Stigler, George J.

Working Paper

The Future of Higher Education: An Economic Perspective

Working Paper, No. 56

Provided in Cooperation with:
George J. Stigler Center for the Study of the Economy and the State, The University of Chicago Booth School of Business

Suggested Citation: Stigler, George J. (1989) : The Future of Higher Education: An Economic Perspective, Working Paper, No. 56, The University of Chicago, Center for the Study of the Economy and the State, Chicago, IL

This Version is available at:
https://hdl.handle.net/10419/262458

THE FUTURE OF HIGHER EDUCATION:

AN ECONOMIC PERSPECTIVE

George J. Stigler

Working Paper No. 56

May 1989

Center for the Study of the Economy and the State
The University of Chicago
1101 East 58th Street
Chicago, Illinois 60637

The Future of Higher Education: An Economic Perspective*

George J. Stigler

May 16, 1989

You and I are members of a large and prosperous industry called higher education. That industry is charged with bringing its students abreast of the society's accumulated knowledge, and it is charged with adding to that stock of knowledge. The industry is widely acclaimed for its success in performing these duties. The air is full of laments over the deficiencies of elementary and secondary education in America, but there is no serious question that the premier universities of America are the premier universities of the world. That flattering judgment is confirmed by the flood of foreign students seeking to study in our universities.

I propose to look through the eyes of an economist at the structure and trends of higher education and its probable development in the future. I need hardly persuade you how important higher education is to the future of the nation -- to its economic and political and cultural prosperity. That message is incessantly urged by the industry itself. Indeed, I am not at all confident that higher education is so successful in discharging its fundamental tasks of teaching and research as it is in the fine art of extracting money from students and their parents, private donors and governments.

---

*This lecture was given at Clemson University as part of its Centennial Program, on Monday, April 10, 1989.

Although my perspective will be that of an economist, I shall not ignore the large role that governments seek to play in higher education. Almost all higher education in western Europe is and long has been financed and directed by government, whereas higher education in the industrial Asian nations is mostly private. In the middle of the nineteenth century most higher education in America was still private, although state universities and soon land grant colleges were beginning to appear. Hence the era of the dominant role of private colleges and universities in America was highly exceptional by Western standards. I attribute this era to the fact that most institutions of higher education in America were then affiliated with churches. The strong tradition of separation of church and state inhibited the public financing of private colleges. The inhibition, it must be noted, was on the governments, not on the schools: shortly after Harvard and Yale were founded, for example, each was begging its state legislature for financial help. In fact, until the recent turmoil over investments in South Africa, colleges and universities have seldom been squeamish over the moral history of the dollars they accepted.

1. The Size of the Industry

In discussing trends in higher education, I shall seldom look back before 1900, and I shall attempt to peer into the future no farther than, say, 2050. One measure of the size of the industry is the number of its customers, in this context students. In 1900 the students numbered 200,000, or 2 percent of the population aged 18-24. Today they number 12.5 million, or about 42 percent of the population aged 18-24.

That is a rate of growth of enrollments of 5.0 percent a year. Malthus predicted dire overpopulation of the world if population grew only 2.8 percent a year (doubling every 25 years), so the immensity of the past growth in enrollments is evident. It would be frivolous to extrapolate the 5.0 percent annual rate of growth to the year 2050, for that would require one of two things to happen. Either all Americans aged 18-24 would have to attend seven colleges simultaneously, or we would have to import some 90 million students -- and presumably begin teaching in Chinese.

An economist is not permitted to discuss how much of anything people will buy without first paying due attention to the price of the object and the incomes they possess, and that is true even in discussing the purchase of education. Here we must notice that the price of higher education has several important meanings. To the students and their parents, there are two main components of the cost of obtaining a college education and a college degree:

1. The tuition (and related charges for books, fees, etc.) of the institution they attend. Tuition plus fees now averages about $2,900 a year in all schools, but reaches a respectable $13,000 or $14,000 in the Ivy League.
2. The earnings students forgo when they attend school. When a freshman enters college upon completing high school, he could today instead be earning perhaps $13,000 his first year in the labor force. Instead, by attending college he is restricted to summer earnings of perhaps $2,000. Each of these figures rises each year by perhaps 4 percent, so the total forgone

earnings (with interest) by the time of graduation will be in excess of $50,000.

In summary, the cost of four years of college to the student is on the order of $50,000 to $90,000, near the lower end at public institutions and near the upper end at the leading private institutions.

Most people wish to add to these costs of attending school the cost of food, housing and the like during the years of school attendance. That would be a mistake: those costs of living are already implicitly covered by the forgone earnings and to include them again would be double-counting. Of course if the standard of living is higher while in college -- say one must be better dressed at school -- the extra costs should be added to our previous total. Casual observation suggests that only the inhabitant of a nudist colony has lower costs of clothing than a college student.

The cost of higher education to society is more than twice the cost to students. Even the private institutions, where tuition income is a higher fraction of expenditures, barely cover half these instructional costs from tuition: the remainder comes from the government, sales and services, and endowment and current gifts. For public institutions tuition is less than one-sixth of instructional expenditure.

In attempting to understand enrollment trends, therefore, one must look at both the costs to students -- affecting demand -- and the cost to society -- the supply side of the picture.

During this century the cost of attending college or university has risen somewhat more rapidly than the cost of living generally. The rate of tuition has risen from roughly $85 in 1900 to about $2,900

today. The forgone earnings of students have risen roughly as average earnings in the labor force, or from about $400 in 1900 to $25,000 today, each in current dollars. Hence the total student cost (including forgone earnings) of a year of higher education has risen a bit more slowly than average incomes (say, 4.8% versus 5%) but a good deal faster than the consumer price level (3.0% per year) in the same period. Despite this rising relative cost of higher education, the enrollments have expanded enormously, as we have seen.

The fundamental reason enrollments have been high and growing is that college and university degrees have been excellent investments. Despite the enormous growth in the number of graduates of these institutions, the returns to the investment in these degrees have not been falling. The return has fluctuated substantially -- for example, falling in the early 1970s and rising dramatically in the 1980s, but there has been no persistent secular tendency for the rate to fall. Recently a college graduate earned about 50 percent more per year than a high school graduate, yielding a return of about 12 to 15 percent on the costs of the higher degree. If that sort of premium persists in the future, it will certainly encourage the growth of enrollments.

It would require more knowledge or foolhardiness than I possess to predict the future earnings differentials of college graduates and advanced degree holders. Even if the present high levels of return to higher education persist into the next century, one must expect a sharp reduction in the rate of growth of enrollments -- not only because the college age population itself will not grow greatly, but also for a second reason. Higher education is of substantially more value to more

intelligent than to less intelligent students. Once half the college-age population is enrolled -- roughly the situation today, -- we may expect additional growth of enrollments to come from less able students who will receive smaller returns from higher education. Some increase in enrollments there will be, but I predict that it will be modest in comparison with past increases.

Tuition rates seem always to increase. They have a second remarkable feature: at any institution, there is scarcely any variation in tuition per student credit hour for different levels or types of instruction but large variations in the direct costs of instruction per student credit hour. Roughly two-thirds of these costs are for faculty, the remainder for departmental services, secretarial services, etc. (library costs are here excluded). To instruct a graduate student in a physical science (which will normally involve laboratory costs) costs more than six times as much as to instruct an undergraduate in a non-science field.

The range by individual subjects is also wide. The following ratios of tuition to cost of instruction per student for a representative private university are old but probably still illustrative of the variation in undergraduate courses:

Subject	Tuition/Cost
Religion	0.1
Chinese and Japanese	0.2
Music	0.2
English and Comparative Literature	1.3
Commerce and Business	3.1

Thus it costs thirty times as much to teach religion as business -- a multiple that will no doubt fall with the new emphasis upon business ethics.

The practice of charging identical or similar tuition for courses of study of widely differing costs is longstanding and widely practiced. Economists call this method of pricing price discrimination. We believe that price discrimination cannot persist when there is competition because it would be profitable to reduce prices to those who are charged high prices. If commerce students pay three times their costs of instruction, why don't some schools cut tuition for this subject and increase enrollments and net revenue? Universities and colleges are almost always nonprofit institutions, indeed usually net deficit institutions, and they perpetually claim to need money.
Why not compete?

The answer may lie in the interests of the faculty. Many faculty members would be vigorously opposed to making large tuition charges for attendance at classes with few students taught by expensive senior faculty. They would complain that such a system of tuition would lead to still smaller classes in the humanities and experimental sciences, and more students shifting to cheap courses in business and economics. The persistence of such price differences is difficult to reconcile with the undisputed competition among schools.

2. The Role of Governments

We would expect a large increase in enrollments in colleges and universities in a society where per capita income was rising rapidly and

where education was valued for both productive and cultural reasons. The question therefore naturally arises: has the intervention and growing financial role of governments been a large factor in the past rise in enrollments? If so, will that be equally true in the future?

We may note that already by 1900 the role of government was substantial: 40 percent of the students were in public institutions and today that percentage is 80 percent. Moreover, government plays a most considerable role even in the nominally private institutions. At the University of Chicago, for example, government funds (chiefly federal) account for 32 percent of the consolidated academic budget -- and this figure is down from 42 percent a decade earlier. As part of this role, government paid 7.8 percent of Chicago faculty salaries, down from 14.5 percent a decade ago. Even in private institutions the governmental role is often dominant in the biological and physical sciences.

The share of the federal government in revenues of institutions has also risen substantially -- it was perhaps five percent in 1900 and is about 12 percent today, and to this should be added the equivalent of 10 percent in federal aid to students in both public and private institutions.

It might seem pedantic to ask whether these vast sums of governmental money have had a major influence upon enrollments in higher education. Nevertheless, I wish to ask that question. The influence of government is almost always overestimated: if an activity is regulated, there is a nearly universal propensity to believe that the regulations are influential. Yet we know that the expectation is often and perhaps usually false. For example, laws prohibiting victimless crimes such as

gambling are notoriously unsuccessful. A significant fraction of the drivers of automobiles have no driver's license or an invalid one; nevertheless, they persist in driving. Prohibition of alcoholic beverages was beyond the powers of the national and state governments and possibly beyond the power of a Dean of Students. Governments are not omnipotent: omnipotence, indeed, is costly beyond our resources.

The importance of governmental assistance in higher education should not be exaggerated. The largest part of the cost of higher education is the forgone earnings of the student, and that is not subsidized by governments. This factor alone implies that the major cost of higher education is borne by the student.

Moreover, the expenditures of government are taken from the population through taxation, so on average a family pays as much in taxes as it gets back in educational subsidies. This does not mean that the taxes and the subsidies cancel, because the taxes are paid whether or not the family has children who receive the subsidy. In principle it might be expected that this system would tax the well-to-do to subsidize the less well-to-do, and no doubt it does have this effect to some degree. Yet college students are drawn primarily from the families in the upper half of the income distribution, so the degree of redistribution is not great.

It is not obvious that educational subsidies increase the expenditures of families on higher education over what they would be without subsidies. When a state school in effect supplies a $6,500 subsidy to a student receiving an $8,000 education (measured by cost), that student cannot obtain better quality education -- say $10,000 worth

-- without leaving the public school system. Hence his tuition will rise from, say, $1,500 to $5,000 to obtain $2,000 more of education. My colleague Sam Peltzman, in an important 1973 study, concluded:

1. "The largest part of expenditures and enrollment at government higher-education institutions appears to substitute for private expenditures and enrollment."
2. The giving of governmental subsidies in the form of educational facilities rather than money had reduced higher education expenditures by 17 percent compared to expenditures if the subsidies had been given in money.

And we must remember that many students are now paying the full cost of their education by tuition.

These considerations do not add up to a demonstration of a negligible role of government in the growth of enrollments in higher education, but that role is less than first appears. As a bold guess, enrollments are higher by a quarter than they would be if governments' contributions were negligible. The expansion of the governmental share of expenditures since 1900 has been large and surely will not increase as much -- if at all -- in the first half of the next century. I conclude that the growth of enrollments will therefore be much smaller in the future: the population of college age will hardly increase and the relative contributions of government will probably stabilize near present levels. Higher education is becoming a mature industry.

The conclusion that governmental support does not play an overwhelming role in the scale of higher education is reinforced by European experience. All direct costs of higher education are paid by

European governments, yet until recently only small fractions of the relevant populations of Britain, Germany, Sweden and other countries went on into higher education.

3. The Faculty

The central resource of a college or university is its faculty: the faculty constitutes the professional competence and sets the intellectual standards of the institution. This bold proposition requires no proof because the faculty freely admits to its central role in higher education.

Over the present century there has been a much more rapid increase of students than faculty: the ratio of students to faculty has doubled in this century. President James Garfield is supposed to have said that the ideal university instruction would be in a log hut with a professor (Mark Hopkins of Williams College) at one end of a bench (legend prefers "log") and a student at the other end. A cynical colleague once remarked that it would be just as useful to sit on the student and talk to the log. Whatever the ideal, we are now approaching average class sizes of 50 to 75 students, thus obtaining major economies in the purchase of logs.

The proximate explanation of this rising trend of students to faculty is a combination of two related factors. The student/faculty ratio is much larger (perhaps 50 percent larger) in public than in private institutions, and also much larger in two-year colleges, most of which are public, than in four-year colleges and universities. During the present century, two-year college enrollments have risen rapidly,

and enrollments at four-year public institutions have risen more moderately relative to four-year private institutions. These trends will all be more moderate in the future.

There has been a reversal of this trend -- a decline in student/faculty ratios since the mid-seventies. It is attributable to three forces which were operative throughout the century but have only recently become dominant:

1. The teaching hours of faculty are lower at the more advanced levels of instruction. Graduate enrollments have risen faster than undergraduate enrollments, and graduates are now one-fifth of the students in four-year institutions.
2. The hours of classroom instruction per teacher have fallen over time. I may be somewhat representative: I started teaching 12 hours per week and in recent years have had about 5 hours of classroom per wek. The average hours of classroom teaching of a teacher have probably fallen by one-fourth or more in this century.
3. A rising number of faculty are in full-time research or other academic activities such as administration. The roughest of estimates is that the share of professional employees in administration doubled between 1960 and 1983.

All of these developments are expensive, and their continuance depends upon the generosity of public funding of higher education.

If my forecast of a slow growth of enrollments proves to be accurate, it carries the implication that there will be only a modest future growth of faculties in the next sixty years. Present full-time

faculty number about 500,000 (there are another 200,000 part-time), and that number could rise by as much as one-fourth in the period ahead.

Academicians have always lamented the meagerness of their compensation. Adam Smith stated that in medieval times the word scholar was synonymous with the word beggar. I suspect that this lament is characteristic of all occupations -- with the possible exception of big-league athletic stars and junk bond salesmen. The average salary of a professor in a university is $53,000 today, or roughly twice the average earnings of employees outside of agriculture. (Total compensation including fringe benefits averages $64,000.) The relative economic status of university teaching has fallen over time: in 1914 the average salary of professors at state universities was three times that of nonagricultural employees.

Professors' salaries have grown at an average rate of 4.6 percent from 1940 to 1988, and if this rate were to continue to 2050, their salaries would on average reach $725,000. That prediction is not impossible because continued inflation is not impossible. However, the consumer price index rose 4.5 percent a year over this period, so professors' real salaries did not rise. However, the total academic earnings of professors (including fringe benefits) rose more rapidly (4.9 percent). Summer compensation is now prevalent at many universities, but was practically nonexistent fifty years ago if one were not teaching in summer. Health benefits and retirement benefits have grown at a more rapid rate than base salaries. The members of every occupation consider themselves underpaid, and predict the early decline of their occupation if this sorry state of affairs is not soon

corrected. Professors are no exception.

One aspect of the structure of academic salaries is unusual: the smallness of the differences in the salaries of professors of a given rank at a school. A few schools boast that they have no star system -- all professors of given seniority receive the same salary. Other schools are not so extreme, and therefore not so foolish, in their attachment to egalitarianism, but seldom does the best-paid professor at any university receive much more than twice what the worst-paid professor is paid. Compared with other professions such as law and medicine these differences among professors are trifling.

The smallness of the differences is also mystifying. Surely a great scholar is worth many times as much as the worst: the former brings fame, research grants, able students, and an atmosphere of intense intellectual vitality to his institution. The latter brings drably taught classes and a preoccupation with academic intrigue.

This pressure toward equality of salaries is stronger in the public universities than in the private universities. When a particular academic field is expanding rapidly, in the short run it becomes necessary for a school to raise salaries in that field to attract able scholars. Examples have been business schools and engineering departments and computer science departments at various times in recent years. Public schools usually are required to make public the information on individual salaries, and then growing salary differentials across subjects exacerbate the complaints of members of departments which are not growing rapidly. Thus there have been controversies in recent years at Berkeley over the differences in

salaries in the humanities and the professional schools.

The argument usually takes the form: surely a knowledge of history or literature or art is as important to society as a knowledge of accounting or electrical engineering. Such language is incomprehensible to an economist. It cannot mean that every body of knowledge has an equal claim to the society's resources. Must every university have a graduate Department of German Studies when (1) there are scarcely any American students who enter this area and (2) the subject receives a good deal of attention in Germany? When an area of study booms, should the quality of new appointments fall at every school? Or is it of value to preserve the high quality of premier institutions?

One implication of these differential rates of growth of fields of study, when combined with the pressure for equality of salaries across departments, is that those schools most attached to salary equality will relatively overpay professors in the less prosperous disciplines. In particular, the leading public institutions will become relatively stronger in the humanities, and the leading private institutions will become relatively stronger in popular fields such as economics and the professional disciplines.

In the long run, of course, there is a force tending to reduce salary differentials across disciplines: graduate students will shift toward the more remunerative fields. A prospective graduate student in history or English will question the value of a Ph.D. in that area if its possession is likely to lead to a career behind the steering wheel of a taxicab.

4. Research

The second task of higher education is to add to our knowledge. The universities are the center of fundamental research, and American universities are the leading part of the world of research. In the one area in which I can speak with confidence, economics, the dominance of American scholars is overwhelming.

It has recently become fashionable in some circles to assert that research is now so ascendant in higher education that the function of teaching has been seriously damaged. Charles J. Sykes, who writes with the uncertain authority conferred by being the son of a professor, has recently argued this thesis in *Professors and the Demise of Higher Education*.

His particular grievances are the decline in the number of hours of teaching of professors and the great weight given to research in the determination of promotions. His remedies for this state of affairs are to abolish tenure and increase teaching loads. The book provides a useful compendium of misunderstandings of higher education in America.

The first misunderstanding is the belief that research is the primary function of higher education. It is, but only in at most fifty of the leading institutions. In the remaining 2,000 four-year institutions, research is often tolerated, and sometimes even flourishes for a time in one discipline or another, but is at best a minor goal of the institution and at worst an unwelcome reminder of mediocrity.

The second misunderstanding is the belief that professors have simply eased their lives by chanting "research" and demanding and obtaining lighter teaching loads. Research is demanding of time and

intellectual capacity, and it is strongly competitive. Research is distinctly not a lazy person's game.

The third misunderstanding is the belief that research and teaching are highly incompatible. A capable research scholar has a deeper knowledge than the non-scholar: one treats a subject with much more care if one's thoughts are going to be published and reviewed by hawk-eyed colleagues. A research scholar in general has a higher level of energy than the non-scholar. Of course there are research scholars who are so magnificently incomprehensible and one-sided that in simple mercy to students they should be forbidden to enter a classroom. For every such creature there are surely a dozen lazy, poorly informed non-research scholars. The correlation between teaching ability and research ability is imperfect but it is not negative.

The light teaching loads serve a second purpose in addition to permitting research: they permit the scholar to engage in outside activity. I estimate that academic economists earn 50 to 100 million dollars a year from consultation with government or business, and that figure is no doubt dwarfed by the outside earnings of academic lawyers and physical scientists. Those outside earnings are the method by which the equality of academic salaries is maintained: in fields where the market is a strong competitor to universities, they share the time and talents of the scholar.

A fourth misunderstanding is shared by many: that tenure is readily abolished. I believe, on the contrary, that even if legal tenure were abolished there would be little change in actual tenure in universities and colleges. There is a large measure of esprit de corps

in faculties, and it is wholly unlikely that conscientious senior colleagues of disappointing ability would be discharged.

It is almost impossible to write a book that contains no element of truth or relevance, and there is a fundamental problem to which Sykes' polemic has some relevance. That problem is: how much should a society spend upon the production of new knowledge? Surely not as much as the scholars demand: I believe that the physicists would only begin to believe that their resources were adequate if they reached 10 or 15 percent of national income, and then they would be only temporarily satisfied.

Moreover, the research in economics -- and, I am reasonably confident, also in other fields -- is a mixture of the occasionally brilliant and the frequently pedestrian, of rare originality and voluminous repetition. This mixture of outputs is probably inevitable in research, and it certainly fulfills useful functions. Repetition and controversy disseminate knowledge. The content and fertility of an idea are developed only from many-sided elaborations by different minds.

No one can be confident that our society is spending the correct amount on research, or that the proportions allotted to various fields are correct. We have a penchant for massive programs to solve a given problem to the cost of fields of greater importance. Thus at present we are spending for research something like 90 times as much per patient on AIDS as on cancer or heart disease. We need to learn a great deal more about the economics and politics of research.

5. The Government Again

We have already observed the large role that public funds and public institutions play in higher education in the United States. Four-fifths of the students are in public institutions. If we include direct grants to students and loan subsidies, governments supply at least two-thirds of the revenue of public institutions and one-fifth of the revenue of private institutions. Government pays the piper -- does it call the tune?

We may begin our answer by noticing that governments are somewhat fickle paymasters. In 1976 public institutions received 72 percent of their income from government, but by 1985 the share had fallen to 62 percent. For the same years the share of government funds in private institutions' income fell from 35 percent to 20 percent. These large short-run fluctuations impose a good deal of inefficiency upon colleges and universities, whether the funds soar or plummet.

The governmental grants also influence the distribution of instruction and even more of research among the various subject fields. Graduate work in fields such as biochemistry, microbiology and health sciences have received large numbers of federal dollars, and the social sciences have done quite well, but the humanities have tested the proposition of Adam Smith that a poor person must exhibit great virtue in order to cut an acceptable figure.

The influence of government on salaries of academicians is clear: democratic governments have a strong pressure toward egalitarian wage structures. In the federal employment, mailmen and secretaries and janitors are much overpaid relative to the private labor force, and

senior officials and judges are much underpaid. The recent debacle over the proposed salary increases of the latter groups plus congressmen is only an example of this tendency.

I have already remarked that the salaries of professors are remarkably similar, so conventional measures of inequality show them to be much closer to equality than the earnings of lawyers or physicians. That is even more true of public universities and colleges than of private universities and colleges. The same pressures that have made comparable worth a rallying-point in public employment have also influenced the academic wage structure.

That does not mean that governmental policies do not give way for a time and a space to pressures of inflation and the competition of private market wages. Law professors are paid half again as much as professors of fine arts, and in recent times there has been a widening of differences in academic salaries by subject -- and even an increase in the concentration of federal grants to elite institutions. In the long run, however, the pressure of democratic politics is toward equality.

In the next half-century the influence of democratic politics on higher education will surely grow. The financial role of governments will not decline, and the regulatory role will increase. The history of elementary education is one of the persistent growth of centralized control over teacher qualifications, curriculum content and even textbook selection. It would be strange if these same pressures did not wax stronger in higher education.

The pressures toward both homogeneity and the achievement of

social goals such as the improvement of the status of minorities are already exerting a strong influence upon our universities and colleges. The criticism of elite institutions is one interesting example of that influence. I would have thought that the word "elite" was a high compliment to an institution to which it was applied, a recognition that that institution was successfully pursuing the goal of the highest intellectual distinction. Instead, the word "elite" is a condemnation of an institution for subordinating other social goals to that of intellectual eminence.

It is for other lecturers in this series to tell you whether the role of noneconomic factors will become more important than that of economic factors. What the economist must predict is that the resources and desires of every important class in our society will call forth institutions of the type desired by that class. Democratic governments cannot resist the strong desires of any group, so we shall continue to observe institutions of every quality and purpose. I am a fervent admirer of competition, so I look upon this variety as a main strength of American higher education.