

1995/96

Swedish Universities &
University Colleges 1995/96

Short Version of Annual Report

1995/96

Swedish Universities & University Colleges 1995/96

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Printed by – Fälths Tryckeri, Värnamo, August 1997

Högskoleverket Reports 1997:18 R (Högskoleverkets rapportserie)

ISSN 1400-948X

ISRN HSV-R--97/18--SE

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Introduction

This summary of the *1995/96 Swedish Universities and University Colleges Annual Report* gives an outline picture of higher education activities in Sweden, both in quantitative and qualitative terms. The Report provides a basic description of the academic structure in Sweden, and the regulatory framework under the heading *The Higher education sector in Sweden in 1995/96*. Subsequent sections of the report summarize developments prior to and including the 1995/96 fiscal year and cover state, regional authority and private universities and university colleges. Analysis in the Annual Report is based on information obtained from a number of sources, including the annual reports published by Swedish universities and university colleges and statistics produced by Statistics Sweden (SCB).

Fig 1. In 1995/96, it was estimated that there were 140,000 new applications for places from people who had not previously participated in higher education. The total number of registrations in 1995/96 was 286,000. 66,300 had not studied previously at university level. 27,000 students took external courses. A total of 31,600 degrees were awarded in the same year. There were 16,000 active doctoral students. 3,100 new doctoral students were accepted for postgraduate programmes and 2,400 were awarded Ph.D. or "Licentiate" degrees.

The Higher Education Sector in Sweden

Introduction

There have been many changes in the Swedish education system in recent decades. A nine-year obligatory school system and senior secondary schools which offer both vocational training and theoretical programmes have been introduced, and adult education has also been expanded and developed.

Major and fundamental reforms of the higher education system were introduced in 1977 and 1993. In 1977, practically all post-secondary school education was coordinated into the overall concept of higher education. In the 1977–1993 period, there was relatively detailed regulation by the Government and Parliament of the scope and location of higher education. This also applied to the internal organization of university-level institutions.

Further reform of higher education was initiated in the early 1990's, and a new Higher Education Ordinance came into force on 1 July 1993, reducing the powers of central government to exert detailed control over state universities and institutions of higher education. Decisions were decentralized in important areas. General study programmes determined at a central level have been abolished, and a new Degree Ordinance was introduced. Amongst other things, decisions regarding the orientation of undergraduate study programmes were transferred from the state to the institutions concerned, although central government establishes certain targets and frameworks - mainly of a financial nature. Regulations governing decision-making bodies and management principles are in the form of framework provisions. This enables each institution to adapt

its organization to comply with its own educational programme. Furthermore, all universities and institutions of higher education are responsible for admissions on the basis of certain framework provisions. Another object of the 1993 reform was to give students greater opportunities to choose and combine courses in their degree studies. The Degree Ordinance specifies the degrees which are offered.

A new allocation of resources for undergraduate education was introduced in 1993 as part of the wider reform of higher education. Commencing in the 1993/94 academic year, the resources allocated to universities and institutions of higher education have been based on the number of students enrolled at the institution concerned, and the level of achievement. Previously, allocations were based on the activities planned by the institution.

There have also been changes in the central government education authority structure in the 1990's. Universities and institutions of higher education now report directly to the Government.

A new National Agency for Higher Education (Högskoleverket) was set up on 1 July 1995. The new Agency incorporates the Office of the Chancellor of the Swedish Universities (Kanslersämbetet), the Council for the Renewal of Undergraduate Education (Grundutbildningsrådet) and parts of the former National Agency for Higher Education. The National Agency for Higher Education is a central government authority for matters concerning universities and institutions of higher education. The Agency is assigned to inspect and promote higher education activities, and is responsible for monitoring, evaluation, supervision of entitlement to award degrees, other types of supervision, quality audit and enhancement, pedagogic renewal, information concerning studies and international questions in the higher education sphere.

The National Admissions Office to Higher Education (VHS) coordinates student admissions and procurement of equipment.

It is mainly financed by universities and institutions of higher education.

The Council for Studies of Higher Education (Rådet för forskning om högskolan) finances research in the higher education sphere. The Association of Swedish Higher Education (Högskoleförbundet) is a special interest group encompassing most of Sweden's universities and institutions of higher education.

scope of the higher education sector

In the financial year 1995/96 there was a total of some seventy universities and institutions of higher education in Sweden with central government, local government or private organizers.

The central government sector of higher education comprised 10 universities and institutions of higher education with permanent research resources, 7 colleges of art in Stockholm and 16 small and medium-sized institutions of higher education including the Stockholm Institute of Education and the Stockholm University College of Physical Education and Sports. In addition, central government higher education was commissioned by the Gotland College of Higher Education and the Organizing Committee for the University College of South Stockholm. Chalmers University of Technology, the University College of Jönköping and the Stockholm School of Economics are privately organized. There were also 19 county council and 3 private colleges of health sciences in 1995/96. The Faculty of Health Sciences, Linköping University and 6 colleges of health sciences were incorporated into central government institutions of higher education during the fiscal year 1995/96. As of 1 July 1995 Gammelkroppa School of Forestry has examination rights. In addition there are a further 7 small colleges with private organizers.

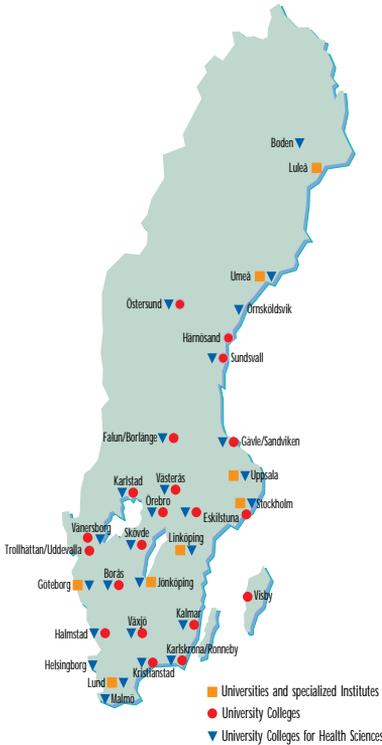


Fig 2. Swedish Universities and University Colleges.

undergraduate education

The traditional forms of central government regulation of undergraduate education was changed in 1993. The former general study programmes determined by Parliament were abolished. In addition, the number of new recruits for each type of study programme is no longer determined at central government level. Instead, each university or institution of higher education decides its own study programme and the appropriate organizational structure within the framework of a three-year "educational assignment" approved by Parliament for each institution of higher education. The educational assignment specifies the results which central government expects in the next three-year period, and the financial framework. The allocation of resources is decided at the local level.

As from 1 July 1993, all undergraduate higher education is to be in the form of courses which may be combined into a study programme based, to a greater or lesser extent, on individual choice. Students can also combine different types of courses in a degree programme.

The scope of a study programme or course is measured in terms of credits. One credit corresponds to one week of full-time study. An academic year normally consists of 40 credits, usually divided up into an autumn and a spring term. In addition, some universities and institutions of higher education offer summer programmes.

The Degree Ordinance specifies the degrees which can be awarded and the objectives. The Ordinance also states the scope of the programmes leading to a degree. Courses and study programmes are determined by the institution concerned. Undergraduate degrees are classified either as general degrees or professional degrees.

General degrees

A master's degree is awarded after studies totalling not less than 160 credits (four years of full-time study). The requirements are in-depth studies at the 80 credit level in the principal subject and an independent study for which at least 20 credits have been awarded, or two 10-credit projects.

A bachelor's degree calls for studies totalling not less than 120 credits (three years of full-time study). In-depth studies at the 60 credit level and an independent project corresponding to at least 10 credits are required.

A university diploma is awarded after studies of at least 80 credits. The orientation is determined by the institution concerned.

Professional degrees

In addition to general degrees, there are some fifty professional degrees for which specific objectives are laid down in the Degree Ordinance. Medical qualifications, engineering degrees, agronomics degrees and compulsory-school teaching diplomas are examples of such professional degrees.

Admission to undergraduate education

Basic eligibility

To be admitted to undergraduate education the applicant must meet the basic eligibility requirements, which are the same for all courses and programmes. Those with a school leaving certificate from any upper secondary national programme, with a grade of at least Pass for 90% of the credits required, or equivalent knowledge, have basic eligibility. Those who are at least 25 years of age and have been gainfully employed for at least 4 years and have a knowledge of Swedish and English equivalent to a completed upper secondary national programme also have basic eligibility. Certain transitional regulations will be in force until the end of 1999.

Previous knowledge — special requirements

Most courses and programmes also have special requirements with respect to previous knowledge. These vary depending on the subject and the type of course. As of 1997 these special requirements are specified in the form of standardized requirements, where each set of standardized requirements corresponds to a broad area of studies. For studies leading to professional examinations, the National Agency for Higher Education determines the standardized requirements, while the requirements for other degrees are laid down locally by the university or institution of higher education concerned.

Selection

If the number of eligible applicants exceeds the number of places available for new students, a selection must be made. At least one third of study places intended for new students must be distributed on the basis of school grades, and at least another third must be distributed according to the results of the University Aptitude Test. The University Aptitude Test is appropriate for all forms of higher education, and measures knowledge and skills of importance in studies at tertiary level. In addition to these criteria (grades and the University Aptitude Test), it is possible to select suitable applicants from among those eligible on the basis of other special tests (subject to approval by the National Agency for Higher Education), previous education or work experience.

Study support

Students have access to state support to finance their higher education studies. This support consists of a study grants and study loans which, in combination, constitute "student aid". Certain requirements must be met if a student is to receive student aid. If the student has an alternative source of income, student aid may be reduced and, if a student is to receive student aid over a period of several years, he or she must maintain a specified study tempo. For the spring term of 1997,

the grant component for full-time study was SEK 1,967 per month and the maximum loan sum was SEK 5,111 per month. In other words, the maximum student aid for full-time studies for 1997 will be SEK 63,702.

postgraduate studies

Postgraduate studies are offered at institutions of higher education organized on faculty lines, that is to say the universities, the Karolinska Institute, the Royal Institute of Technology, the Chalmers Institute of Technology, the Luleå University of Technology, the Swedish University of Agricultural Sciences, the Stockholm School of Economics and the University College of Jönköping. Postgraduate studies are also arranged at many other institutions of higher education in cooperation with other institutions which have a faculty structure.

Postgraduate studies involve a nominal 160 credits (four years) and lead to a doctoral degree (PhD). A licentiate degree, which requires at least 80 credits, may be awarded after two years.

Postgraduate studies are based on undergraduate studies totalling at least 120 credits with at least 60 credits in the area of postgraduate study. In addition, the faculty board concerned determines other requirements for admission to postgraduate studies within its area of competence. There is also an assessment of the applicant's suitability and capacity to complete doctoral studies.

A doctoral student must complete a number of courses and write a doctoral thesis. Each student is entitled to personal tutoring. The doctoral thesis, which is the most important aspect of postgraduate studies, must be defended publicly. A doctoral degree calls for approved completion of courses and approval of the thesis.

Postgraduate study support

Postgraduate studies are financed from the faculty allocation. In addition, external funding is frequently available, for example from research councils. Faculty boards decide whether earmarked resources are to be employed for postgraduate studentships or for study grants. Both studentships and grants cover a period of four years. A grant may also be split between two postgraduate students. A postgraduate student who has a studentship must concentrate on his or her studies, but may also undertake teaching or other duties to a limited extent. Combining studies with participation in a research project, which may receive external funding from a research council or sectoral body, is a relatively common way of financing postgraduate studies.

research

The higher education sector accounts for about a quarter of the resources devoted to R&D. Three fourths of R&D activities are carried out in the corporate sector and by non-university areas of the public sector. R&D conducted by companies concentrates on certain industries and high-technology products, with a primary focus on development activities, while R&D in higher education focuses on basic research and applied research.

The predominant proportion of publicly financed research is carried out at universities and other institutions of higher education. Independent research institutes only participate to a limited extent. As a result, higher education plays a crucial role in the Swedish research system, not merely because it constitutes the traditional base for research and postgraduate studies, but also because it undertakes commissioned assignments for sectoral bodies and for industry. Research activities are obviously also highly relevant for undergraduate education.

Research and postgraduate studies are mainly pursued at universities and other higher education institutions which are organized on faculty lines, but also to an increasing extent at other institutions of higher education. Research at small and medium-sized institutions of higher education is financed by government allocations to support research activities and via research councils, sectoral research bodies and commissioned assignments from industry, public authorities, municipalities and county councils. Small and medium-sized institutions of higher education have been allowed to appoint professors, subject to approval by the National Agency for Higher Education.

financing of higher education and research

A new resource allocation system for undergraduate education was introduced on 1 July 1993. This system means that universities and institutions of higher education are given an educational assignment before the commencement of each three-year period. This assignment specifies the objectives and frameworks for activities in the period concerned. The allocation of resources depends on results in the form of students (calculated in terms of the number of full-time equivalent students) and study achievements (in terms of annual performance equivalent) at each institution. These principles apply to state universities and institutions of higher education, and private institutions. Agreements with private institutions are regulated by special contracts.

The educational assignment specifies the minimum number of certain types of degrees which are to be awarded by the institution in the three-year period. The educational assignment also specifies a ceiling figure for the maximum total payment for full-time equivalent students, and annual performance equivalent' for the fiscal year. In many cases, special commitments which may lead to special compensatory payments are also defined for most institutions.

The sums to be paid for full-time equivalent students and annual performance equivalents are determined on an annual basis by central government and stated in the official directions for the use of appropriations. These sums differ for different subject areas. All courses in these subject areas are classified for universities and institutions of higher education. This classification determines the compensation paid. The sums payable for the 1995/96 fiscal year are presented in Figure 3.

Research and postgraduate training are financed by means of special central government appropriations allocated to faculties at universities and institutions of higher education with a faculty structure. There is also a special budget item for rent of premises. Certain conditions are attached to these appropriations. A certain proportion of allocations must be used for postgraduate study support, for example. A special appropriation for fine arts development is devoted to institutions which offer such programmes.

In addition to these allocations for undergraduate education and for research/postgraduate studies, there are also specially earmarked allocations, for example for measures to support research at institutions which lack regular research resources, for clinical training and research, for the technical-scientific basic year, and for summer courses and external studies.

Appropriations of this kind, which are allocated directly to state universities and institutions of higher education represent about 65 per cent of the resources of these institutions. The remainder consists of external funding for research and commissioned assignments. The major external sources of funding are public authorities such as research councils, sectoral bodies and local authorities.

Subject area	Payment per full-time equivalent student (SEK)	Payment for annual performance equivalent (SEK)
Humanities	14 024	14 242
Theology		
Law		
Social sciences	37 858	33 600
Science		
Technology		
Pharmacy/pharmacology		
Nursing		
Odontology	34 589	41 724
Medicine	46 597	58 874
Education*	27 263	33 299
Other**	31 806	26 579
Design	109 701	68 651
Art	155 984	68 672
Music	94 496	61 459
Opera	225 472	138 565
Theatre	218 170	111 565
Media	221 738	183 118
Dance	138 934	79 412
Physical education and sports	80 091	37 991

* Education methodology aspects of teacher training programmes

** Journalist and librarian programmes and practical artistic courses in teaching training programmes, excluding courses in the fine arts area

Fig. 3 Undergraduate programmes payments, fiscal year 1995/96.

internal organization of higher education institutions and teaching posts

Universities and institutions of higher education largely determine their own internal organizational structure. The Higher Education Act and the Higher Education Ordinance contain certain outline provisions, for example concerning the management structure and the composition of certain decision-making bodies.

Each university or institution of higher education is managed by a board chaired by the Vice-Chancellor, who is also the head of the institution and its foremost representative. Apart from the Vice-Chancellor, the board contains up to 14 ordinary members, the majority of whom are appointed by the Government. The board also includes elected representatives of the teaching staff, and students are entitled to choose at least two representatives. Employee representatives are entitled to attend meetings of the board and to express their views.

Vice-Chancellors are appointed by the Government for a period of not more than six years, following a proposal made by the board. Selection of the board's candidate is based on an election held in accordance with specially prescribed rules. Other board members are appointed for a period of not more than three years. One or more Pro-Vice-Chancellors may deputize for the Vice-Chancellor. Universities and institutions of higher education may also appoint Deputy Vice-Chancellors to whom some aspects of the Vice-Chancellor's responsibilities may be delegated.

All higher education institutions with a faculty structure must have faculty boards which are responsible for research and postgraduate studies. If a university or university college does not establish a special decision-making body for undergraduate education, faculty boards also assume responsibility for undergraduate studies in their fields. Faculty boards are chaired by the Dean of the faculty. Teachers must always be in a

majority in decision-making bodies concerned with research and education. Students are entitled to have at least two representatives on faculty boards and other decision-making bodies which deal with educational matters.

Apart from these regulations for university and faculty boards, universities and institutions of higher education are free to decide their own internal organization and determine what kind of decision-making bodies and committees they wish to have.

The Higher Education Ordinance contains provisions regarding the teaching positions which may be established at universities and institutions of higher education – professorships (including visiting professors), lectureships (including Nordic and foreign lecturers), posts for junior lecturers, research assistants, part-time teachers and visiting lecturers. Government and Parliament are no longer entitled to decide on the establishment of professorships or to appoint professors. Instead, such decisions are now taken by the boards of university institutions with regular research resources. Professorships are established by vice-chancellors or, in special circumstances, by the Government. As from 1 July 1995, professorships may also be established at other institutions, after special application to the National Agency for Higher Education.

A university or an institution of higher education may appoint a senior lecturer who has demonstrated particular proficiency to be an assistant professor.

Trends and Developments

undergraduate education

Student Inflow

More and more people are studying or wish to study at universities and institutions of higher education. During the

academic year 1995/96 the marked rise in the number of students in basic higher education that has been recorded since the early 1990s continued. Both the number of applicants and the number of new students and registered students show an increase compared with the previous year (figure 4).

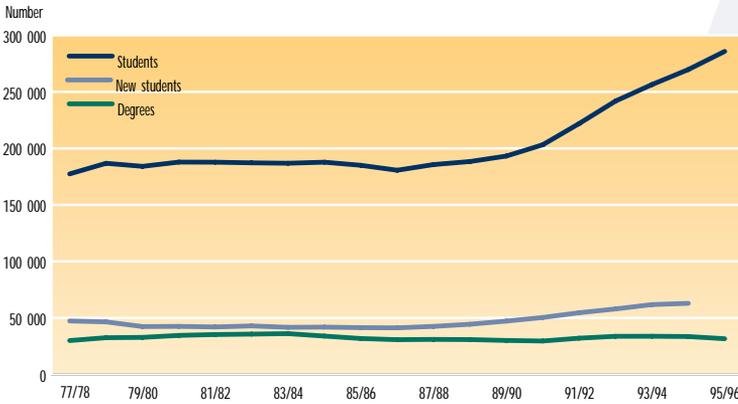


Fig 4. Students and degrees 1977/78-1995/96.

For the autumn term of 1996, 113,000 people who had never previously studied at tertiary level applied for places. This entails an increase of more than 7,000 people compared with the autumn of 1995 (figure 5).

The number of new students in higher education, that is people who have never previously studied at tertiary level, rose compared with the academic year 1994/95. During the academic year 1995/96 the number of new students was 66,300, which is an increase of 5 per cent on the previous academic year. This entails a return to the previous rate of increase in the number of new students in the 1990s after a dip in 1994/95. In the autumn term of 1996 the number of new students was about the same as in the autumn term of 1995.

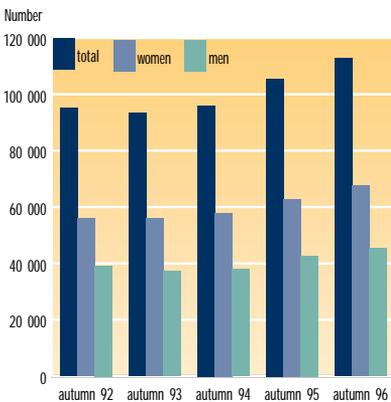


Fig 5. Number of applicants to universities and institutions of higher education, not previously participating in higher education, in the autumn terms 1992-1996.

Student stock

During the academic year 1995/96 almost 286,000 people were studying at universities and institutions of higher education. This is an increase of 6 per cent compared with the academic year 1994/95. The proportion of women was 57 per cent, a level that has generally speaking remained constant since the early 1980s. The number of students under 25 increased during the 1990s from 46 per cent to reach 50 per cent in the academic year 1994/95. The increase did not continue during 1995/96 but levelled off around the 50 per cent level. Students under the age of 21 constituted a smaller proportion at the same time as students in the age group 22-24 years increased.

Student outcome

The number of degrees taken in basic higher education reached a record level in 1994/95 with 34,000 degrees. The academic year 1995/96 saw a considerable reduction in the number of degrees to 31,600. This reduction is closely related to changes in the training of school recreation instructors and pre-school teachers in conjunction with the prolongation of these courses and the change in their degree titles to a degree in child and youth education. The reduction in degrees of this kind corresponds to the intentions of central government in relation to these courses.

The proportion of degrees from courses and programmes taking three years or more has been rising throughout the 1990s. In the academic year 1990/91 this proportion was 43 per cent, and it rose to almost 85 per cent in the academic year 1995/96 (figure 6).

Training capacity

The training capacity of undergraduate education has grown by around 85 per cent during the most recent ten year period.

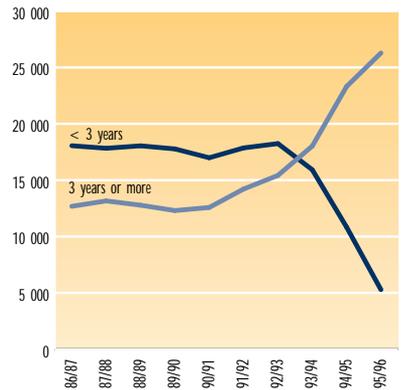


Fig 6. Number of degrees 1986/87-1995/96 by nominal study duration.

The total number of full-time equivalent (FTE) students during the academic year 1995/96 was rather more than 233,000, which represents an increase of 6 per cent compared with the academic year 1994/95. Universities and institutions of higher education with permanent research resources controlled 65 per cent of total training capacity in basic higher education in the academic year 1995/96, while the small and medium-sized institutions of higher education were responsible for 27 per cent. The colleges of art had one per cent, and the colleges of health sciences had 7 per cent. The small and medium-sized institutions of higher education thus increased their proportion by 2 percentage points compared with the academic year 1994/95, while the colleges of health sciences reduced theirs by 2 percentage points. This change is partly due to the transfer of certain colleges of health sciences to small and medium-sized institutions of higher education.

As of 30 June 1996 most institutions of higher education reported some annual performance equivalents for which they were unable to obtain compensation, and which thus failed to conform with the guidelines set by central government, partly in relation to the orientation of the courses and programmes and partly in relation to the financial ceiling. The aggregate value of non-compensated annual performance equivalents at the time indicated was rather more than one thousand million kronor. This amount corresponds to approximately 40,000 students in the social sciences field. The universities and institutions of higher education thus provided places for considerably more students, in complete agreement with existing regulations, than they received compensation for. The main reasons for the excess admissions were partly uncertainty in relation to the new system of allocating resources and partly the state of the labour market which induced the institutions of higher education to admit more young people than the financial ceiling allowed for. In many cases, however, the excess admissions led to over-dimensioned tuition groups and excess strain on teaching staff and premises.

The social background of the students

The educational level of the student's home was used to measure the students' social background. Previous analyses have been based on a classification of parents according to a socio-economic categorization of their professional activities. Comparing the proportion of the year groups born in 1968 and 1973 commencing tertiary studies before the age of 22, it may be seen that the expansion of higher education resulted in an increased intake of students from all social backgrounds. Regardless of the educational level of the home, the proportion commencing tertiary studies increased between these two year groups. It may also be seen that the higher the educational level of the home, the greater the proportion of the year group commencing higher studies. 50 per cent of students born in 1968 from homes where one of the parents has a post-upper-secondary education of three years or more commenced higher education before the age of 22, compared with 63 per cent of those born in 1973 from similar homes. The corresponding figures for young people from homes with pre-upper-secondary education were 9 per cent of the 1968 age-group and 16 per cent for the 1973 group.

Natural science and technology

Courses and programmes in natural science and technology have long been a matter of great public and political concern in Sweden as in other countries. Many steps have been taken to increase the number of students in these fields.

The number of students in scientific and technological courses and programmes

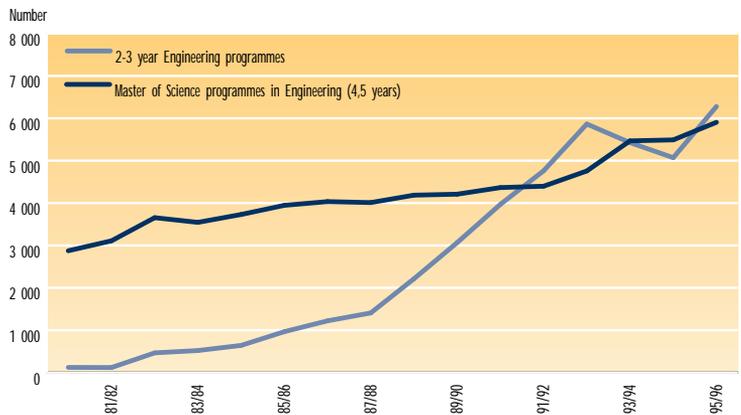


Fig 7. Number of new entrants in Engineering programmes 1980/81-1995/96.

increased considerably in both the 1980s and the 1990s. For instance, the number of new students in Engineering programmes doubled from just under 3,000 in the academic year 1980/81 to almost 6,000 in the academic year 1995/96. During the same period the new students admitted to the 2-3 year college Engineering programmes increased from a couple of hundred to almost 6,300. At the same time the 4 year technical line at the upper secondary was discontinued. (Figure 7).

To increase recruitment to technology and the sciences an introductory year was introduced with a view to providing the necessary previous knowledge required for such studies. The introductory year is available both under the aegis of local government adult education (komvux) and at universities and institutions of higher education. In local government adult education there were 1,500 places available for introductory year courses in the academic year 1995/96, while there are 4,000 places available in the academic year 1996/97. At universities and institutions of higher education there were 2,800 places in the academic year 1995/96 and almost 3,100 in the autumn term of 1996. Between 60 and 70 per cent of those registered for the introductory year at universities and institutions of higher education enrol in scientific or technological courses and programmes the following year. Of those who completed the introductory year on time and passed, almost 80 per cent were studying scientific or technological subjects the following autumn term.

The National Agency for Education and the National Agency for Higher Education have a five-year government assignment intended to increase young people's interest in technological and scientific education. The project spans the whole field of education and involves collaboration with stakeholders in schools, universities and institutions of higher education, the business community and public and private organizations. Teachers constitute an important target group, especially those working in compulsory and upper secondary schools.

Improving quality in undergraduate education

The massive expansion of undergraduate education during the 1990s together with the results-based system of allocating resources that was introduced on 1 July 1993 have combined to bring the quality of basic higher education into focus in a quite new way.

One of the tasks of the National Agency for Higher Education is to authorize the right of universities and institutions of higher education with public organizers to award degrees. The Agency states its opinion to the Government concerning the right of private organizers of higher education to award degrees. In the financial year 1995/96 the National Agency for Higher Education examined 43 requests for degree-awarding rights, of which 26 were from institutions of higher education with public organizers and 17 were from private organizers. The requests from the public institutions mainly concerned the right to award masters degrees in various subjects and certain professional degrees, while the private organizers wished to award degrees of various kinds.

During 1995/96 the universities and institutions of higher education carried out a number of evaluations of various scope ranging from course evaluations to evaluations of individual programmes and of all programmes. In its annual report, Stockholm University mentions a number of evaluations it performed on its own initiative including basic training in the language departments and in biology. In addition to this, employers recruiting scientists were asked to give their views on the education their recruits had received and their opinion of future prospects for scientists. Linköping University reports a large-scale evaluation of the folk high school teaching programme.

Many of the universities and institutions of higher education were involved in the national evaluations carried out under the aegis of the National Agency for Higher Education. The Agency carried out an evaluation of teachers training

programmes for compulsory school teachers and also of the medium-length programmes in the health sciences. The national evaluation of undergraduate education in mathematics was followed up by a report from the universities and institutions of higher education involved on measures implemented as a result.

The Council for the Renewal of Undergraduate Education has the task of supporting efforts to develop the quality of undergraduate education and to encourage pedagogical innovation. In January 1996 some forty project leaders were asked about their work in projects that had received the support of the Council. The answers were unanimous in their testimony that the support given to their projects had made it possible to introduce changes that would not otherwise have been feasible. In many cases the major concepts underlying the projects led to changes in curricula and in the structure and execution of courses and programmes. The students were favourably disposed throughout. Some project leaders claim that learning performance improved markedly.

A programme of teacher exchanges was set up which means that a hundred or so Swedish university teachers per year participate in project activities. The Council was also assigned by the Government to reinforce environmental aspects in the courses and programmes offered by universities and institutions of higher education, and to use project activities to encourage more women to study science and technology.

Postgraduate Studies

In the past ten-year period the number of new postgraduate students increased by 38 per cent. In the academic year 1995/96 3,120 people were admitted to research training. The proportion of women among the newly admitted postgraduate students rose from 31 to 40 per cent. In the academic year 1995/96 there were almost 16,000 active research students (10 per cent study activity or greater). (Figure 8 and 9).

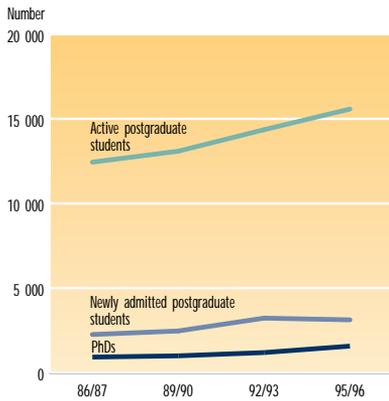


Fig 8. Active and newly admitted postgraduate students and PhDs 1986/87-1995/96.

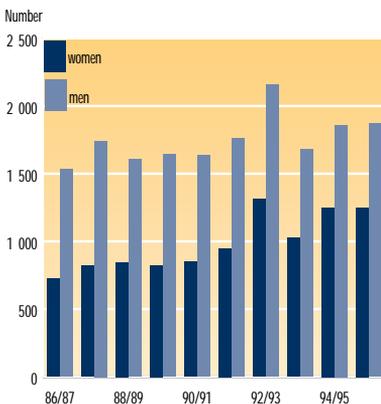


Fig 9. Newly admitted women and men to postgraduate studies 1986/87-1995/96.

The active postgraduate students funded their studies in various ways. Almost 8 per cent had education grants and 38 per cent had a postgraduate post. Approximately 40 per cent had some other form of funding such as scholarships, university posts or gainful employment linked to research. There are also postgraduate students who finance their studies using the study aid system. In faculties of medicine almost half of the clinically oriented postgraduate students funded their studies by way of gainful employment, primarily as doctors.

The number of PhDs increased by almost 70 per cent during the past ten-year period. In the academic year 1995/96 approximately 1,600 PhDs were completed, and 825 licentiate degrees. The proportion of women among those completing their PhDs was 32 per cent, which is one percentage point less than the previous year.

Research

The higher education sector is responsible for about a quarter of the resources allocated to Research and Development (R&D) in Sweden. Three quarters of the research is done in the business sector and the public sector excluding the higher education sector.

According to the annual reports of the institutions of higher education, approximately 17,000 R&D year-equivalents were performed during the academic year 1995/96 at universities and institutions of higher education, which represents a marginal decrease in relation to 1994/95. By far the greater part of this, 16,300 year-equivalents, was done at universities and institutions of higher education with permanent research resources. At the small and medium-sized institutions of higher education a little less than 500 year-equivalents were performed, while the rest was carried out at colleges of health sciences and colleges of art. At universities and institutions of higher education with permanent research resources most year-equivalents were performed under the aegis of medical and technical faculties, while the predominant part of R&D

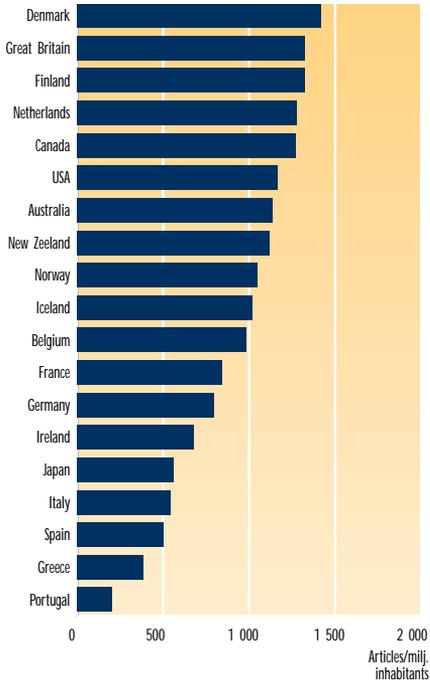


Fig 10. Number of published scientific articles per million inhabitants, 1996.

work at the small and medium-sized institutions of higher education was done in the social sciences field.

Swedish researchers have been publishing a constantly rising number of scientific articles during the 1990s. Sweden has a high position internationally if the number of published scientific articles is used as a measure of research activity. If the number of articles is related to the population, Sweden comes in second place after Switzerland as far as OECD countries are concerned. Collaboration across national borders has increased noticeably, as has collaboration among researchers in the writing of scientific articles within Sweden. (Figure 10).

In the academic year 1995/96 there were 2,255 professorships at universities and institutions of higher education in Sweden. During the three-year period 1993/94-1995/96 the number of professorships increased by 158 or 7.5 per cent. The greatest increase has taken place in the social sciences, in which the number of professorships grew by almost 25 per cent. (Figure 11).

Fakulty	Professorship 1995/96	Change 1993/94-1995/96 per cent
Medicine	569	5,8%
Technology	477	6,7%
Social sciences	309	24,6%
Mathematics/science	200	4,2%
Agriculture	190	0,8%
Humanities	181	8,4%
Technology/science (Only Uppsala)	87	2,4%
Arts	61	8,9%
Law	58	-1,7%
Odontology	53	-7,0%
Theology	28	12,0%
Thematic research (Only Linköping)	19	11,8%
Pharmacy/pharmacology (Only Uppsala)	12	0%
Philosophy (Only Linköping)	11	120%
Total	2 255	7,5%

Fig 11. Number of professorship by faculty academic year 1995/96 and the change 1993/94-1995/96.

The National Agency for Higher Education has authorized nine small and medium-sized institutions of higher education to set up a total of 51 professorships. 22 of these were professorships in the fields of science, technology and computer studies, while 18 were in the social sciences field and 10 were in the humanities. One professorship was in the area of sports sciences.

International contacts

Many kinds of international contacts form part of the activities of universities and institutions of higher education. Research is often international in character and foreign students, researchers and teachers are a common feature of Swedish higher education. A large number of Swedish students, researchers and lecturers are active in other countries. The internationalization of activities is seen as an essential quality factor.

In the academic year 1995/96 an estimated 20,000 Swedish students were studying at foreign institutions of higher education for longer or briefer periods. Of these, almost 15,000 were studying on their own initiative, while approximately 5,000 were participating in exchange programmes of some description. The EU Erasmus programme organized almost 3,000 Swedish students who studied abroad in the academic year 1995/96. The number of foreign students/guest students mentioned in annual reports of the institutions totals rather more than 5,000, which is an underestimate since a number of institutions were unable to account for their foreign students. (Figure 12).

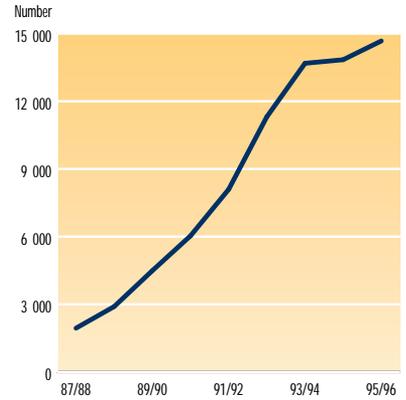


Fig 12. Number of Swedish persons studying at foreign institutions of higher education on their own initiative ("free movers") 1987/88-1995/96.

Maintaining standards – work at universities and institutions of higher education

The audit by the National Agency for Higher Education of the quality work carried out at institutions of higher education applies to all institutions. In an initial run-through the audit will be made during the three-year period 1996-1998. The most important elements are a self-assessment by the institution of higher education, an inspection visit by a group of external observers and a follow-up meeting with the senior management of the institution taking the group's report as its starting point. During the fiscal year 1995/96 the quality work of five institutions of higher education was audited. Beyond this, most of the audit process is now complete for a further seven institutions of higher education.

The reports show that quality work is different in design and orientation at the institutions being evaluated. They also show that different institutions have achieved different degrees of progress. In most cases, quality work is in its inception. Many admirable efforts are being made, but a clear and systematic approach is often lacking. Reading the annual reports of all universities and institutions of higher education, however, indicates a general intensification of work being done and

discussions being held on the issues of quality development during the fiscal year. In their annual reports, some institutions also mention measures that are being carried out or being planned as a result of audits made by the National Agency for Higher Education. Many of the reports mention a clearly enhanced interest and commitment among the staff for issues of this kind.

Staff at universities and institutions of higher education

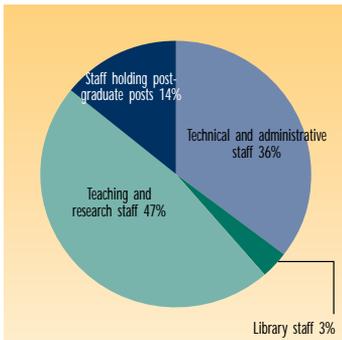


Fig 13. Percentage allocation of all staff (FTE) at universities and institutions of higher education academic year 1995/96.

During the academic year 1995/96 44,400 year-equivalents were carried out at universities and institutions of higher education in Sweden with central government, local government and private organizers. 21,000 of these year-equivalents were performed by teaching staff including visiting and temporary teachers and other teaching and research staff, and 6,170 were performed by staff holding postgraduate posts. (Figure 13).

82 per cent of all year-equivalents were carried out at universities and institutions of higher education with permanent research resources, while 12 per cent were done at small and medium-sized institutions of higher education. The colleges of art accounted for 1 per cent and the colleges of health sciences for 5 per cent.

The number of FTE-students per year-equivalent of all teaching categories including visiting and temporary teachers and other teaching and research staff varies considerably between different types of institutions. The small and medium-sized institutions of higher education as a group have almost twice as many FTE students per year-equivalent of all teachers as do the universities and institutions of higher education with permanent research resources (19 and 10 respectively for the academic year 1995/96). If the number of FTE-students is related to the number of senior lecturers and lecturers instead, whose main worktime should be devoted to teaching, then the

picture is quite different. In this case the quota for the group of universities and institutions of higher education with permanent research resources becomes 20, and for the group of small and medium-sized institutions of higher education it becomes 22. There are however great differences between different institutions, and the figures given only reflect average values per group of institutions.

During the academic year 1995/96 51 per cent of the year-equivalents performed by the group of professors, senior lecturers, lecturers and research assistants were done by PhDs. At universities and institutions of higher education with permanent research resources this proportion was 65 per cent, while it was 24 per cent at small and medium-sized institutions of higher education, 1 per cent at the colleges of art and 8 per cent at the colleges of health sciences. Compared with the academic year 1994/95 the proportion increased by 3 percentage points at small and medium-sized institutions of higher education, while a slight reduction can be noted for universities and institutions of higher education with permanent research resources.

During the academic year 1995/96, 47 per cent of the total number of year-equivalents were performed by women and 53 per cent by men. Women dominate in the groups of administrative staff and library staff. Among all teachers and holders of postgraduate posts, rather more than a third of the year-equivalents were performed by women and just under two thirds by men. (Figure 14).

During the ten-year period 1986/87 to 1995/96 the proportion of women in the group of professors has risen from 5 to 8 per cent, and in the group of senior lecturers from 17 to 22 per cent.

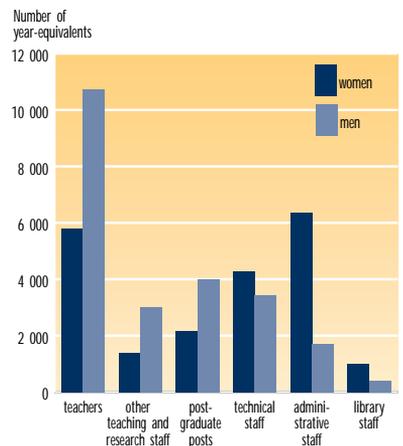


Fig 14. Number of year-equivalents academic year 1995/96.

Finance

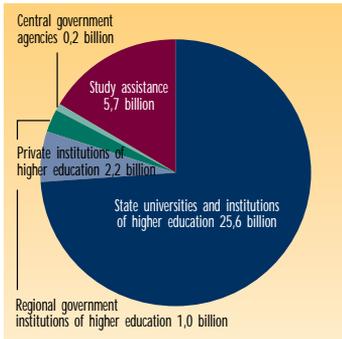


Fig 15. Allocation of total expenditure in the higher education sector calendar year 1996 (SEK billion). The total cost was SEK 34,7 billion.

The total cost of the higher education sector for the extended fiscal year 1995/96 (18 months) may be estimated to amount to 51,500 million kronor. For the calendar year 1996 the corresponding costs may be estimated at 34,700 million kronor. This includes the costs of training and research/research training at central government, regional government and private universities and institutions of higher education, the costs of central government agencies and study assistance to students of higher education. By comparison, the costs of the whole of the education sector in Sweden in 1995 amounted to 122,000 million kronor.

Universities and institutions of higher education with permanent research resources accounted for 82 per cent of the costs. Small and medium-sized institutions of higher education accounted for 13 per cent, colleges of art for 1 per cent and the colleges of health sciences for 4 per cent. Compared with the financial year 1994/95 this means that small and medium-sized institutions of higher education increased their share of funding by 2 percentage points while both universities and institutions of higher education with permanent research resources and colleges of health sciences reduced their share of funding by 1 percentage point each.

During the fiscal years 1993/94 and 1994/95, institutions of higher education reported large positive changes with respect to capital. The changes with respect to capital being reported now for the calendar year 1996 indicate considerably smaller financial room for manoeuvre, particularly for small and medium-sized central government institutions of higher education.

Activities commissioned by external clients at universities and institutions of higher education continue to increase. Most universities and institutions of higher education with permanent research resources report revenues from commissioned work amounting to approximately 4 per cent of total income. At small and medium-sized institutions of higher education the corresponding proportion was around 8 per cent.

Facts about the Higher Education Sector in 1995/96

Students and Teachers	1995/96	Change from 1994/95	Proportion of women 1995/96
New higher education students	66,330	+5 %	56 %
Registered undergraduates	285,800	+6 %	57 %
Undergraduate degrees	31,570	-8%	58 %
New postgraduate students	3,120	0 %	40 %
Active postgraduate students	15,580	+0,5 %	38 %
Doctoral degrees	1,600	+5 %	32 %
"Licentiate" degrees	825	+17 %	30 %
Total full-time equivalent students of whom	233,070	+6 %	55 %
Universities and institutions of higher education with permanent research resources	151,630	+6 %	51 %
Small and medium-sized university colleges	62,540	+14 %	57 %
University colleges of fine arts	2,000	0 %	58 %
University colleges of health sciences	16,900	-16 %	88 %
Total annual performance equivalents of which	193,670	+7 %	57 %
Universities and institutions of higher education with permanent research resources	124,530	+6 %	53 %
Small and medium-sized university colleges	51,640	+19 %	60 %
University colleges of fine arts	1,900	0 %	57 %
University colleges of health sciences	15,600	-19 %	88 %
Staff (FTE) at state, regional authority and private universities and university colleges of which all teaching personnel	44,400 21,000	+8 %	47 %
Proportion of professors, senior lecturers, lecturers and research assistants with doctoral degree	51 %	0%	21%
Costs, M SEK			
Total cost of higher education sector of which	34,700		
State universities and institutions of higher education	25,600		
University colleges of health sciences	1,000		
Private universities and university colleges	2,200		
Student financial support	5,700		
Other	200		
Net operational cost of state universities and institutions of higher education of which	25,600		
Universities and institutions of higher education with permanent research resources	21,740		
Small and medium-sized university colleges	3,670		
University colleges of fine arts	360		

Universities and University Colleges in Sweden 1995/96

Universities and Institutions of Higher Education with Permanent Research Resources

State

Uppsala University
Lund University
Göteborg University
Stockholm University
Umeå University
Linköping University
Karolinska Institute
Royal Institute of Technology
Luleå University of Technology
The Swedish University of Agricultural Sciences

Private-sector

Chalmers University of Technology
Stockholm School of Economics
University College of Jönköping

university Colleges

State

University College of Borås
Dalarna University College
University College of Gävle/Sandviken
University College of Halmstad
University College of Kalmar
University College of Karlskrona/Ronneby
University College of Karlstad
Kristianstad University College
University College of Skövde
University College of Trollhättan/Uddevalla
University College of Växjö
University College of Örebro
Stockholm University College of Physical Education and Sports
Stockholm Institute of Education
University College of Mälardalen
Mid-Sweden University College
Gotland College of Higher Education*
University College of South Stockholm (Org. Comm.)*

Private-sector

Erica Foundation
Gammelkroppa School of Forestry
Johannelund Theological Institute
Stora Sköndal Foundation
Stockholm School of Theology
Örebro Theological Seminary

university Colleges of Arts

State

University College of Dance
University College of Film, Radio, Television and Theatre

University College of Arts, Craft and Design
Royal University College of Fine Arts
Royal University College of Music in Stockholm
Stockholm University College of Opera
Stockholm University College of Acting

Regional Authority

Ingesund College of Music

Private-sector

University College of Music Education in Stockholm

university Colleges for Health Sciences**

Regional Authority

The Baltic International School of Public Health
Bohuslän College of Health Sciences
Jönköping University College of Health Sciences
Stockholm University College of Health Sciences
Umeå College of Health and Caring Sciences
Värmland University College of Health and Caring Sciences

Faculty of Health Sciences, Linköping University**

Kalmar University College of Health Sciences
Skaraborg College for the Health Professions
Boden College for Health Sciences
Borås College for Health Sciences
Falun College for Health Sciences
Gävle College for Health Sciences
Göteborg College for Health Sciences
Kristianstad College for Health Sciences
Lund/Helsingborg College for Health Sciences
Malmö College for Health Sciences
Uppsala College for Health Sciences
Vänersborg College for Health Sciences
Växjö College for Health Sciences

Private-sector

Ersta University College – Department of Nursing and Health
The Swedish Red Cross University College of Nursing and Health
Sophiahemmet College of Health Sciences

* Higher education commissioned by the Gotland College of Higher Education and the Organizing Committee for the University College of South Stockholm

** Six university colleges of health sciences and the Faculty of Health Sciences, Linköping University were incorporated in state institutions of higher education during the fiscal year 1995/96.