
<th>Year</th>
<th>Award CEQ Weighted Course % Broad Research</th>
<th>Staff FTE</th>
<th>Operating Expenses</th>
<th>Completions</th>
<th>Publications</th>
<th>Productivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995</td>
<td>190,918 88% 75,755</td>
<td>15,191 80,754</td>
<td>140,198 89%</td>
<td>88,888 175</td>
<td>1.745</td>
<td>1.959</td>
</tr>
<tr>
<td>1996</td>
<td>146,228 86% 73,755</td>
<td>16,222 88,888</td>
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<td>81,404 178</td>
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<tr>
<td>1997</td>
<td>195,071 90% 80,285</td>
<td>25,932 80,322</td>
<td>205,169 91%</td>
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<table>
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<tr>
<th>Year</th>
<th>Total Increase</th>
<th>2%</th>
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<th>5%</th>
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<tr>
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<td>21%</td>
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<td>73%</td>
</tr>
<tr>
<td>1996</td>
<td>4.0%</td>
<td>0.5%</td>
<td>12%</td>
<td>0.4%</td>
<td>3.0%</td>
<td>3.6%</td>
<td>0.0%</td>
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The total increase measured directly is 21% in 1995 compared to 1996.

At this stage I feel that I should re-emphasise the warning I have stated earlier namely, that the above are only partial measures of productivity.

They do not for example capture the substantial increase in the human capital of students added through university teaching and the substantial effects that this has on the productivity of other sectors of the economy.

Nor do they capture the spillover effects on industry from research or the substantial multiplier effect of higher education expenditure on the national economy, which have been observed by others.

Conclusion

Over recent decades, successful Australian governments have sought to improve the productivity of higher education through reforms including restructuring, encouraging the diversification of income; industrial reform and quality assurance arrangements. In seeking ways to achieve "more with the same" or even "doing more with less" improving productivity has been a fundamental driver for many of the recent initiatives in higher education. Some might even conclude that part of the Cross-Border reform agenda is to improve productivity. The business community also believes that higher education needs to be relevant to the community and provided in an effective and efficient manner. As stated earlier, productivity embodies both concepts of efficiency and effectiveness. Effectiveness is determined by the extent to which the outputs achieve specified objectives but fulfilling the requirements of the community these objectives need to be achieved as economically as possible.

### Table 1: Productivity of Higher Education: Selected Measures

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The total increase measured directly is 21% in 1995 compared to 1996.
As John Ralston Saul observes: “Effectiveness is about content and policy delivery. Risk, thought, research and development are not concrete places; they are incapable of efficiency.” To quote Saul once more: “the simple and central role of universities is to teach thought … the problem is not to teach skills in a galloping technology, but to teach students to think and to give them the tools of thought so that they can react to the myriad changes, including technological, that will inevitably face them over the next decades.” Productivity in higher education may have increased but the substantial effect that research and knowledge generation (the output of university education) has on the productivity of other sectors of the economy is the most rewarding measure.

### UNIVERSITY RESOURCING: AUSTRALIA IN AN INTERNATIONAL CONTEXT

The Productivity Commission released a Draft Report on 1st October with international comparisons of the resourcing of higher education institutions and the management of those resources in Australia and other countries. The purpose is to provide information for the review of higher education currently being carried out by the Australian Government.

Comparisons of the tertiary education sector and government involvement are reported on a country-wide basis. Financial resourcing comparisons were made at the individual university level for a selection of 31 Australian universities and 23 universities from 9 other countries (see box). Governance arrangements are compared on a case-by-case basis for a more restricted number of universities.

The report acknowledges that there are many factors that make the higher education sector in each country unique, and distinguish individual universities within each country. That said, the Commission says it is possible to make some general observations about the resourcing of different universities.

#### Graduation rates
- Graduation rates for Australian bachelor and masters degree courses in 1999 were in the middle of the range of those in the United States of America (US) and the United Kingdom (UK) and higher than those in many other countries.

#### Publication rates
- Salaries for Australian academics in 2001 – measured on a Purchasing Power Parity basis – were comparable to those in a number of other countries, although lower than in Singapore and the US.

#### Tuition fees
- The ratio of students to teaching staff was higher in Australia in 1999 than in Canada and the US, the only other countries for which there were comparable data. Student-teacher ratios increased somewhat in Australia over the late 1990s, while the ratios in North America remained largely unchanged over the same period.

#### Academic salaries
- Salaries for Australian academics in 2001 – measured on a Purchasing Power Parity basis – were comparable to those in a number of other countries, although lower than in Singapore and the US.

#### Overall financial resources
- There have been substantial changes to the funding of tertiary education (including TAFE) in a number of countries, including Australia, over recent years. The total expenditure (public and private) on tertiary education in Australia was equivalent to 1.4 percent of Gross Domestic Product in 2000. This was lower than in the US, New Zealand, Sweden and Canada, but higher than in the UK and some other European countries.

- There were significant financial resource differences among the universities studied. Universities generally fell into two broad categories when ranked by their total revenues in 2001, namely:
  - Australian universities and most of the overseas universities, with revenue ranging, for example, between $57.4 million and $847.4 million in Australia; and
  - three resource-rich US universities, each with revenue of over US$2.6 billion (Yale, Stanford and Pennsylvania).

#### Sources of revenue
- Australian universities generally received the largest share of their revenue, either directly or indirectly, from government. For about half of the overseas universities, revenue from other sources – including gifts, donations, investments and commercial activities – accounted for a greater proportion of revenue than from either government or students.

- It is difficult to compare the share of revenue received from domestic students, as the domestic-international split is not generally available for overseas universities. While Australian universities typically received a greater share of their revenue from students than did universities in other countries (recognising Higher Education Contribution Scheme (HECS) payments as student payments), full-fee paying international students accounted for up to 50 percent of total student revenue for Australian public universities.

- Support for research is provided, in part, on a competitive basis in Australia and other countries. The relative size of research funding is an important source of the difference in the level of available resources, both between Australian universities and universities within the Australian group.

- Differences in returns from assets, including financial assets, did not account for a large proportion of the variation in the revenues of Australian universities. These returns represented a small portion of total revenue.

#### Assets and liabilities
- The value of university assets cannot be readily compared across the institutions because of the differences in valuation methodology.
• The resource-rich US universities had massive assets in comparison to the other universities included in the study.
  - Moreover, the observed difference is likely to underestimate the actual difference because of the conservative historical cost valuation methodology used by these universities.
• Australian universities generally had low levels of cash and investments compared to the value of their physical assets and relative to the invested funds of overseas universities. The level of Australian university debt was lower than that of most overseas universities included in the study.

Commercial activities
• Universities are involved in a diverse range of commercial activities. The revenues from such activities were relatively small for Australian universities (up to 20 percent). However, the surpluses generated from commercial activities were generally significant in relation to overall university surpluses.
• In 2001, some US universities derived substantial revenue and operating surpluses from their commercial activities, whereas others incurred losses. For example, Stanford University's hospitals and health care services generated revenue of US$920 million (a third of total revenue) and had an operating deficit of US$13.4 million.

University expenses
• For all the universities studied, staff salaries and related costs were the major expense.
  - As a proportion of total expenses, staff costs ranged from 48 percent to 60 percent.
• The next most significant expenses generally were depreciation and maintenance of buildings and grounds.

Financial position – operating surplus and net cash flows
• Some of the Australian universities studied had relatively strong operating margins (ratio of total revenue less total expenses to total revenue).
• On average, there does not appear to be any systematic difference between the operating margins of the Australian universities and those of the other countries.
  - However, a one year snapshot may include extraordinary items and is not a reliable indicator of longer term financial position.
• The cash flows of Australian universities are mixed, with some reporting net inflows and others net outflows.

Government programs
• There are significant differences across countries in government programs supporting higher education. In Australia, direct financial support for higher education (as block grants) comes mainly from the Commonwealth. In the US and Canada, the federal government’s role is primarily in support of students and research. In the US, many private universities receive substantial gifts and donations from their alumni and other sources.
• In Australia and a number of other countries, universities receive block grants that cover both teaching and academic research:
  - in Australia, this funding is mainly based on numbers of student places;
  - in the UK, a broader range of other demand and university-related factors are taken into account.
• Recently, a number of governments in countries have attempted to separate their teaching and research funding. There has also been a move away from block funding for research to competitive or performance-based funding.
• University tuition fees in public universities are regulated in all countries except New Zealand, although the degree of regulation varies between States and Provinces in the US and Canada:
  - however, public university students in Sweden do not pay tuition fees, and first-time undergraduates do not pay tuition fees in Ireland.
• Demand (through places) is regulated in all countries except New Zealand and some States of the US.
• The ability of universities to respond to student demand can have important implications for the management of their resources. Governments can influence this flexibility through the way they deliver support and the conditions they attach to it.
  - Government restrictions on the number of places that attract funding also influence the supply of courses provided, thereby indirectly affecting demand responsiveness.
  - Government funding arrangements also have the potential to affect university governance, depending on the conditions attached to funding.

University governance and external controls
• Detailed governance comparisons were limited to four case studies, and only cover financial and physical asset management and quality assurance.
• Australian arrangements appear similar to those in other countries:
  - there is a high degree of commonality of auditing and monitoring processes, although the extent of monitoring and reporting mandated by Australian governments is less than in England. That said, the Commission is not in a position to judge the efficacy of the arrangements in practice.
  - Universities appear to be moving towards arrangements that are more closely modelled on the reporting practices of the corporate sector.

2002 Awards for Outstanding Achievement in Collaborative R&D

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The Awards will be presented by the Hon Dr Brendan Nelson MP, Minister for Education, Science and Training, at a gala dinner in Melbourne on 20 November 2002.

In the next issue of B-HERT NEWS (March 2003) there will be a full report of the winners.

2002 Award for the Best Entrepreneurial Educator of The Year

To recognise the importance of education in the process of developing and nurturing entrepreneurs, and to showcase best practice in entrepreneurial education.

This Award will be presented by the Hon Dr Brendan Nelson MP, Minister for Education, Science and Training, a gala dinner in Melbourne on 20 November 2002, and the winner will be featured in the next issue of B-HERT NEWS (March 2003).
THREE SCHOLARS FROM WATER-RELATED CRC’S SCOOP THE B-HERT SCHOLARSHIPS POOL!

B-HERT has provided scholarship support to three outstanding young scientists, Gavin Begg, Sam Brooke, and Regina Counihan, to attend the sixth annual Leadership and Career Development Course, held at Melbourne Business School, University of Melbourne, October 8-11. The course, attended by 27 PhD students and Postdoctoral Fellows from fifteen Cooperative Research Centres across Australia was voted a great success. Course Directors, Professor Leon Mann and Robert Marshall, spoke highly of the three B-HERT scholars and their leadership potential.

Gavin Begg
Gavin, a PhD graduate from the University of Queensland, is a senior research fellow and project leader for the CRC Reef Research Centre Fishing and Fisheries Project in Townsville. The CRC Reef focuses on the sustainable utilisation of fisheries resources in the Great Barrier Reef World Heritage Area. Gavin’s field of research is marine resource assessment, in which he is examining the stock structure, population dynamics and effects of fishing on reef and pelagic fish in northern Australian waters, and of groundfish species in the northern Atlantic Ocean.

Sam Brooke
Sam is a third year PhD student at Flinders University. He is conducting his research in the CRC for Water Quality and Treatment, located in Salisbury, South Australia. His research deals with optimum conditions for oxidation of toxic microcystins in supplies of drinking water. The results of his research will provide advice to water treatment operators on the removal of toxins present in water supplies.

Regina Counihan
Regina Counihan is a project leader in the CRC for Coastal Zone, Estuary and Waterway Management, based in Indooroopilly, Queensland. She is a recent PhD graduate from the University of Queensland. Her research explores the utility of automated monitoring technologies to evaluate and predict marine ecosystem processes and health.

Left to right: Sam Brooke, Professor Leon Mann, Gavin Begg and Regina Counihan.
As a unique group of leaders in Australian business, higher education and research organisations, the Business Higher Education Round Table (B-HERT) sees as part of its responsibility the need to articulate its views on matters of importance germane to its Mission. From time to time B-HERT issues Papers in this context - copies of which are available from the B-HERT Secretariat at a cost of $9.90 (GST incl.) per copy.

**Position Paper No. 10 (September 2002)** - 
**The Importance of The Social Sciences To Government**

The social sciences cover a wide array of complex issues and disciplines. Government activities are now centrally related to social policy and the boundaries between social, economic and science policy are blurred. Commonwealth Government expenditure on social security and welfare, health and education amounts to some 65% of total expenditure and indicates the importance and persuasiveness of social policies.

**Position Paper No. 9 (August 2002)** - 
**Enhancing the Learning and Employability of Graduates: The role of Generic Skills**

This paper outlines the nature and scope of generic skills. Examples of the incorporation of generic skills into higher education structures and courses are also described.

Finally the paper makes some recommendations to enhance the employability of graduates.

**Position Paper No. 8 (July 2002)** - 
**Higher Education in Australia – The Global Imperative**

This paper is B-HERT's submission to the Nelson Review of Higher Education.

**Position Paper No. 7 (January 2002)** - 
**Greater Involvement and Interaction between Industry and Higher Education**

This paper looks at the need for a more enhanced partnership between the business community and higher education.

**Position Paper No. 6 (August 2001)** - 
**Sharing Administrative Functions at Lower Costs**

This paper highlights an innovative approach to achieving savings in administrative activities.

**Discussion Papers:**

- How Should Diversity In The Higher Education System Be Encouraged?
- The Role of Universities In The Regions

(Refer B-HERT website: www.bhert.com)
USQ WIN SIFE AUSTRALIA NATIONAL CHAMPIONSHIP AND SHINE IN AMSTERDAM

On Saturday 13 July, at a gala Awards Ceremony dinner at the Hilton Sydney attended by more than 200 students, academic mentors and business leaders, the Fraser Coast SIFE team from the Wide Bay Campus of USQ was named the Qantas SIFE Australia National Champion for 2002.

SIFE's mission is to challenge university students to make a difference in their own lives by developing their leadership, teamwork and communication skills. They are encouraged to do this through learning, practicing and teaching the principles of free enterprise so as to empower others in their communities and enhance their economic prospects.

USQ's Fraser Coast SIFE team are highly motivated students from a campus with an enrolment of only 750, mentored by Associate Lecturer Ms Penny Richards and encouraged by the DVC Academic, Professor Susan Banbrick OBE. The other competitors comprised ANU, Bond, COU, Edith Cowan, Flinders, Griffith, Macquarie, Melbourne, RMIT, Tasmania, UWA, UNSW, UQ and UWS were runners up, followed by RMIT and Flinders.

Professor Glencie Hancock was named Most Supportive Vice-Chancellor, UM bours Dr Joanna Tapper was named Most Supportive Dean, Arnott's SA Regional Manager Mr David Watts was named Most Supportive Business Advisory Board Member and the Woolworths Leadership prize of $2,000 for Most Outstanding Mentor was awarded to QSU's Ms Beth Tennent.

The USQ team won a travel award provided by Qantas, $5,000 cash from Arnott's and the right to represent Australia at the SIFE World Cup which was held in Amsterdam from 22 to 24 September and in only its second year attracted entries from 23 of the 31 countries with active SIFE programs.

For a ‘rookie’ team formed in only March of this year, USQ's performance was outstanding, as they came a close second in their Opening Round League to a long-established team from Togliatti Academy of Management in Russia, which has the second oldest and largest SIFE program after the USA, with more than 60 active university SIFE teams and 11 years of development behind it.

The four finalists, in addition to Togliatti, were the University of the Free State, Bloemfontein, South Africa, La Sierra University, Riverside, California, USA and the University of Ghana, Accra, Ghana. La Sierra was named the winner with Ghana as the runner-up.

The membership of B-HERT comprises by invitation, the chief executives of leading Australian businesses, professional firms and associations, public research organisations and the vice-chancellors of Australian universities.

B-HERT pursues a number of activities through its Working Groups, and active alliances with relevant organisations both domestically and internationally. It publishes a regular newsletter (B-HERT NEWS), reporting on its activities and current issues of concern relevant to its Mission.
A compendium of statistics on higher education.

Any constructive debate about the future of higher education in Australia needs to start from an agreed basis of FACTS.

Unfortunately, much of the debate is absorbed by the proponents disputing one another’s facts.

The purpose of this paper is to present some key relevant statistics, trends and comparative data, collected from a variety of authoritative sources which hopefully will provide some valuable insight into higher education in Australia on both an historical and international comparative basis.

Some of the Commonwealth’s pronouncements on higher education efficiency remind me of the old joke about a time and motion study of a performance of Schubert’s Unfinished Symphony.

1. For a considerable period, the oboe players had nothing to do. Their number should be reduced and their work spread over the whole orchestra, avoiding peaks of inactivity.
2. All 12 violins were playing identical notes. This seems to be unneeded duplication, and the staff of this section should be cut. If a volume of sound is really required, this could be accomplished with the use of an amplifier.
3. Much effort was involved in playing the 16th notes. This appears to be an excessive refinement, and it is recommended that all notes be rounded up to the nearest 8th note. If this were done, it would be possible to use para-professionals instead of experienced musicians.
4. No useful purpose is served by repeating with horns the passage that has already been handled by strings. If all such redundant passages were eliminated then the concert could be reduced from two hours to twenty minutes.
5. The symphony had two movements. If Mr Schubert didn’t achieve his musical goals by the end of the first movement, then he should have stopped there.

In light of the above, one can only conclude that had Mr Schubert given attention to these matters, he probably would have had time to finish the symphony.