NON-AGENDA

With the view of causing an increase to take place in the mass of national wealth, or with a view to increase of the means either of subsistence or enjoyment, without some special reason, the general rule is, that nothing ought to be done or attempted by government. The motto, or watchword of government, on these occasions, ought to be — Be quiet...Whatever measures, therefore, cannot be justified as exceptions to that rule, may be considered as *non-agenda* on the part of government.

— *Jeremy Bentham* (c.1801)

Economic and Social Benefits of Universities: Policy Implications

Roger Dean

Most studies of the outputs of universities imply that the largest economic benefits of university education are captured in the enhanced salaries of graduates. This returns an enhanced tax stream to government which exceeds the investment it has provided. Almost as large an output is contributed by the direct income and employment (national and international) activities of universities, and the ‘spillover’ effect of their R&D (Cabalu, Kenyon and Koshy, 2000). Only few studies consider other economic contributions substantively.

Because of the importance of the current discussion of ‘Higher Education at the Crossroads’ (Nelson and Commonwealth Department of Education Science and Training, 2002) initiated by the Australian Commonwealth Minister for Education, Science and Training for the future of Australian universities, it is argued here that there is at least one additional important economic benefit from the maintenance and expansion of numbers of graduates in our society: their additional contribution to GDP and its growth. The neglect of this argument in most studies, makes it worthwhile to reinforce government (and possibly academic) awareness of this important output by reviewing the literature, and presenting some deductions.

The main argument in this paper is that the full value of universities has been substantially underestimated, and consequently current levels of public funding represent significant under-investment. Brief comments are first offered on some social returns beyond the purely economic, many of which may have additional economic benefits. The paper then reviews studies that estimate the economic

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benefits of university education and, in consequence, argues for the expansion of student numbers in the Australian system and for an enhanced public funding.

Social Benefits of Universities: An Informed and Equitable Society

A successful period of university study, combining training and education, fits us for flexibility and adaptability in work (see, for example, Chapman, 2001). It also allows us to contribute to the intellectual and cultural diversity of our communities and to enhance their equity. A key creative capacity, which universities can imprint is that of seeing simultaneously many aspects of a phenomenon like the beaming and the hidden sides of the sun. Such 'Janusian' perception is required for us to establish the necessarily multiple equilibria with our national stakeholders and the rest of our globe.

An educated society is capable of enhanced rates of knowledge acquisition (Lucas, 1988) and technology transfer and progress (Dowrick, 2002) as reflected, for example, in the uptake of internet facilities. In some such respects Australia still performs well (Goldsworthy, 2002). There is also an indirect economic benefit from university education in the improved health, and psychological and social well-being of graduates, which reduces government expenditure. Positive civic and political engagement, and gender and race equality are also fostered. The Productivity Commission has listed many of these social 'spillovers' (Productivity Commission, 1997) and a detailed UK investigation has been published (Bynner and Egerton, 2001).

Attaching a financial value to such major social benefits of education is difficult, and some commentaries argue that both the psychological and civic benefits are very small (the latter in comparison with year 12 completers). However, best estimates seem to be that it is at least comparable in value to those derived from the human capital considerations that follow in our discussion. For example, this was the conclusion of a study of the benefits of completing schooling in Australia (King, 1999), consistent with earlier US and Canadian studies discussed in that publication. The economic evaluation of these social benefits is clearly presently much less robust than those that follow.

Economic Outputs of Universities

The 'Crossroads' paper neglects the fact that the Australian university system and those of many other countries are not just profitable businesses, but also profitable for government, and vastly profitable for their host economies. The authors write as if universities were loss-making enterprises which might happily be left to wither, rather than the engines of economic development. This current lack of attention to the market drive resulting from university education is another motivation behind writing this article, so as to focus interest on these socio-economic impacts.

Studies of economic outputs of universities generally consider three components: local and overseas 'direct' income and employment generated through their activities, including export income (for example, Cabalu, Kenyon,

and Koshy, 2000); human capital (generated in the employable expertise of the graduates and estimated from their enhanced salaries); and 'spillover' of University R&D efforts into government and business commercialisation (Cabalu, Kenyon, and Koshy, 2000). Amongst the several recent pertinent publications, most (for example, Productivity Commission, 1997; Cabalu, Kenyon, and Koshy, 2000; Borland *et al.*, 2000; Greenaway, and Haynes, 2000; Larkins, 2001; Johnson and Wilkins, 2002) do not discuss in any depth the possible additional contributions to maintenance of GDP beyond those encapsulated in 'direct' income and employment, human capital, and R&D 'spillover'. Several make reference to the importance of progressively enhancing educational status for growth of GDP (and of labour force output per head).

The analysis published by the Business/Higher Education Round Table (BHERT) in Australia (Cabalu, Kenyon and Koshy, 2000) and undertaken at Curtin University, provides a convenient set of estimates of Australian university expenditure and income for the year 1998. In round numbers, universities contributed \$8.7 billion (amounts quoted in this article are all in Australian dollars) on 'staff, non-wage purchases and net capital expenditure'; students contributed \$1.8 billion in expenditures 'related to their attendance at University' in Australia (of which \$75 million was due to their associated international visitors to Australia); the total of these expenditures was approximately \$10.6 billion. Staff earned \$70 million in consultancy income. Export receipts (from fees and other expenditure by international students) were \$1.8 billion.

The second category of output, human capital, was estimated at \$9.3 billion (Cabalu, Kenyon and Koshy, 2000). Even this single component, accumulation of human capital (the present value of the private return to graduates, expressed as the increment in their income over that of their non-graduate peers), is profitable both for the graduates, but also for government through the enhanced taxes they pay. For each government dollar invested in university education it receives \$1.1 in 'additional (discounted) tax revenue from the enhanced salaries achieved as a result of university education'; correspondingly students on average receive a \$2.0 'additional (discounted) lifetime return' in the form of the enhanced salaries. In making these calculations, government input was appropriately not taken to include HECS (the income-contingent higher education contributions scheme, which is a government loan to students rather than a grant). Government input was \$4.6 billion in 1998 and corresponded to approximately 50 per cent of universities' income. Note that in 2000 this contribution had reduced to 31 per cent (Nelson and Commonwealth Department of Education Science and Training, 2002), with the difference made up by the progressive increases in HECS, so that even disregarding the increasing numbers of students being educated, the taxation returns to government are now at an even higher ratio. It is worth noting explicitly that the taxation increment to government from graduates themselves exceeds government investment. On average graduates make a lesser demand on the social support mechanisms provided from taxation than other members of the population. Thus, it is clear that non-graduates are not required to 'subsidise' the

benefits of university education obtained by graduates, in spite of the routine political representation to the contrary.

Several other authors have reached similar conclusions about the value of human capital generation by university education (for example, Maglen, 1993; Productivity Commission, 1997; Borland *et al.*, 2000; Pincus, 2000; Greenaway and Haynes, 2000; Larkins, 2001; Chapman, 2001; Chapman and Salvage, 2001; Johnson and Wilkins, 2002). Concordant studies from several other countries have been reviewed (Psacharopoulos, 1995). The human capital model has been compared with competing models based on screening theory and public choice theory, which have been found defective, while the human capital model has been relatively resilient (Quiggin, 1999). Screening theory assumes that education has no economic value, but is effectively simply a ranking system designating suitability of individuals for particular levels of job and income. Public choice theory presumes that 'bureaucrats will benefit from expansion of their institutions beyond the socially optimal level'. Quiggin provides both strong intellectual and empirical dismissal of screening and public choice theories in the context of higher education, though there are clearly possibilities for hybrid theories.

Human capital-based returns from different courses of study have also been compared (Larkins, 2001). More recently, the University of Canberra's National Centre for Social and Economic Modelling developed the 'Returns to Education Model (RED99)', which embraces the human capital approach (Johnson and Lloyd, 2000). As the authors state: 'RED99 ... examines private and government rates of return rather than private and social rates of return', and thus 'the model does not include the less tangible benefits of education, such as improved employee productivity, enhanced innovation'. The first and, to some degree, the second of these factors underpin the often neglected argument developed in this paper. The most recent update of this model RED02A gives consistent results (Johnson, Beer and Lloyd, 2002).

The third component discussed by Cabalu, Kenyon and Koshy (2000) and most other studies is the flow-on action of university research into R&D exploitation in other parts of the Australian economy. Universities' research income in 1998 was estimated at \$1.2 billion, and the flow-on conservatively estimated at \$2.3 billion (Cabalu, Kenyon and Koshy, 2000). These figures were used by other authors in their estimates of 'spillover' from individual research areas (Larkins, 2001), but seem to be significant underestimates in view of evidence that 50-60 per cent rates of return on investment are more realistic. The data in any case indicate drastic under-investment in R&D in Australia (Dowrick, 2002).

Aggregating these figures, one determines that the \$10.6 billion of 1998 expenditure by universities and their students corresponded to human capital generation with net present value at the time of \$9.3 billion, and spillover to industry of \$2.3 billion, a total of \$22.1 billion. This figure corresponded to approximately four per cent of GDP in 1998.

Difficulties in Measuring Universities' Contribution to GDP

It is now argued that universities make broader and more substantial contributions to economic output. Some economists are, reasonably, quite resistant to (or cautious about) the idea of disentangling component contributions to GDP. They point out, for example, that the efficiency of capital equipment exploitation varies at the same time as the efficiency of labour input. Dowrick, author of some of the most committed and sophisticated investigations of this issue, was previously quite sceptical about establishing understanding on the issue. Most recently he has argued for quite clear-cut conclusions: 'It appears ... that there are... significant long-term growth effects — the more educated is the work force, the better is it able to implement technological advances' (Dowrick, 2002).

In reaching this particular conclusion, Dowrick gives a detailed analysis of the slippages/developments in economic growth theory, such as that between neo-classical and endogenous growth ideas, and the distinction between investment in human capital and in physical entities. He points to complementarity, positive feedback and non-rivalry as key distinguishing features of the human capital investment not shared by investment in physical materials. His informative analysis will not be reiterated. Many other researchers support distinguishing between such components of growth as market output, labour input and productivity, and capital input and productivity, by multivariate analyses (for example, Quiggin, 2001).

Let us consider a *reductio ad absurdum* position. What if all graduates withdrew their services from the work force? For example, they might well undertake a protracted strike on behalf of improved government funding for students and universities. Would the economy suffer, and GDP drop? Obviously such a 'perturbation' experiment cannot be undertaken, but it is the root of deductions from multivariate analyses of time sets of data about economic outputs, educational expenditure, and educational status. Such a 'counterfactual' approach is also at the root of many related analyses of economic impacts, such as that in which it is postulated that the University of Western Australia might not exist (Greig, 1997), or those of the comparative study of regional universities by the Centre for International Economics (1997). Such bald arguments are used here to reassert the importance of estimating the overall contribution of university education, through its graduates, to GDP. The conclusion is that a significant portion of GDP beyond that 'entrapped' in human capital may be involved.

Has the R&D Spillover Been Underestimated?

A brief elaboration on the R&D spillover component mentioned above is provided here as an introduction to the issue of underestimation of R&D spillover. It is well understood that there are very high social and government rates of return on R&D in both overtly commercial and more fundamental, less predictably commercial, areas; and these are under-resourced both by public and private funds (for example, Dowrick, 2002). It is commonly believed that Australia has been very

inefficient and unsuccessful in exploiting its R&D, and this may be a reason for government hesitation in investing optimally. In 1998, universities were responsible for 27 per cent of Australian expenditure on R&D, and 78 per cent of basic research expenditure (Cabalu, Kenyon and Koshy, 2000). If there were poor exploitation, then of course the possible economic impact of the basic research would be mostly unfulfilled. However, Clarke (2001) has mounted a spirited defence of Australian innovation and entrepreneurship arguing that the available data do not indicate 'a weakness in the national scientific base or in the proclivity of the private sector to innovate'. Clarke discusses two 'proxies' for the exploitation of research outputs as used by OECD. One is patent applications per 10,000 population, which was 4.6 in 1996, making Australia fifth of the OECD countries. The other is the ratio between technology exports and imports, for which the Australian value of 0.62 was tenth amongst the OECD countries. However, Clarke reveals that between 1990-1996 this ratio improved by 72 per cent. Firm conclusions cannot be established as yet. Furthermore, even if the estimate of R&D spillover effect quoted above is a significant underestimate, the real value should be contained within the gross GDP output argument.

What Graduates' Earnings Say About their Contribution to GDP

What is the reason for the increased lifetime earnings of the average graduate and their decreased incidence of unemployment in comparison with the average non-graduate members of our society? It is normally assumed to be that they are more productive, and this is commonly labelled an 'external benefit'. However, as listed above, most publications imply that the increased productivity is measured by the increased earnings. Yet earnings only correspond to about 2/3 of GDP. Furthermore, if the concept of profitability applies to any degree in employment selection, then an employer expects to leverage the increased productivity of individuals yet further than their relative salaries. As Quiggin (1999) puts it:

These external benefits represent one of the main reasons for public subsidies to education. However, ... external benefits are hard to capture econometrically ...

Kniest has commenced a process to capture some of the benefits, specifically those which result from network externalities:

Network externalities arise in product markets where the utility derived by consumption of a product increases as the number of consumers increase. ... Network externalities differ from traditional externalities in that the benefits are internalised to participants in the network and not the broader community (Kniest, 2001).

A corollary of this is Kniest's proposition that 'the value of employing graduates rises as the number of graduates employed increases'. His preliminary

analysis of available data on ANZSIC industry divisions indeed shows a positive correlation between profit margin and university-qualified as a percentage of total employees. He also reveals positive correlations between changes in the percentage of post-school employees and both labour productivity and multi-factor productivity, based on data from the Productivity Commission.

The externalities discussed so far are the ‘traditional’ ones, while the additional externalities (the ‘networks’) that Kniest envisages clearly include employers. Thus, it is reasonable that an output ‘multiplier’ (ratio between earnings and output attributable to the efforts of an individual) should in a ‘market analysis’ increase with salary in certain ranges — certainly as far as the commercially modest salaries of university vice-chancellors, though possibly not as far as the much higher range of company CEO salaries. In some cases, of course, education may give individuals the ability to bluff their way into highly paid jobs.

What might be the increment in total GDP corresponding to the graduate human capital — the economic justification for the increased earnings of the graduate? The 1998-99 Australian Bureau of Statistics Household Expenditure Survey reveals that post-school, bachelor or higher qualified workers account for 27 per cent of earnings, and their average earnings were \$894 per week compared with \$479 per week for the group with no post-school qualifications (and \$671 for that with other post-school qualifications). Thus 46 per cent of graduate earnings might be attributable to their graduate education.¹ A similar argument can be made on the basis of 2001 data on ‘Education and Training Experience’ published by the Australian Bureau of Statistics (Catalogue No. 6278.0). These reveal that less than 17.1 per cent of the work force are graduates, but they attract 34.9 per cent of total earnings, which by a similar argument would give a figure of about 63 per cent of graduate earnings being attributable to their graduate education. Comparable data are deduced by Johnson and Wilkins (2002), though expressed as a graduate ‘mark up’ (percentage increment on the non-graduate figure). Even higher figures are implied by the analysis of Greenaway and Haynes (2000), which notes ‘income differentials’ (similar to the ‘mark up’ terminology) of 70 per cent for Australian males (78 per cent for UK males) and 86 per cent for Australian females (131 per cent for UK females).

The 1998 data take account of factors such as part-time work, but might be overestimates of the return due to graduation because they partly reflect an increase due to completion of secondary schooling. This might be represented in the difference between ‘other’ and ‘no post-school’ earnings in the 1998 data since the latter group contains people who have not completed school. But the 2001 data disaggregate eleven levels of educational attainment showing that those with year 12 attainment had ‘average usual weekly earnings’ of \$673, while those with bachelors degrees (and not higher) had \$1,108. This gives an estimate of 40 per cent of graduate earnings attributable to their graduate education. When the same argument is used with respect to those with a postgraduate degree it suggests a

¹ Equal to $(894 - 479)/894$ as a percentage.

figure of 51 per cent. Additionally, there are underestimates in our argument. For example, the social 'positive spillovers' listed by the Productivity Commission (1997) must make some contribution to economic outputs of graduates. These range from those listed in the earlier brief comments on social implications of university education, to 'improved employability' (Clare and Johnston, 1993; Bynner and Egerton, 2001), family and co-worker effects (benefits transmitted to other members of the families of graduates or to their colleagues), leadership, and better information transmission (facilitating competition).

The discussion, therefore, will proceed conservatively on the basis of the estimate of 46 per cent. This simple deduction presumes, as does the Productivity Commission (1997), that 'talent' does not impact on this estimate. This presumption deserves a little further discussion before returning to the main argument. Talent is usually reflected in an arbitrary alpha-coefficient in the relevant literature, and values used vary hugely, but are commonly around $2/3$. This would mean that the attribution of 46 per cent of earnings to graduate education would instead become an attribution of roughly 31 per cent (that is, $2/3$ of 46 per cent). If this were to be a realistic adjustment, then the talent in question would have to be that 'entrepreneurship' and 'efficiency' which bears on economic output, and not the broader 'intellectual' talent one would normally consider. Furthermore, for an adjustment to be required the 'entrepreneurship' would need to be distributed amongst the population in the same way as the UAI, the educational achievement entry score which determines university entrance! This proposition seems highly implausible and thus, like most authors, in the face of a virtual lack of evidence no 'talent adjustment' is made here. Data from twin studies (discussed in Quiggin, 1999) tend to support this conclusion and those of a recent UK study also argue for at most small adjustments (Greenaway and Haynes, 2000).

Returning to the main argument, if 46 per cent of graduates' earnings is attributable to their university education, then 12.4 per cent (46 per cent of 27 per cent) of total earnings is attributable to graduate education. What proportion of GDP does this correspond to? Here we face the disentanglement issue directly and can find no overpowering grounds for an answer. However, the immediate translation of per cent of earnings into per cent of GDP would be an underestimate if the arguments about 'profitability' of choosing employees has any bearing. Thus, a minimal estimate of 12.4 per cent of GDP would correspond, for the 1998 data discussed above, to roughly \$64 billion output from universities, rather than the BHERT proposition of \$22.1 billion.

While it has to be admitted that such estimates of the proportion of GDP attributable to the maintenance of a graduate labour force are crude, they deserve further and more detailed attention in future research. More attention seems to have been paid to establishing links between GDP growth and advancing educational attainments in societies across the world (reviewed by Dowrick, 2002). For example, there are strong positive correlations between labor-force quality (measured as cognitive ability or as average years of education experienced by the community) and economic growth in many countries,

including Australia (for example Hanushek and Kimko, 2000). Similarly, it has been argued that 80 per cent of US growth is due to continued growth in 'education and research intensity' (Jones, 2001). Dowrick presents convincing arguments that contradictory studies which pool data from both the least and most developed economies should be disregarded (Dowrick, 2002). Thus, universities not only lead to the production of a significant proportion of GDP, but are also a major factor in its continuing growth.

Let us conclude this section with a brief look at the current implications of the argument. Our GDP in 2001 was \$641 billion, and so the university-dependent contribution could easily have exceeded \$79.5 billion (corresponding to 12.4 per cent), which from an annual Commonwealth grant of the order of \$3.9 billion per year is an impressive scale of 'return'. Note that the 'return' in a given year is the result of a state achieved cumulatively from previous years inputs — only in an absolute steady state would the output numbers for a particular year co-align with that year's measured inputs. In a slowly changing system, the synchronous data nevertheless give a rough indication of inputs and returns. Such a massive return as summarised above indicates that universities are one of the best investments any government can make. Yet our government has allowed public spending on higher education as a percentage of GDP to decline by 15 per cent (Nelson and Commonwealth Department of Education Science and Training, 2002). Australia is consequently third-last of all OECD countries in relation to 'Knowledge Investment' as a percentage of GDP.

Desirable Scale and Diversity of a University System

So government investment in universities is crucial and profitable for government — present good economic growth will not be retained without it. Should its investment be enhanced, or can the market truly adjust the scale of the system to a desirable level? It has already been argued that GDP and GDP growth depend on maintaining and enhancing (respectively) the proportion of the population who receive university education, and that this implies that enhanced government investment would be beneficial to society while remaining profitable to government. A sceptic might counter that Australian government returns from its very modest investment in mining are much greater than those from education and, therefore, investment in mining should be increased in preference. However, this argument neglects exactly the issue which is core to the present discussion: that investment in universities permits individuals to gain a personal return at the same time as contributing vast spillovers to every aspect of society. In contrast, public investment in mining would simply permit mining companies to make an enhanced profit, some returned to government as tax, but without major spillovers to society, and certainly none outside the ambience of mining.

The question is, what is the optimal scale of a university system? Presently, only about 20 per cent of the work force are graduates (19 per cent in the 1998-9 ABS data discussed above). The Australian Vice-Chancellors' Committee (2002) advocates targeting a 60 per cent participation rate in higher education by 2020;

New Zealand targets 70 per cent, while the British figure endorsed by the Blair Government is 50 per cent access for 18-30 year olds by the year 2010. In all cases current participation rates are 10 or more percentage points lower. Many politicians accept the desirability of such increases. For example, Estelle Morris (2002), the UK Minister for Education and Skills, has recently written that 'a one percentage point increase in the number of workers with higher education qualifications raises GDP by 0.5 per cent', which corresponds to £UK4 billion. As several authors have pointed out, the issue for government is exactly this, the marginal rate of return:

if the additional expenditure were to enable more students to be educated it is the return from that marginal student that is the issue; if it is higher expenditure per student that is being considered it is the effect of such extra spending on those students, through any improvements in quality that is the issue (Borland *et al.*, 2000).

There are, of course, possible counterarguments to the view that a greater number and proportion of graduates are needed in our workforce. In 1996, for example, 8.1 per cent of graduates were working as clerks, 5.2 per cent in sales, and 2.5 per cent as labourers (Andrews and Wu, 1998), which might suggest that there were more graduates than suitable jobs. However, this may be due to imbalances between graduates in certain areas and jobs in those areas, to preferences, or to the need to subsidise activities such as those in creative arts with income from other jobs. Such counterarguments do no refute the evidence on greater lifetime employability of graduates, nor of the dependence of economic outputs on the development of our graduate community.

What is the desirable balance between public and private funding of universities? It would be that which develops and then sustains an optimal level of university graduates in the community. The market has not yet produced this condition in Australia, since an increase in the proportion of graduates in our work force could be predicted to enhance GDP growth as well as enhance society. The available full-fee paying domestic undergraduate places are modestly subscribed, and price elasticity of demand is clearly higher than in the US (where much higher fees do not significantly decrease demand). It follows that enhanced government investment is probably the only way to increase the number of graduates, and hence their proportion in our work force. Higher expenditure per student is also needed, since Australian class sizes are uncompetitively large and university infrastructure is decaying and becoming uncompetitive internationally.

How could one make such an adjustment to the Australian system? Clearly this needs to be done gradually. A criterion of entry to universities might be that it be available, equitably, to 60 per cent of the population at the formative stage in their lives, so that its benefits have maximal application. Currently, a much smaller proportion of our eligible population is able to access universities, and the number of eligible applicants who could not be accepted in the most recent round has increased by a third. There is huge scope for improvement to our economy,

and society, through increased university investment. Lower 'socio-economic status' and rural groups are currently still a small minority in our university system. Targeting these groups financially and by information campaigns will be necessary to achieve maximal exploitation of our nation's talent as well as being a crucial vehicle towards equity. Complementary analyses consistent with this recommendation have been published (for example, Pincus, 2000; Chapman and Salvage, 2001). The variety of funding models under which this could occur cannot be detailed here.

Our system must balance efforts to contribute to the education of international students with those towards Australians. We gain great social benefit from co-educating Australians with citizens of many other countries, and at the University of Canberra we celebrate the access to difference we gain from the presence of students from more than 80 countries. In March 2001, 15.5 per cent of students in the Australian system were international and government pressures are impelling the number upwards. Further, granted the high quality of our system and its low cost relative to those in the US and UK, a private commercial university system would simply permit an enhanced proportion of international students and such an escalation in charges that Australians and the government financial returns from public education would be relatively disadvantaged. Higher fees would most probably not mean more Australian students, in spite of arguments to the contrary from the Productivity Commission (1997). As noted already, the elasticity of demand in the US is probably due to the very high personal return a graduate gains there from his or her investment in education, whereas the personal returns in Australia are significantly lower. Indeed, of 17 OECD countries that provide graduate data, only Norway has a lower personal return to graduates than Australia. Thus the response of Australians to further raised fees would probably be one of decreased entry.

While diversity of students is desirable, so is flexibility of activity in universities, particularly in relation to the dialogue between teaching and research. It is also critical to retain full ranging internal competition and exchange. University academics are our main source of technical and research innovation (as reflected partly by the 'spillover' effect). Most academics have an intense interest in flexibility of work-style to allow them to invest huge energy (way beyond normal working hours) in teaching, research, enterprise and the community. To prevent the access of academics in any university to any of these activities would be to limit transfer pathways and competition. For example, our university is known for its creative approaches to educating professionals, yet even as a 'post-1987 university', it is still significantly above par in research income per staff FTE. For example, in the DEST Performance Indicators 2000 (covering 1999), we exceeded some universities from the 'older' and the '1960-1986' group. Such diversity of achievement, and the competitive flexibility it implies, is critical for the future health of our system, and hence for its ongoing contribution to societal and economic development.

Conclusion.

Governments such as that of Australia are elected to lead society towards an increasingly equitable, reconciled, and culturally fulfilled condition, at the same time enhancing the economic prosperity of their nations. Granted university education is an important tool towards this, it is bizarre that any responsible government could become a 'minority shareholder' in the process. Yet this is exactly what the Australian government is, contributing only 31 per cent of universities' budgets in the form of the operating grants in 2000. As Dowrick (2002) has said:

... international comparisons suggest that Australia's educational report card should be marked: 'Started well, but slackened off. Substantial room for improvement'.

The arguments above have indicated that the present combination of public investment and market forces has as yet produced a sub-optimal size university system in Australia. Since the level of private investment in university education cannot be mandated, and banks are rarely prepared to offer loans solely on the basis of future human capital, the only option available to government is enhanced public investment. Thus, like other responsible governments, the Australian government needs to promote and evolve the strength and internal continuities of a university system, not only through competition, efficiency and globalisation, but also through enhanced public funding. Since to do so would be profitable both for government and for society and its members, there is no economic impediment to this, granted the political will.

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