

Reflections on Different Pricing Strategies for Engineering Degrees and Potential Impacts on Employability of Graduates

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Structured Abstract

BACKGROUND

The Australian Government subsidises the education fees for domestic undergraduate students in Australian universities. Students pay a contribution of their fees which are currently capped, depending on the program they are studying. Nevertheless, fee deregulation is being debated with strong sentiments on both sides of the argument. Opponents fear that fee deregulation may drive the cost of university degrees beyond the reach of the average Australian student. As a result, it may deter students from attending university. A study in the US, where university fees are deregulated, concluded that price is not a deciding factor for “bright youngsters” but more so for those who are weakly motivated or with limited resources (Cartter, 1967).

PURPOSE

This paper aims to raise awareness of the potential implications of adopting different pricing models on the employability of engineering students.

DESIGN/METHOD

Literature related to different pricing strategies for university education was reviewed. Advantages, disadvantages and potential implications of applying these strategies to price engineering degrees are discussed.

RESULTS

Tuition fees are not a major factor for students who decide to enrol at higher education. However, they are more of an issue for students on the margin. Most Australian universities are close substitutes. As a result they have limited market power. Most universities are likely to adopt a pricing policy based on the marginal cost of educating their students. Universities may face more competition on first year enrolment as private operators and other non-degree offering institutes may offer articulation programs at lower cost.

CONCLUSIONS

If universities pursue a path to lower the marginal cost of educating students via reduction of instructional expenditure, graduate attributes such as communication skills and critical thinking may be negatively affected. As a result, a mismatch between employers demanded skills and graduates outcomes.

KEYWORDS

Graduate employment; University fee deregulation; Engineering degree pricing.

INTRODUCTION

Delivering high quality university education costs a lot of money. Higher education institutes derive income from tuition fees, gifts and endowment, government support, contracts and auxiliary business income. Around the world, different models to fund higher education are adopted with varying degrees of government contribution. In Australia, the government places a cap on university fees. Students are able to defer the payment of their university fees until after their graduation through the Higher Education Contribution Scheme (HECS). Although, deferred fees are index annually by the Consumer Price Index (CPI), effectively, students are borrowing against their potential future income at zero interest rate. However, the Australian government is planning substantial reform to the higher education sector. The proposed changes include the de-regulation of tuition fees, thus allowing universities to set their own tuition fees. The reforms also call for ending the interest free student loans and replacing it with an interest based loans. This proposal sparked an outcry among students and members of the public who fear that these changes will lead to tuition fee hikes combined with higher interest rates on student loans making university education unaffordable. However, the proposed changes also include the introduction of more scholarships to help students offset the cost of university education. Under the proposed changes, universities are required to set aside \$1.00 for every \$5.00 it raises in additional revenue for scholarships. These scholarships can be offered on need basis or other merit grounds.

The proposed changes, however, include elements that may contribute to keeping university education affordable by widening the competition base. For example, the government will open the door to other institutions (non-university) including private institutions to offer degree programs and be eligible to receive funding from the government. It will also widen the base of student loans to encompass students who are enrolled in non-degree programs such as certificate and diploma level offered by colleges and Technical and Further Education (TAFE) institutes. Currently, students who are not attending university are not eligible for HECS.

Higher university tuition fees leading to limited access to university education have been the centre points of the debate against the reforms. According to Cartter (1967) tuition fees are rarely a deciding factor for attending university education for 'brilliant students'. Nevertheless, university tuition fees are more important to those who are weakly motivated, at academic risk or those with limited resources (Cartter, 1967). These findings were mirrored in a more recent study in the UK (Moore, McNeill, & Halliday, 2011). The current HECS system allows students regardless of their financial capability to access an interest free loan, thus arguably providing a safety net to those with limited resources. Although, the proposed scheme will provide greater access to scholarships, the effect of these scholarships on the decision to take up university education may be limited. Jackson (1978) argued that financial aid programs have limited effect on students enrolment.

The demand for a product depends on many parameters such as price, buying power of the targeted consumer group, price of other goods, substitutes and customer preferences (Leslie & Brinkman, 1987). Demand theory dictates that when the price of a good or a service rises, the demand for the good/service will decrease. As such, higher tuition fees should lead to lower enrolment given other factors remains constant. Nevertheless, the price elasticity of the higher education service is reduced due to diminishing economic returns for non-degree holder jobs (Hughes, 2011). Moore et al. (2011) concluded that the Aimhigher group who decide to join higher education and persist are usually motivated by the prospects of better job opportunity. Therefore, enrolment number may not be proportionally affected by the rise in tuition fees.

Student enrolment in an institution is affected by the price charged by competitors (Leslie & Brinkman, 1987). Abundance of higher education institutes who offer similar degrees, such

that students may view as close enough to be substitutes, will reduce the market power of the institutions (Hughes, 2011). Epple, Romano, and Sieg (2006) maintained that colleges of medium and low quality are close substitutes. As a result, the admission policy is driven by the effective marginal cost. Nevertheless, due to the limited market power of higher education institutions, price competition may not be always the case. Gu (2013) concluded that the price an institution charges auto-correlates to other institutes within close proximity leading to a Nash equilibrium. According to Gu (2013), institutes are more likely to price collude rather than compete when there are less than 11 institutes within a short spatial distance. On the other hand, higher quality institutes have greater market power which enables them to charge premium fee above the marginal cost. The quality of educational experience provided to students depends on a number of factors which include peer ability, income of the student body and instructional expenditure (Epple et al., 2006). Therefore, higher revenue generated from charging higher tuition fees allow higher quality institutes to invest in further improving their quality and maintain their lead.

This paper aims to provide an overview of potential impacts of the proposed university fee deregulation and the new higher education student funding model and the consequences of different potential pricing strategies on the employability of engineering graduates from Australian universities.

ANALYSIS AND DISCUSSION

There are 43 universities currently operating in Australia. Forty (40) universities are Australian public universities; two are international universities and one private university. Thirty one (31) of these universities offer engineering degrees. Table 1 shows the geographical distribution of the engineering school in Australia and the corresponding leading institute(s). In this context, a leading institute is a university that belongs to the Group of eight (Go8).

Table 1: Engineering Schools in Australia by city

City	Number of engineering schools	Leading Institute(s)
Regional	9	NA
Melbourne	5	2
Sydney	4	2
Brisbane	3	1
Perth	3	1
Adelaide	3	1
Canberra	2	1
Darwin	1	NA
Hobart	1	NA

As evident from table 1, none of the Australian cities has more than 11 higher education institutes. With exception of Darwin and Hobart, all capital cities have at least one leading institute. This situation may limit the incentive for institutions to compete on the basis of price (Gu, 2013). While regional universities tuition fees may not be affected by neighbouring institutes prices, the fact that these universities are located in regional centres limits their ability to draw students from major population centres due to the abundance of the places offered by equivalent universities in the major Australian cities. This is especially so as none of the regional universities is in the Go8. As a result their market power is limited. Consequently, they are likely to resort to a marginal cost pricing strategy rather than premium fees.

With the exception of Sydney and Melbourne which have two perceived market leaders in each, all other capital cities have one perceived market leader. Accordingly, aside from the market leader, all other engineering schools within each capital city are alleged to be close substitutes (Epple et al., 2006). This situation when combined with the small number of operators within close proximity does not create conducive environment for competing on price. As a result and by extension of Gu (2013) findings, institutes may be able to work out the pricing strategy of their competitors and may have little benefit from changing their own price. Furthermore, due to the limited market power of higher institutes, it is unlikely that an institution engages in price war and set their tuition fees lower than the marginal cost in order to drive competitors out of business.

It may be argued that the competition will not be limited to universities. As the proposed changes widens the base for student subsidy to include private universities, TAFE institutes, diploma students and associate degree students. Such approach may give students more freedom for their choice of where to attend their education and which pathway to take for the completion of their degree. Nevertheless, it is hard to see that new operators will move in to offer traditional engineering degrees as these degrees require high start-up capital and accreditation from the professional body. However, this may create higher activity for colleges offering diploma and associate degrees. Students from these colleges may eventually move to a university to complete their engineering degree. The motivation to students may be lower cost, lower entry requirements, convenience or flexibility. Operators at this level may have lower marginal cost than full fledged universities. Another opportunity may stem from existing institutions that have the basic infrastructure, such as TAFE institutes, to offer specialised engineering degrees, either through partnerships with neighbouring universities or industries. Allowing them to leverage their existing infrastructure and value add to their student experience. In either case, increased number of operators may not necessarily affect the overall enrolment numbers. The competition is more likely to be on converting some of those who are on the margin either due to economic or academic reasons.

REFLECTION ON PRICING STRATEGIES AND THEIR IMPLICATIONS ON GRADUATE EMPLOYABILITY

The above discussion leads us to believe that the price of higher education in most Australian universities will be driven by marginal cost because a) other than the Go8, all other universities may be regarded as close substitutes (Epple et al, 2006) and b) the limited number of universities in close proximity allowing each university to figure out the pricing model of the competition which may lead to Nash equilibrium (Gu, 2013). A few universities may opt to capitalise on their reputation as market leaders and charge premium to provide higher quality education. The potential competition by smaller operators who may aim to take advantage of the widening of the education student funding (loans) to private and non-degree operators, are likely to offer entry and articulation programs which do not require the

high capital cost of setting up a full-fledged engineering degree. As a result, this strategy will lower the marginal cost of educating their students and may be able to offer cheaper options to students who may then complete their degree in a university. If this shall happen, it will place high pressure on enrolment levels for the first year in the engineering degree at universities (medium and lower quality) which in turn may lead some to search for means to lower the marginal cost of educating their students. These measures may include increasing class sizes, reducing tutorial and lab hours and increased reliance on online modules. Epple et al. (2006) maintained that the quality of educational experience depends, among other factors, on the instructional expenditure per student.

The Australian Graduate Outlook Survey listed the top ten selection criteria which employers look for in a graduate in the engineering sector. Interpersonal and communication skills are the most important; critical reasoning and analytical skills was ranked fourth and ability to work in teams was ranked sixth (Lindsay, 2014). Developing these skills requires extensive interaction between students and instructors, provision of opportunity to practice the skills during tutorial or workshop sessions as well as constructive timely feedback. However, reduced instructional funding in order to reduce the marginal cost of education may not provide conducive environment for these skills to be appropriately developed. Consequently, the result may translate into graduates who are not well prepared for the work force.

CONCLUSION

In view of the proposed fee deregulation and higher education reforms by the Australian government, this paper reviewed literature on university degree pricing. Most Australian universities are considered close substitutes. As a result, universities have limited market power which may lead them to adopt pricing policy based on marginal cost of educating students. Due to limited number of institutions in close proximity, universities may not seek to compete with each other on price, a situation that may lead to Nash equilibrium. Non-degree institutes and private operators may take advantage of the proposed changes to student loans by offering articulation programs at lower cost than universities. If universities pursue a path to lower the marginal cost of educating students via reduction of instructional expenditure, graduate attributes such as communication skills and critical thinking may be negatively affected. As a result, a mismatch between employers demanded skills and graduates outcomes.

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