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The costs and benefits of student retention for students, institutions and governments

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Abstract

The future of higher education is bound up with questions of costs and benefits. This paper will take an economic perspective on student retention in higher education and will argue that, as students have to contribute more financially to their education, and participation in higher education is broadened to a larger proportion of the age cohort, then student attitudes will be increasingly driven by the likely financial return they will get for their investment. They will consequently also need to take into account the risk to that investment in the form of student attrition rates. Equally as institutions compete for students and funding they will also be forced to look at the financial consequences of their retention practices. Finally governments will also take student retention increasingly seriously when looking at the overall benefits of higher education and will increasingly relate institutional funding to student retention.

The paper will argue that the financial consequences of student dropout are substantial with very large sums of money at stake for students, institutions and governments. The paper will also attempt to show that there are retention activities which can make a 'profit' to the institutions undertaking them. These activities are mostly 'proactive' contact with individual students and will involve actions more usually described as 'student support' rather than teaching.

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Introduction

Higher education is a strange business. No other form of manufacturing would take in tested components (new students) and produce a final product (graduates) with a wastage rate of 20% or more. Or at least if such a business existed then it would very rapidly go bankrupt. Yet universities not only largely ignore such waste but even appear to take a perverse pride in it, maintaining that it indicates high academic standards.

This of course is a very mechanical view of the functions and purposes of higher education. But as the widening participation agendas of many governments mean that increasing numbers of students will join up all around the world at increasing personal cost, the economics of higher education may become more rather than less important in the future. As the costs and benefits of higher education become an increasingly important economic issue for students, institutions and governments,

student retention will correspondingly gather increasing importance as a vital aspect of the economic analysis of higher education.

However when speaking of costs and benefits it is important to observe - as Rumble quoting Franklin notes (2001)—“Whenever someone talks to you about the benefits and costs of a particular project, don’t ask ‘*What* benefits?’ ask ‘*Whose* benefits and *whose* costs?’. There are three economic players in higher education—students (often including their families), institutions, and governments (representing society as a whole). Each of these players will have a different direct interest in student retention. Nevertheless it is the thesis of this paper that their financial interests are all served by increasing student retention and that such increases can be self-funding; and indeed profitable to all parties.

Higher education—the financial interests of students

Students enter higher education for many reasons. For most it is a natural progression from school and does not involve much thought except in the choice of course. For others it may be the result of a more considered decision about the career they want to pursue. Most will probably not see it as primarily a financial decision nor will they undertake a financial assessment of whether the time, energy and above all, money that they are committing to their education is a good investment. Yet ultimately their decisions will be driven in part by whether the income generated by their education will be increased as a result of investing in that education. If it becomes widely believed that expenditure on certain kinds of education has no long term financial reward then those kinds of education may tend to decline in favour of those that do.

Of course at the moment investing in almost any form of higher education has a positive reward. In the UK when the government was arguing the case for the introduction of tuition fees, it used a figure of £400,000 (A\$ 900,000) for the ‘graduate premium’; that is the extra amount a graduate will earn over a lifetime compared with a person of the same age. A later report from the University of Warwick (Walker & Zhu, 2003) suggested a somewhat lower figure of £200,000, a finding which was also supported by Grugulis (2003). But of course a graduate will have invested (or possibly his or her parents or partner will have invested) money to achieve that premium. This investment will be in the form of tuition fees, maintenance costs and, in a negative sense, income forgone during study (in fact for students in full time higher education this latter is actually the biggest investment cost). The ratio of the graduate premium to the initial investment is the return on that investment in higher education.

However the returns on investment can vary very widely and will depend on a number of variables:

- The degree subject studied. Walker and Zhu (2003) suggested that in general subjects with a financial and numerate basis such as business studies and economics have the highest returns together with legal subjects. In general humanities subject are less financially rewarding and in some cases—such as art history for example—may have returns of less than 100%. In other words the cost of such a degree may never be recouped through increased earnings. However there is little evidence as yet that either the class of a degree or a higher degree affects subsequent earnings to any great extent.
- The institution at which the qualification was obtained. It is still the case the degrees earned at some institutions—in the US, Harvard, Yale and so on, in the UK Oxford, Cambridge and a few others—will attract a higher

graduate premium than less prestigious institutions. In commercial terms the ‘resale value’ of such qualifications is higher than those awarded at other institutions. In the UK, tuition fees are currently capped by the Government at £1000 and will go up to £3000 in 2006. In 2010 that cap will be abolished and institutions will be able to charge what they like. Consequently the more prestigious institutions will be able to charge higher fees and probably still maintain a higher return on investment for their graduates.

- Widening participation trends. Most developed countries are attempting to increase the numbers of students participating in higher education in each age cohort. In the UK the Government’s target is that 50% of the age group will have a ‘higher education experience’ by 2010 thus matching the US in participation rates. It is not yet clear whether that target is achievable or what effect it will have on the graduate premium and return on investment. If a simple law of supply and demand continues to hold then it would suggest that the return on investment will decrease as the number of graduates increases. There is some evidence for this view. As noted earlier Walker and Zhu found a figure of £200,000 for the graduate premium compared with the earlier government figure of £400,000. A more recent study from the University of Swansea (Taylor, 2005) found a premium of around £150,000. Coupled with increasing tuition fees it is not entirely fanciful to foresee a situation where the returns on investment in certain circumstances fall towards those available from conventional investment instruments such as stocks and shares. From a purely economic point of view the advice to someone considering higher education in such circumstances would be to put their money into a savings account instead. But we may be a long way from that at the point—a recent OECD report (2004) suggested that even in countries with high participation rates such as Sweden and Australia the graduate premium was holding its value. In addition a report from Australia (Karmel, 1997) suggested that although a number of Australian graduates will spend some time in sub-graduate jobs, graduates are much more likely to be in the work force which presumably will maintain their graduate premium. However a more tangible effect of widening participation is that it will probably decrease student retention with subsequent effects on returns, as we shall see in a moment.
- The type of study. Here the main distinction is between full and part time study. As noted previously the biggest cost to full time students is the loss of earnings experienced whilst studying. If part time students can continue to earn whilst studying then their total costs will be less and their returns correspondingly higher than their full time equivalents despite the longer time they take to qualify (they may of course suffer some extra ‘costs’ due for example to lost opportunities for overtime and loss of leisure time). Using data gathered by Woodley and Simpson (2001), I estimate that for UKOU students (part time and distance) the return on investment is of the order of 2000% compared with 600% for full time students. However there is again a caveat to this finding in what is probably the biggest effect on return on investment—the risk of losing that investment through student dropout.

Higher education—the financial interests for institutions

The economics of student retention for any higher education institution will obviously depend on the financial environment of that institution. That environment will be different, for example, for state-supported institutions than private ones. The main financial flows which relate to student retention will probably be as follows:

- State grants for student-related activities
- Student fee income versus expenditure on students
- Recruitment costs.

Taking these in turn:

- State grants for students. Increasingly governments' grants to institutions are dependent on outcomes in terms of student success. In the UK that is quite explicit—the Higher Education Funding Council for England (HEFCE), the body that distributes government funding to universities in England, links its annual grants to the number of students at an institution who are in 'good standing'—generally taken to mean that number of students who sit (but not necessarily pass) the institution's exams each year. (The formula that is used is actually more complex than that as it includes factors relating to recruitment as well.) The sum involved is of the order of £2500 per full time student in good standing per year. Given current UK levels of dropout Yorke and Longden (2005) estimate the amount 'lost' by UK institutions in government grant each year due to student dropout is of the order of £105m.

The picture in other countries varies. In the US, for example, there are calls from the Republican majority in the Senate for clearer links between government grants and student success. These proposals are likely to be taken forward in some way.

- Student fee income. Clearly student fee income relates very closely to student retention. A student who drops out will pay no more fees beyond a certain point. They will also incur less expenditure by the institution but since most institutional expenditure on students is up front—employment of staff, accommodation and so on—it is unlikely that savings on expenditure will match the loss of fees. Savings on fees will in also depend on institutional policy on refunds of fees for dropout during the year.
- Recruitment costs. This may seem an odd item to put into the economics of student success but there are links insofar as dropped out students have a recruitment cost in the first place and new students have to be recruited in order to keep institutional numbers steady. The proportion of recruitment costs that have to be set against student dropout will obviously vary a great deal from institution to institution.

This is, of course, is a grossly simplified picture but at least it is a start to unravelling the complexities of the finances of student retention. Because the variations between institutions are so great it may be best to illustrate these finances using a case study.

Case study: the finances of student retention—the UK Open University.
The UKOU is not a typical higher education institution in as much as it has an open entry policy (which means that its retention rates are low) and its students study part-time and at a distance (which means that the returns on investment to students are higher—Woodley et al., 2001). But it is one of the few institutions where some attempt at a financial analysis of retention activities has been made (Simpson, 2003).

The financial streams are as follows:

- **Grant income.** The UKOU is a distance learning higher education institution with about 180,000 part time students studying some 200 courses. The HEFCE grant to the UKOU is about £1100 per year for a student sitting the exam for a half full time equivalent course. Dropout in the UKOU is comparatively high since it is an open entry institution—no qualification is needed to enter—and is around 30% per year. Allowing for the fact that many students take courses that are less than half full time the sum ‘lost’ to the university each year is of the order of £20m.
- **Student fee income.** Because of its open entry policy and the recognition that mature students are more likely to be subject to dropout forces beyond their control, the UKOU operates a fairly flexible policy on student fees, offering fee refunds on the basis of the date of dropout. These refunds are designed to be relatively balanced with respect to the University’s expenditure on students so that dropout is also financially neutral as far as the University’s income from tuition fees is concerned.
- **Recruitment costs.** The university is currently required to increase its student numbers each year in order to meet the UK government’s policies on widening participation. Thus not only do new students have to be recruited to meet this target but in effect students have to be recruited to replace the dropped out students. Recruitment costs are high: although the actual budget is confidential it is believed that the University has to spend about £500 per new student recruited each year. Clearly some of that recruitment is to replace students successfully graduating and some is overhead that would be spent anyway. In addition most continuing students are only lost temporarily to the university and return of their own accord. Nevertheless it is estimated that up to 30% of that sum is to replace dropped out students giving an estimated total of £2.6m as the re-recruitment costs of student dropout.

Thus these admittedly crude estimates suggest that the overall costs to the UKOU of student dropout are of the order of £22m per year. This is approximately £120 per registered student or, (assuming the average load of a part time student to be 0.3 of a full time student), about £370 per full time equivalent student.

This is a particular case and any institution will have to make its own calculations of the costs of student dropout in its own situation. For many smaller institutions with selective entry and lower dropout the costs will be substantially lower. However it is unlikely that the costs of dropout are negligible in any institution given the criticality of funding for higher education in all developed countries.

Higher education—the financial interest for governments

The main financial interest for governments will be the increased benefits to society as the result of a better educated workforce. It is clearly very difficult to put a figure on the growth in Gross National Product due to there being more graduates in employment. An estimate made by the (admittedly partisan) consortium of UK universities (Universities UK, 2002) estimates that there is about £35b a year increase in UK GNP due to graduates. Set against the UK government's current investment in higher education of £6b a year this suggests a return on investment of 600% in higher education. Such an estimate involves too many assumptions for any degree of reliability. Nevertheless it is a basic governmental belief that in an era of globalisation where certain kinds of work are being outsourced to countries such as China and India that the developed countries will only continue to hold their lead in income through better training and education and maintaining a technological lead.

Student retention—the financial costs and benefits to students

Higher education is a risky business. Dropout rates in UK full time higher education are around 20%, varying from 1–2% for 'Oxbridge' universities up to 35% for some universities committed to less exclusive student entry policies. These retention rates are nevertheless amongst the highest in the developed world: only Japan has higher retention and that from a more restricted entry cohort. However it means that from an economic point of view a student investing in higher education will be affected not only by the ultimate return on that investment but the possibility of losing their investment altogether through dropping out. Higher education in the UK is in fact a riskier investment than putting money into wildcat oil well drilling where the chance of total loss of investment is now reduced by careful site pre-drilling investigation to only around 10% (Montie, 1999).

This of course assumes that a student who drops out before graduation does not qualify for a graduate premium and loses most if not all of the money they have invested up to that point. We generally have little evidence on the ultimate destinations of dropped out students: clearly some start again losing only their fees and potential earnings for their unsuccessful first year. Equally it is very easy to compile a list of successful dropout students such as Bill Gates, John D. Rockefeller and Mick Jagger for whom withdrawal was clearly not a financial disaster. The loss may also depend on the country in which the student is living; for example the UK Higher Education Policy Institute suggests that there are higher labour market penalties attached to non-completion in the UK than the US (Weko, 2005). Given these various caveats the total amount lost by dropped out students in annual income in the UK may be estimated from the total annual dropout numbers multiplied by the graduate premium—a sum of about £630m.

Risk is also an important factor for institutions because it ultimately will affect a students 'willing to pay' factor—that is the amount that they are willing to invest (financially, emotionally, and in time and energy) in their education. Clearly if some potential students perceive that their investment in a particular programme carries a considerable chance of a zero return then those students may be less likely to enrol for that programme. This is not to say that they will make conscious calculations of risks and returns any more than if they were buying a second hand car or having a baby. But one cannot buck the market in the long run and if

subconscious perceptions grow that a particular higher education is not good value for money for whatever reasons then recruitment to that education is likely to falter. Indeed this process may already be happening—in the February 2005 UK edition of a publication as demotically inclined as the *Reader's Digest* there was an article entitled 'Is university worth it?' which came to the conclusion that it was an increasingly difficult question to answer positively with any confidence.

In addition many dropped out students will be from a widening participation background: that is they will be drawn largely from educationally and therefore economically disadvantaged sections of society. They may therefore have acquired a considerable debt without acquiring the means (the graduate premium) to pay it off. At 20% of the 50% participating in higher education in the UK this will mean that 10% of the entire age cohort will be indebted at various levels depending when they dropped out. This is unlikely to be good for the reputation of higher education and may discourage overall enrolment.

Student retention—the financial costs and benefits to institutions

The financial benefits accruing to a higher education institution as a result of increasing student retention will again depend on the particular funding characteristics for that institution. Again perhaps the best way to illustrate the possibilities is by case studies, this time from two contrasting institutions.

Case study 1. Ohio State University, US.

Mager (2003) used a predictive modelling process to identify new students most at risk of dropping out. His team then undertook proactive phone calls (a process he called 'telecounselling') to those students whilst maintaining a control group of similar students who were not contacted. He estimated that this resulted in an increase in retention of 4% at an overall cost in wages, phone charges and other costs of US\$345,000 which brought in additional tuition revenue of around US\$2.25m. This gave a return on investment of around 650% or a surplus ('profit' was the word used) to the institution of US\$1.9m.

Case study 2. The UK Open University.

A similar exercise was undertaken at the UKOU in the years 2001–3 (Simpson, 2004b). New students vulnerable to withdrawal were identified using a logarithmic regression analysis of previous students' personal characteristics and subsequent withdrawal rates (the main factors in the analysis were previous educational qualifications, sex, and age). Students were listed in reverse order of their 'predicted probability of success' based on the analysis (ranging from 9% to 83% probability of passing) and alternate students were chosen from the list in order to construct a fully equivalent control group.

Over the three years of the study there was an average 4.5% increase in student retention amongst the experimental group over the control group (n=3500). The cost of each contact was of the order of £10 per head. It was estimated that each student retained brought in an income of around £1100 in UK Government grant and a saving of around £200 on re-recruitment costs. Overall the return on investment was calculated to be around 450%. If applied to the UKOU's overall entry of new students of 33,000 each year the annual net 'profit' was estimated to be £1.2m.

These two institutions offer considerable contrasts between a conventional US university with full time students (Ohio State) and a distance UK university with open entry and part time students. Given those contrasts the similarity of the findings are remarkable and suggest perhaps that similar proactive retention practices at other kinds of institution might yield similar results.

Student retention—the financial costs and benefits to government

It is very difficult to assess the economic consequences of increased student retention to governments. For example the figure of £105m quoted earlier (Yorke & Longden) as the cost of dropout to UK institutions is actually the sum the UK government saves through not having to pay out that amount in grant to institutions. Nevertheless Governments have financial interests in retention although these are most likely in the long term. They might be:

- Increased income from increased income taxes. If the graduate premium continues to exist then clearly that premium will be taxed. In the UK for example it will be taxed probably at the higher rate of 40%. If retention were increased from 80% to 100% that would produce an extra 60,000 graduates a year earning a graduate premium of £400,000 over a working life of 40 years the extra tax paid would be £200m a year. But there are so many assumptions in this figure that it is difficult to see it as anything other than a very wild estimate. However it does seem clear that there will be a greater than 100% return on investment in retention in higher education to the government of a direct financial kind from taxation.
- As noted earlier it is claimed that the net benefit of having more graduates in the work force in the UK is of the order of £35b a year. If there was a proportional correlation between this estimate of increased GNP and the number of graduates in the economy then a dropout rate of 20% would suggest that the total cost of student dropout to the UK is of the order of £7b a year. Again the assumptions mean that this figure can only be an order of magnitude estimate but again it seems clear that there is a greater than 100% return.
- Lower government expenditure. It has been suggested (Henderson, 2004) that better-educated people not only make lower demands on society in terms of health and social welfare needs but also contribute more in the form of voluntary services. Whilst this is difficult to quantify there are clear financial gains to government.

Thus governments have clear financial returns from increasing the quantity of better educated people in their countries. How far this extends into an interest in increasing student retention will depend on the overall government subsidy to higher education. In the UK despite the introduction of tuition fees that subsidy will still be of the order of £6b noted previously. If retention could be increased from 80% to 100% then the net cost to the government in increased grants to institutions would be the £105m noted by Yorke and Longden (2004). If (as assumed earlier) the consequent returns to the government were proportional to the increase in graduates in the population that would be 20% of £7b which is £1.4b which suggests a return on investment of 1300%.

Conclusions

The total sums involved in student dropout are thus very large; if the cost of dropout in the UK is taken to be the total cost of student dropout to students,

institutions and government then it is of the order of £7.8b, most of which is due to the possible reduction in GNP due to student dropout.

But equally, even if very approximate, the figures (for the UK) for returns on investment in student retention are impressive with returns of 600% to 2000% to students depending on their qualification and institution; returns of 450% to 650% depending on funding arrangements to institutions; and returns of up to 1300% to the government. Thus there are clear financial benefits and returns on investment to individual students, institutions and governments in increasing student retention, even if quantifying these is a very approximate science.

How far these figures can be replicated in countries other than the UK remains to be researched but given the increasing similarity in funding regimes in the developed world it seems likely that there are similarities in retention costs and benefits. Thus student retention is a multi-million dollar business with a turnover equal to many big corporations. It seems only appropriate therefore that it should start attracting attention as much as Microsoft and Coca-Cola.

Institutional retention activities

If this analysis is an order of magnitude accurate then it follows that for most institutions investing in student retention is a wholly positive policy which is not only self-funding but can make considerable ‘profits’ for such institutions. But what kinds of retention policies are likely to most financially effective?

It is not strictly part of the remit of this paper to suggest in detail which activities are most likely to increase retention cost-effectively. But literature searches (Simpson, 2003) suggest that the most important activities will be proactive rather than reactive—that is the institution will need to initiate active individual contact with its students rather than provide services—however good—which require students to take the initiative. “Self-referral” notes Anderson (2003) “does not promote retention. Students who need help the most are the least likely to seek it”. Seidman (2005) editor of the US Journal of College Student Retention suggests a ‘formula’ to promote retention:

$$\text{Retention} = \text{EId} + (\text{E} + \text{I} + \text{C}) \text{Int}$$

where EId = Early Identification of vulnerable students and (E + I + C)Int = (Early, Intensive and Continuous) Intervention. It has been suggested that the Seidman formula could be amended to

$$\text{Retention} = \text{ACC} + \text{EId} + (\text{E} + \text{I} + \text{C}) \text{Int} + \text{ExS}$$

where ACC = Appropriate Course Choice and ExS = External Support from other students, parents, employers and so on (Simpson, 2004a). It is difficult to cost the individual items in this formula but (for instance) it seems likely that effort put into ensuring students are on the right courses for them is very likely to be cost-effective.

The emphasis here on individual proactive contact with students may seem a curious contribution to the retention debate where argument has often centred on improvements in teaching as the principal way of enhancing retention. But teaching is essentially a reactive activity—to a large extent students choose to participate—and so improvements, whilst immensely desirable in themselves may not have marked effects on retention. Thus the key to retention lies more in effective student

support rather than in improvements to teaching. This may not necessarily be an entirely welcome message in some institutions but as Johnston (2003) notes “The main barriers to increasing student retention are institutional attitudes”. Bringing money into the retention debate may very well be the most effective way of changing those attitudes.

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