

4 Deregulation of higher education: tuition fee differentiation and selectivity in the US

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4.1 Background

This chapter deals with the issue of deregulation in the higher education sector. To what extent should higher education institutions be free to determine their own policies? Or should the government decide on important issues?¹ We study this question in detail by focussing on two major and interrelated issues (giving an indication of the extent of deregulation), namely the determination of tuition fees and selection of students. Our research questions are:

- What are the main effects of deregulating tuition fee policies?
- What are the main effects of deregulating admission policies?
- How do these policies interact?

Discussions on deregulation often meet with resistance. Opponents argue that deregulation promotes inequality and endangers access. And differentiation in the higher education sector could come at the cost of transparency, so it is argued. On the other hand, there is an increased need for diversity to improve the match between demand and supply. And deregulation will foster competition between suppliers, leading to a better price-quality ratio.

In the US the higher education sector is strongly diversified with completely regulated public schools on one end of the spectrum and fully free private universities on the other end. These differences within the American higher education sector provide an excellent case-study for evaluating the effects of deregulation.

We start in Section 4.2 with a brief discussion of relevant theory on deregulation in general, and on student selection and tuition fee differentiation in particular. Section 4.3 provides some insight into the present situation with respect to admission and tuition fee policies in Australia, Denmark, the Netherlands, the UK, and the US. In Section 4.4 we study tuition fee and admission policies in the US, and present some empirical findings on the connection between tuition fees and academic quality, and between quality and student selection. In Section 4.5 we evaluate the pros and cons of a deregulated higher education system in the US in terms of the effects on educational quality and accessibility.

¹ By deregulation we have in mind the relaxation of existing regulations in the public sector, permitting higher education institutions to determine their own tuition price, to adopt their own admission policy, to design their own curriculum, to develop their own human resource management, and so forth. To put it differently, this form of deregulation devolves control over decisions to the individual institutions. It should be noted that the terminology is also used to refer to privatisation, *e.g.* de-monopolisation, de-nationalisation, and “contracting out” (*cf.* Dill, 1997). But these other forms of deregulation will not be discussed here.

4.2 Deregulation and economic theory

4.2.1 Tuition fee deregulation

In many countries tuition fees, *i.e.* the prices of higher education charged to students, are controlled by the government.² By keeping tuition fees low, the government tries to promote access to higher education. This is the basic argument behind regulated tuition fees. However, the available empirical evidence suggests that the price elasticity of the demand for higher education is low (see Chapter 3). When students' responsiveness to price reductions is weak, the expansion in demand due to regulated tuition fees is limited. In that case, a price cap is a costly instrument to promote accessibility as it merely implies a shift in educational spending from price-insensitive students to the average taxpayer.³

In addition, in light of recent trends and developments it seems inevitable to move towards a more differentiated higher education system when there is consensus that a country needs to have some excellent universities "in-house".⁴ For instance, globalization will extend the higher education market beyond national borders. Students and staff become more and more mobile internationally, and educated people will more often work abroad. Also new technological opportunities such as the advent of the Internet and ICT-developments will have their impact on the higher education market, for instance by facilitating distance learning and the "virtual university". So to prevent the best students and staff from switching to a foreign university, the higher education sector has to offer an attractive alternative. To facilitate quality-differentiation, it could be helpful to allow the higher education institutions to set their own tuition prices.

What will happen when institutions are permitted to set tuition fees themselves? Tuition fees would then more closely reflect actual costs and market conditions. This will promote competition in the higher education sector. Schools try to differentiate themselves by looking for niches in the market, *i.e.* particular price-quality combinations (*cf.* Hoxby, 1997). The match between demand and supply will improve, as institutions become more responsive to students' need and social demand. Competition for students will be fostered (through tuition discounting, for instance), and institutions try to recruit students who fit best with the study program.⁵

Two remarks are in order. First, one may argue that the objective function of higher education institutions is different from those of firms operating in other markets. Whereas

² In most countries tuition fees only cover a fraction of the average direct cost of a higher education program (in the Netherlands about 20%, see Chapter 1).

³ It should be noted that estimated price elasticities may become unreliable for large price changes so that enrollment changes could be larger than predicted from the estimates when cost-covering tuition fees are charged.

⁴ Also the Minister of Education, Mr. Hermans, recognises the importance to provide "Harvard-, Yale- and Princeton-like" training programs (*cf. de Volkskrant*, 14 November 2000).

⁵ There is a growing literature on the effects of competition on (higher) education. An interesting example is Epple and Romano (1998), who demonstrate that competition promotes quality-differentiation. A recent empirical investigation of these effects is available in Epple, Figlio, and Romano (2000).

commercial firms mostly pursue maximisation of profit or shareholders' value, higher education institutions may strive for excellence, or academic reputation. It is therefore unlikely that the pricing policy of the higher education institutions is based on pure profit-maximisation. In addition, because of the customer-input technology in educational production, an institution must take account of the effects of its pricing policy on the student population. Second, the asserted consequences of tuition fee deregulation will only materialise when competition in the higher education market is not hindered. This is our next topic.

4.2.2 Impediments to competition

An opponent could argue that the alleged competition between schools when fee differentiation is permitted will fail to occur. Indeed, a number of factors could impede the competitive process, namely:

- Limited student mobility;
- Information problems;
- Indivisibilities;
- Economies of scale.

First, students often choose to go to a higher education institute in their neighbourhood. Especially the vocational colleges often mainly serve a regional market. And even in a small country like the Netherlands students often choose a university in their region. It remains the question whether this is so because students are home-loving or because they think that higher education institutions do not differ so much. However, travelling costs are limited, and the observation that Dutch students are prepared to move when institutions differentiate themselves⁶ supports the claim that student mobility is low because differentiation is limited. This low mobility could be problematic, as it turns the higher education institutions into local monopolies. In a fix-price system, this could lead to a reduction in educational quality – for instance when the academic staff wants to have an easy life. In a flex-price model it could lead to lower quality and / or higher tuition fees. So in both systems student immobility could worsen the price-quality ratio. And since quality decreases are more difficult to observe than tuition fee increases, there is a real danger of falling educational standards in an environment with limited student mobility.⁷ Hoxby (1997) studies the historical development of competition in the US higher education market in light of this problem of limited student mobility. The large distances

⁶ Two examples show that a substantial fraction of students comes from all over the country if institutions differentiate themselves. University Maastricht attracts lots of students from other regions because of its specific didactic system, and Wageningen University provides unique programs in the field of agriculture.

⁷ A related interesting issue is whether ICT developments and distance-learning are going to reduce the importance of location. In the limit, spatial factors turn irrelevant (“the death of distance”) so that the market for higher education becomes a global one. As a consequence, price-quality ratios will improve because competition for students becomes more intense.

and limited transport facilities severely hampered students' freedom of movement for a long time. Technological developments in the transport- and telecommunication-sector (resulting in a reduction of travelling-expenses and telephone-tariffs) helped to foster student mobility, and thereby competition in the higher education sector. In our reading, the analysis in Hoxby predicts that competition in the higher education system is going to intensify in the near future, in light of the above-mentioned trends of globalization and the advent of the Internet.

Second, information problems hamper the competition process in a free market. For instance, students and prospective students often have limited information on the quality of the various education programs. When educational quality is difficult to observe, higher education institutes could exploit their information advantage at their own benefit. This will result in similar problems as mentioned above: lower quality in a fix-price setting; lower quality and / or higher price in a flex-price setting. Leslie and Johnson (1974) stress the importance of these information problems in their sceptical review on competition in the higher education industry. Another information problem is that one cannot completely know the value of an education program in advance. Education is to some extent an experience good. This implies that established incumbent schools have an advantage in the market. As a consequence, reputation effects could erect entry barriers for (potential) newcomers and thereby frustrate the competitive process.⁸ Again, the incumbent institutions might be tempted to raise the price-quality ratio.

Third, higher education programs are to a large extent indivisible. A college entry decision is in fact a yes or no decision. It is not a serious option to attend two years of a three year program and then go to the labour market. And it is often difficult to attend part of a program at one college and the remainder at another. This implies that students are "locked-in" at their higher education institution. So once enrolled, student mobility is sharply reduced. To put it differently, competition for more advanced students in the higher education market is almost entirely ruled out. This could lead to a deterioration of the price-quality ratio, and a mismatch between student demand and the institution's specialisation pattern.⁹

Finally, educational production is sometimes characterised by economies of scale. Natural sciences, engineering and medical studies require expensive equipment and laboratories. Such investments can only be made when the institute is large enough. This implies that large schools have a cost advantage over small ones, and that there are substantial entry barriers for newcomers in the market for such costly study programs. In case of such a "natural" monopoly,

⁸ An interesting observation in markets with experience goods is that entry of new firms in the market may actually induce incumbents to *increase* their price. The intuition is that the new firms attract the price sensitive customers while the incumbents keep the price insensitive ones. This segmentation of the market enables the established firms to raise their price as they keep the loyal customers. An example of this effect can be found in the market for pharmaceuticals (*cf.* Frank and Salkever, 1991).

⁹ The intended introduction of a two-cycle Bachelor-Master system in the higher education sector in the wake of the Bologna-declaration will help to intensify competition for more advanced students in the Netherlands.

the government could impose price regulations to prevent the abuse of market power. To put it differently, differences in the cost structure across subject areas could give rise to differences in the extent of price regulation.

4.2.3 Student selection

For some commodities, customers may have a double role in that they are involved in both the production and the consumption process (*cf.* Chapter 2). Think of a trendy bar. Most people do not go to such a bar because they are thirsty, but because they want to meet and talk to others. In fact, social interaction is probably the bar's main product. And value-added is determined by the number and type of visitors. In case of queueing, the porters often give priority to those customers whose presence will be appreciated by the other guests (beautiful girls do not have to wait in the cold and do not have to pay an entrance fee). By doing so, the porters correct for the external effects associated with the appearance of these popular visitors.

This may seem a peculiar example, but comparable principles are at work in the higher education sector. We can characterise the educational process by a *customer-input technology* in the sense that students are both consumers and producers of education. Social contacts among students and communication between students and staff are important ingredients of the educational process. This implies that the quality of a training program partly depends on the quality of the students (*cf.* Rothschild and White, 1995).

The notion of a customer-input technology has one major implication: it provides a justification for selection of students. Universities can reach a higher quality-level by selecting the best mix of students. It thereby also gives a rationale for price discrimination among students, such as merit-based student aid. According to this principle, the best students should pay lower net tuition fees in order to correct for the positive spillovers they generate. These customer-input arguments are not purely academic: both selection of students and merit-based aid are actually used in the US as well as in some other countries, and the notion of customer-input technology is often mentioned in this context.

4.2.4 Problems with student selection

Two problems may arise with selection of students:

- Errors in the selection process;
- Matching versus mixing of students.

First, selecting students inevitably involves making mistakes. Sorting out good students is difficult, and there is always the possibility that suitable students fail the admission test and unsuitable students pass the test. (By "suitable" we mean students who would have completed their studies if they were enrolled and by "unsuitable" students we mean students who do not

complete and drop-out.) We refer to these errors as type I and type II errors.¹⁰ While these errors in the selection procedure are problematic, it should be realised that open admission also leads to mistakes as some fraction of the student body will drop out. So open admission involves type II errors. An ultimate assessment of the problems with student selection should therefore be based on a comparison with the mistakes connected with open admission. We are not aware of examples of such type of cost-benefit analysis (CBA) in the literature; a first attempt of a CBA to explore the desirability of student selection in the Dutch context is presented in Canton (2001b). Though student selection can also be organised in a centralised system, the higher education institutions probably have more information on observed student characteristics than the government, so that delegation of the selection process to the individual institutions would result in a better allocation of talent.

Second, there is a debate on matching versus mixing of students. Briefly put, student selection is aimed at matching students while open admission leads to mixed classes. Whereas the notion of customer-input technology argues for matching, other stories would favour a mixing-strategy. For example, mixed classes could be the optimal strategy (from a social point of view at least) when personal talent is not some fixed exogenous endowment but something that could develop in an appropriate environment through social interaction with good students. In that case, matching students according to entrance criteria could imply some loss in human potential. On the other hand, effective education time in the classroom is reduced when bad students ask more of a teacher's time. As a consequence, some mixture of "good" and "bad" students would be the optimal strategy. This is the point made in Lazear (1999).

A final comment is in order. While higher education institutions take account of the consequences of errors in the selection process and internalise spillovers connected with the process of educational production, the benefits from human capital spillovers to society at large might be undervalued. This could imply that the institutions calculate a positive net gain from selective admission, whereas a social CBA would turn out to be negative.

4.2.5 Relationship between tuition fee and admission policies

Decisions about the extent of government influence on the determination of tuition fees impact on optimal admission strategies and vice versa. When tuition fees are centrally determined and uniform across subject areas, student selection may only be partially successful as a vehicle for differentiation. Schools with international ambitions are limited in their freedom to attract additional financial resources as they are unable to charge higher tuition fees, so that they may experience difficulties in recruiting superstars. And by superstars we not only refer to academic

¹⁰ We define a type I error as the rejection of a student who should have been admitted, and a type II error as the admittance of a student who should have been rejected.

staff, but also to students. We have seen that the observation of a customer-input technology in educational production calls for a policy of price discrimination between students. In particular, universities may want to give discounts to students who raise the quality-level of an education program. And when universities are limited in their possibilities to do so, they may be unable to attract the best students. Likewise, higher education institutes who basically serve a local market and who probably have a less expensive production process cannot attract additional students by lowering tuition fees in a regulated environment. So also for this type of school the fixed price policy may have adverse effects on the institution's admission strategy.

4.3 Deregulation in international perspective

In order to illustrate the substantial international differences, let us briefly sketch the actual situation with respect to tuition fee policies and selection procedures in Australia, Denmark, the Netherlands, the UK and the US.

Table 4.1 Tuition fee policies and selection procedures: international comparison

	Tuition fees	Selection of students
Australia	differentiated, centralised	yes
Denmark	zero	yes
the Netherlands	uniform tariff	limited
United Kingdom	uniform tariff	yes
United States	differentiated, decentralised*	yes*

* Some public schools (community colleges) do not charge tuition fees and have an open admission policy.

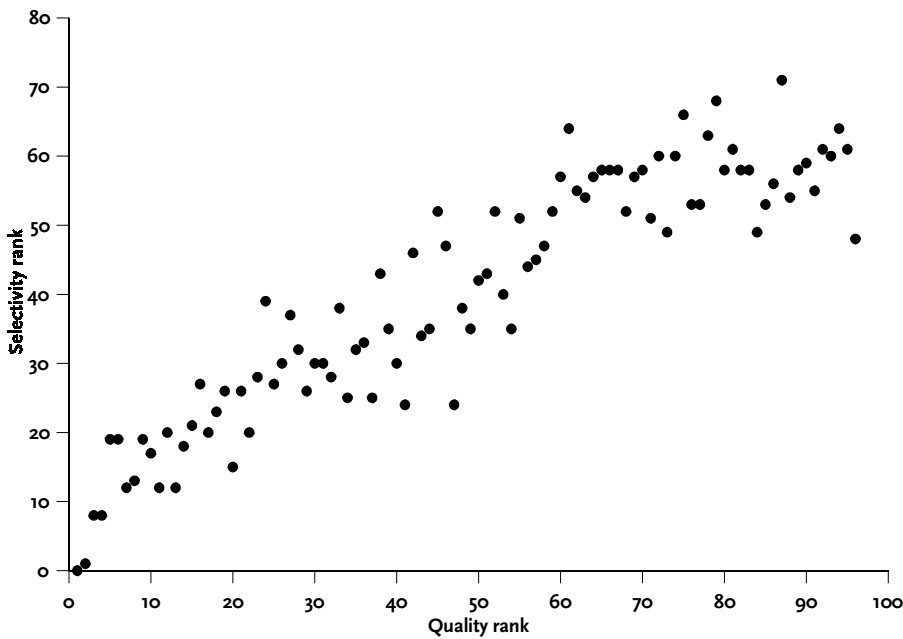
Table 4.1 presents a summary. In *Australia*, tuition fees are centrally determined but vary across subject areas since 1997 (see Chapter 3). In deciding about the tariff group in which a discipline is classified, the government both looks at the costs of the training program and at the (expected) future earnings for the students in that program. The total number of publicly funded study places is centrally determined by the government. As there are more applications than study places, students are selected on the basis of their results at secondary school. About 5% of the applicants was rejected in 1998. As of 1998, rejected students can buy a study place at a cost-covering tuition price. Universities are permitted to levy cost-covering fees for up to 25% of the Australian students they admit, under the condition that their quota of HECS-supported students are filled. In addition, universities are statutorily required to charge cost-covering fees to international students. So in the Australian system there is differentiation by subject area, between home and foreign students and between home students who are eligible for HECS-funded places and home students who are admitted on a cost-covering basis (*cf.* Greenaway and Haynes, 2000).

In *Denmark*, no tuition fees are charged. Danish higher education institutions are, however, permitted to select their students. So admission policies are deregulated. As we will see in Chapter 5, some institutions adopt a rather selective admission regime while others accept all applicants. Information on quality-differences across universities is not readily available to students and their parents. This reduces transparency on the higher education market. In addition, student mobility is limited (students do not have obvious reasons to prefer one university over another so that they just might go to the nearest university), and competition for students is hampered.

In *the Netherlands*, tuition fees for regular full-time students are centrally determined by the government. But universities can freely determine tuition fees for full-time students not eligible for student support, part-time students, and external candidates. The institutions do make use of this discretionary freedom (see Chapter 1). Also admission criteria are centrally determined for most subject areas in the Netherlands. Only students applying for a slot at an art academy or Ph.D.-program have to go through a selection procedure. In addition, some studies like medicine or dentistry have restricted admission, based on a weighted lottery where the chance depends on average grade points at secondary school.

In the *United Kingdom* tuition fees are uniform, and centrally determined by the government for regular full-time EU undergraduate students. However, universities are free to set their own prices for part-time students and for non-EU overseas students. Universities have the freedom to set their own selection criteria. These criteria can even differ across various disciplines within the same university, and selection is in general rather rigorous. It is interesting to look at the relationship between student selectivity and quality of the university. *The Times* presents a ranking of 96 universities. Data are collected on teaching assessments, research, entry standards, staff-student ratios, and library and computer spending. This data-set can be used to study the relationship between selectivity and ranking. The top-5 of the UK is (1) Cambridge, (2) Oxford, (3) Imperial College of Science, Technology and Medicine, (4) London School of Economics and Political Science, and (5) University College London. Figure 4.1 shows the relationship between selectivity and rank. The figure clearly shows that the best universities adopt the most restrictive admission policies.

The *United States* have the most liberal higher education system in terms of tuition fee deregulation and admission policies. The next section describes the US-system in more detail.

Figure 4.1 Relationship between selectivity and quality for some British universities

Source: *The Good University Guide*, www.the-times.co.uk/news/pages/tim/98/05/15/timguggugo1001.html?999.

4.4 Tuition fee and admission policies in the US

4.4.1 Tuition fee policies

In the US, not only private schools can set their own tuition fees, but also public schools often have some freedom in their pricing policies (except the two-year community colleges who are not allowed to charge any fees). This decentralised character of tuition price policies is rather exceptional. We will explore levels and variety of prices charged to students, and we shall try to detect determinants of tuition fees. In particular, we look at educational quality as a potential explanation for tuition fee differentiation between higher education institutions. To that end, we collected data on research universities¹¹ available from the National Science Foundation.¹²

Because of missing data, two universities are left out (Rutgers the State University of NJ New Brunswick and University of California-Irvine). We thus have data on 102 universities, from which 62 are public and 40 private. We selected a number of variables to get a global picture on the differences between public and private institutes.

¹¹ Notice that by focussing on research universities, other parts of the US higher education system (like colleges and non-research universities) are not included in the analysis.

¹² On the Internet at caspar.nsf.gov/webcaspar.www.

Table 4.2 Some facts of public and private universities in the US

	Public universities	Private universities	Total
Revenues from tuition fees (% of total revenues)	18 (8)	29 (16)	22 (13)
Endowment income (% of total revenues)	1 (1)	7 (8)	3 (6)
Tenured staff (%)	69 (7)	63 (13)	67 (10)
Salaries (\$)	58,629 (6,257)	68,856 (11,247)	62,639 (9,916)
Quality academic personnel (1.24-4.70)	2.88 (0.67)	3.36 (0.77)	3.07 (0.75)
Tuition fees (\$) undergraduate / in-state	3,359 (1,085)	18,082 (5,645)	9,133 (8,055)
undergraduate / out-of-state	9,510 (2,521)	18,114 (5,561)	12,884 (5,800)
graduate / in-state	3,896 (1,491)	16,914 (5,724)	9,001 (7,389)
graduate / out-of-state	9,587 (2,665)	16,951 (5,637)	12,475 (5,450)

Note: Revenues from tuition fees are listed as a fraction of total revenues (adjusted total current funds revenues, excluding Pell grants (Pell grants are grants for students provided by the government)). Endowment income is expressed as a fraction of total revenues. Average numbers are reported above standard deviations. The sample includes 62 public and 40 private universities. Data on quality academic personnel apply to 1993, the other data to 1996.

Source: NSF, data available from [Webcaspar \(caspar.nsf.gov/webcaspar\)](http://caspar.nsf.gov/webcaspar).

Table 4.2 summarises the data (mean values are above standard deviations). The table shows that:

- Public universities receive 18% of their income from tuition fees, while this is 29% for private institutes. With 74% of its revenues from tuition fees, Northeastern University is on top;
- Endowment income is negligible for the group of public universities, but amounts to 7% for private universities. The “wealthiest” institute is Rice University, with 40% of its revenues coming from endowments;
- The fraction of tenured academic staff is 63% for private and 69% for public universities;
- Annual salaries for academic personnel are on average about \$10,000 higher at private universities, but also vary stronger in the private sector (the standard deviation of salary payments is almost twice as high for private universities compared to public universities). The real money-makers are to be found at California Institute of Technology, earning an annual salary of \$112,000 (on average);

- With an average score of 3.36, private universities employ slightly better personnel than public universities (the quality-indicator ranges from 1.24 to 4.70). Only one public university is listed in the top-10, namely University of California-Berkeley.¹³

With regard to tuition fees, four categories of students are distinguished: undergraduate versus graduate students and in-state versus out-of-state students. The table shows that:

- On average, tuition fees are substantially higher at private universities;
- The program level (undergraduate versus graduate) is not an important determinant of tuition fees;
- Public universities strongly differentiate between in-state and out-of-state students (since a substantial part of the university budget is paid out of state tax money).

With regard to measurement of quality, two additional comments are in order. First, quality not only refers to academic quality, but may also relate to “fit for purpose”. While this dimension is ignored in the U.S. News quality-indicator, some schools publish job market prospects of their graduates (*e.g.* starting salaries). Good job market prospects are an indication that the training program fits market demand. Second, some competition between institutions who measure quality or a system of multiple accreditation could improve the quality-ranking methodology.

¹³ The top-10 in terms of quality of academic staff is: (1) Massachusetts Institute of Technology, (2) University of California-Berkeley, (3) Harvard University, (4) California Institute of Technology, (5) Stanford University, (6) University of Chicago, (7) Princeton University, (8) Yale University, (9) Cornell University and (10) Columbia University in the City of New York.

How to measure quality?

In this Box we describe how the U.S. News quality-indicator is calculated (following Graham and Morse, 1999). The quality-indicator is a weighted sum of the following seven categories (a recent discussion of these weights is presented in Webster (2001)):

- Academic reputation. To quantify a school's reputation, the presidents, provosts, and deans of admission are asked to rate peer schools' academic programs on a scale from 1 (marginal) to 5 (distinguished).
- Retention of students. 80 percent of the retention score is determined by the six-year graduation rate and 20 percent is determined by its freshman retention rate.
- Faculty resources. Five factors are used to assess a school's commitment to superb instruction:
 - class size, the proportion of classes with fewer than 20 students and of classes with more than 50 students (40%);
 - faculty salary (35%);
 - the proportion of professors with the highest degree in their field (15%);
 - the student-faculty ratio (5%);
 - the proportion of full-time faculty (5%).
- Student selectivity. Four factors are used to quantify student selectivity:
 - test scores of enrollees on the SAT- or ACT-test* (40%);
 - the proportion of enrolled freshmen who graduated in the top 10 percent of their high school classes for the national institutions and the top 25 percent for the regional schools (35%);
 - the ratio of students admitted to applicants (15%);
 - the ratio of students who enroll to those admitted (10%).
- Financial resources. This is measured by average spending per student on instruction, research, and education-related services.
- Alumni giving. The percentage of alumni who gave to their school is taken as an indicator of alumni satisfaction.
- Graduation rate performance. For year x , this is the difference between a school's six-year graduation rate for the class that entered in year $x-6$ and the predicted rate for the class (after controlling for spending and student aptitude). The idea here is that the college is enhancing achievement if the actual graduation rate is higher than the predicted rate.

* For more information on these admission tests, visit www.sat.org and www.act.org.

To determine the relationship between quality (see the Box for an explanation of the ranking methodology) and tuition fees, we carry out some regressions. Table 4.3 reports on regression analysis on undergraduate tuition fees. In model (1) and (2) the dependent variable is tuition fees for in-state students, while in (3) and (4) we look at tuition fees for out-of-state students. Comparison of model (1) and (2) shows that tuition fees charged to in-state students are higher and increase faster with quality at private institutions. But also the better public universities charge higher tuition fees to their students. From (3) and (4) it can be seen that public universities still charge lower fees to out-of-state students compared with the private institutions, but the coefficient on quality is now in the same order of magnitude for both types of

institutions: an increase of one standard deviation of educational quality is associated with a \$1,685 tuition fee increase ($0.68 \cdot 2.478 \cdot 1000$) at public universities and \$1,949 at private universities ($0.78 \cdot 2.499 \cdot 1000$).

Table 4.4 presents results from an analysis along the same lines for graduate students. A similar picture emerges here, though private institutions seem to react to quality-increases even stronger than in case of undergraduate training.

	(1)	(2)	(3)	(4)
	In-state / Public	In-state / Private	Out-of-state / Public	Out-of-state / Private
Constant	1.377 [0.556]	9.479 [3.868]	2.384 [1.074]	9.716 [3.815]
Quality	0.689 [0.188]	2.560 [1.122]	2.478 [0.364]	2.499 [1.107]
R ²	0.18	0.12	0.44	0.12

Note: Standard-errors are between brackets.
Source: See Table 4.2.

	(5)	(6)	(7)	(8)
	In-state / Public	In-state / Private	Out-of-state / Public	Out-of-state / Private
Constant	1.339 [0.775]	5.500 [3.726]	2.267 [1.159]	5.779 [3.675]
Quality	0.889 [0.262]	3.396 [1.081]	2.546 [0.393]	3.324 [1.066]
R ²	0.16	0.21	0.41	0.20

Note: Standard-errors are between brackets.
Source: See Table 4.2.

It is important to note that net tuition prices could be substantially lower than gross tuition fees due to “tuition discounting”: colleges and universities have embraced the strategic use of aid to students, and aid is shifting from need-based to merit-based. More and more institutions pursue aggressive admission strategies to recruit the students they want to have. Many institutions have paid a steep price in terms of sharply reduced net tuition revenues, leaving them with less money for instruction. Such cut-throat competition could adversely affect the higher education system.

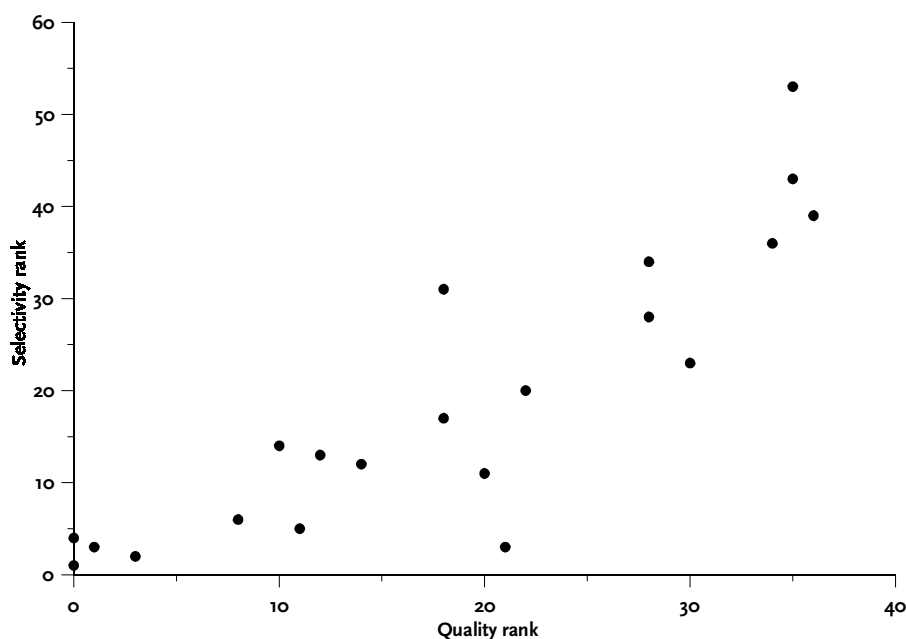
Two final comments about quality-stratification are in order. First, a disadvantage of the ordinal quality-ranking methodology is that it provides no insight into absolute quality-levels and absolute quality-differences between institutions. And some people claim that quality-stratification has led to polarisation in the US higher education system. While we recognise the possibility that good universities get better at the cost of the medium- and lower-ranked institutions, this view is not supported by the facts (*cf.* Duffy and Goldberg, 1998). Second, and finally, it is sometimes claimed that quality-differentiation in education could sustain income differentials across communities. In several states of the US, primary and secondary public schools are largely paid from local property taxes. As a result, there is a large disparity of educational spending per student across districts. Inequity in educational opportunities at primary and secondary public schools could be an important factor behind social polarisation. The interested reader is referred to Bénabou (1996), Fernandez and Rogerson (1996), and Durlauf (1996). However, it is far less likely that quality-differentiation within higher education helps to sustain socioeconomic segregation: students can freely choose across schools, institutions often have need-based student aid programs, and there are substantial returns to higher education (probably also for graduates from lower-ranked institutions).

4.4.2 Admission policies

Let us now turn to the question of student selectivity. Again, a distinction should be made between public and private universities. Private universities can always adopt their own admission criteria, but in case of public institutions the responsible government (state or local government) may control the school's admission strategy (at least to some extent). This role of government differs widely across states: from hardly any to fairly detailed regulation. For the admission to a Bachelor's program universities mostly look at high school scores. In about 20 out of the 50 states a compulsory high school exam guarantees a certain standardisation to make high school scores comparable. In some cases the university takes an additional admission test, *e.g.* the Scholastic Aptitude Test (SAT). Selectivity is very strong at the top: prestigious institutions select the best students from a large pool of applicants (from all over the world). At the bottom end there is no selection at all: community colleges accept all applicants.

This widely diversified character of the American higher education system provides a good example to study the relationship between university ranking and selectivity. In Figure 4.2 we plot selectivity against quality-ranking (*cf.* the Box) for 21 higher education institutes. The figure clearly shows a relationship between selectivity and ranking. Down-left are the best and most selective schools (among them California Institute of Technology and Stanford University). We hasten to add that the relationship in this figure does not reveal any direction of causality: we cannot claim that a better ranking enables universities to be more selective or that more selective universities climb up in rank. Probably both effects play a role.

Figure 4.2 Relationship between selectivity and quality for some American universities



Source: Webcaspar (caspar.nsf.gov/webcaspar) and U.S. News (www.usnews.com/usnews/edu/college/corank.htm).

So the above “eyeball econometrics” approach points at a relationship between educational quality and admission policy. A recent – and more elaborate – study on this connection is provided in Monks and Ehrenberg (1999). They investigate how college rankings influence selection-policy for a number of private universities in the US, finding that a lower ranking:

- Induces universities to accept a larger proportion of the applicants (a one unit drop in ranking leads to a 0.4%-point increase of the acceptance-rate);
- Leads to a reduction in the fraction of accepted students that register for the program (a one unit drop in ranking leads to a 0.17%-point decrease of the fraction of accepted students that registers);
- Decreases the average scholastic aptitude of student inflow (a one unit drop in ranking reduces the average SAT-score by 2.8 points – with an average SAT-score of college students of 1001 in 1991 (*cf.* Hoxby, 1997)).

Another important issue is whether selection helps to improve completion rates. An interesting study dealing with this issue is Light and Strayer (2000). They investigate whether the match between student ability and college quality affects college graduation rates in the US. A number of interesting findings emerge from their analysis. First, students at the bottom end of the observed ability distribution hurt their graduation chances by attending high-quality schools.

Second, the chance of completion first rises with college quality and then falls. So low-quality colleges provide the best chance of graduation for low-ability students, but this is not the case for students with measured ability in the top three quartiles. By-and-large, Light and Strayer conclude that the match between student ability and college quality has a significant effect on college completion.

4.5 Evaluation

In this chapter we looked at the issue of deregulation in higher education by discussing tuition fee and admission policies in a number of countries. By-and-large, government regulation in the higher education sector is still rather strong. In many countries tuition price is centrally determined (like in Australia, the Netherlands and the UK) or zero (Denmark and the other Scandinavian countries). Also admission policies vary substantially. Some countries employ national admission criteria (the Netherlands), others permit the institutions a large autonomy (UK).

The US higher education sector is a good example of a flexible system with regard to tuition price and admission policies. This has led to substantial price- and quality-differentials across higher education institutions. Universities focus on a particular segment of the market, and compete for students within this segment. Economic theory predicts that this would lead to improvements in the average quality and in price-quality ratios, and this claim seems to be supported by the data (*cf.* the empirical analysis in Hoxby, 1997).

We also saw that flexibility may come at a price. Evidence from the US showed that the better universities charge higher tuition fees. This may hamper accessibility for economically disadvantaged students. On the other hand, to maintain or improve their academic reputation, high-quality universities are forced to attract good students (independent of their socio-economic background). For that reason, US universities sometimes employ a high tuition – high aid strategy. Students pay a high price, but poorer students receive financial support that (at least) partly compensates for these higher costs. Put differently, rich students cross-subsidise poor students. If universities do not adopt such a high tuition – high aid policy, they may not be able to maintain their academic quality.

In addition, deregulation will only deliver the desired effects on price-quality ratios when the higher education market is competitive and transparent. Students and their parents must have access to reliable information on study programs, quality, tuition fees and future income prospects to make the correct choices. Such information systems are available in the US and the UK, but may need some further development in the Netherlands and Denmark.

As we have seen, tuition policies and admission policies are interrelated. These issues cannot be studied independently. From the international comparison provided in this chapter, we consider three possible combinations:¹⁴

- Regulated tuition fees and admission policies
This system has a tendency to focus on the common denominator. The use of average admission criteria implies that the average quality of the student population will be comparable across higher education institutions. Since tuition fees are centrally determined, also the price mechanism cannot help to serve as an allocation device. Proponents of this system argue that it is equitable, since the regulated system would secure broad accessibility to higher education. Also, in combination with peer review of educational quality the system may provide a high average quality of higher education. Opponents criticise such a system for its homogenising character. The system frustrates the competition process, as universities cannot compete on price and can only partly compete on quality. The latter outcome is due to the fact that admission criteria are uniform, so that students are mixed rather than matched according to ability. This policy of uniform entry criteria could imply a waste in human potential, as the variety in student ability within the classroom is too large.
- Regulated tuition fees, deregulated admission policies
This system acknowledges heterogeneity in the population with respect to ability as it allows universities to differentiate on enrollment criteria. This will induce quality-differentiation across universities. However, since tuition price cannot be set by the higher education institute, universities are limited in the amount of money they can collect from tuition payments. This financial constraint could limit the scope for further quality improvements.
- Deregulated tuition fees and admission policies
This system is the most flexible as it allows schools to set their own tuition fees and to follow their own admission strategy. Each university will look for a niche in the market with a particular quality-price combination. The resulting differentiation leads to a better match of students. So while cross-university differences in quality will increase, each classroom will be populated by a more homogeneous group of students. Two problems may arise. First, price will tend to increase in quality. There is thus a potential danger that good but economically disadvantaged students cannot afford to study at the best schools. On the other hand, universities could offer need-based student support for instance through a high tuition – high aid strategy with cross-subsidisation of poor students. Such within-university differentiation in net tuition price is necessary to preserve academic quality. And in combination with the provision of a loan-scheme with income-contingent repayment (*cf.* Chapter 3), higher private contributions to the cost of higher education do not have to affect accessibility. Second, the

¹⁴ We are not aware of an example of the fourth possibility, *i.e.* where tuition policy is decentralised but admission criteria are uniform.

question whether mixing or matching students increases educational production is unsettled yet. Economists should talk to education experts and teachers, and learn from their experience.

To conclude, the US system is rather different from the system in the Netherlands. The US experience seems to show that tuition price differentiation and student selection – as the natural outcomes of increased competition between higher education institutions – promote both average quality and price-quality ratios. However, lack of internationally comparable data hampers a direct translation of the US evidence to other countries. In Chapter 8 we will discuss the issue of deregulation in the context of the Dutch higher education sector.