Swedish Universities & University Colleges 1998

SHORT VERSION OF ANNUAL REPORT

Swedish Universities & University Colleges

HÖGSKOLEVERKET
National Agency for Higher Education

SWEDISH UNIVERSITIES AND UNIVERSITY COLLEGES 1998

Cover photo:
The Stockholm University library is the hub of the university in Frescati, which stands right in the middle of Sweden,s only national urban park. Stockholm University. Photo: Per Bergström.

Photo page 4: Radio and TV-mast (323 m) in Arvidsjaur covered with ice. Research is being carried out on atmospheric icing to facilitate analysis of the causes of damage to masts and power lines. Luleå University of Technology, Eva Sundin.

Photo page 33: Hopefully, Milou will be able to carry out assignments that humans cannot cope with, for example in hazardous environments or for the functionally disabled. The research team is interdisciplinary and includes mathematicians whose task is to coordinate two video cameras that will teach the robot to "see" and find its way about. Örebro University College. Photo: Magnus Westerborn.

Editor:
Onni Tengner

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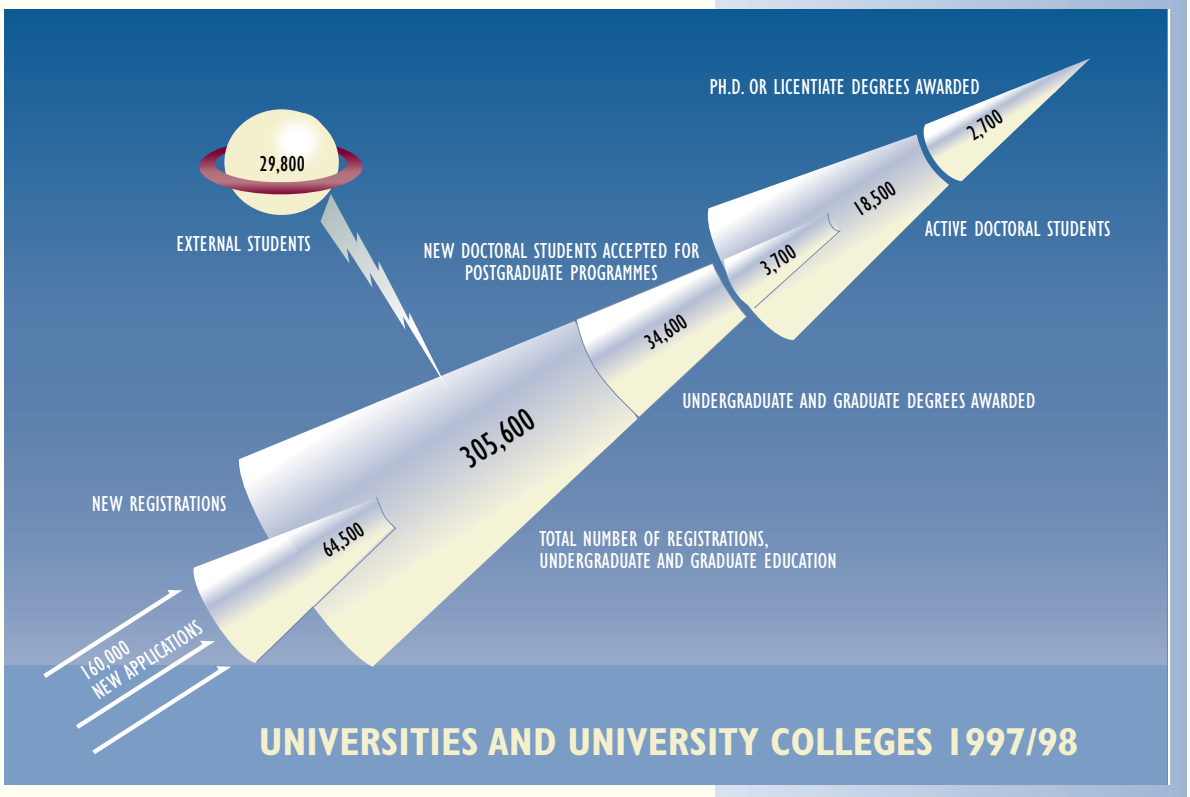
Introduction

This summary of the *1998 Swedish Universities and University Colleges Annual Report* gives an outline picture of higher education activities in Sweden, in both quantitative and qualitative terms. The Report provides a basic description of the academic structure in Sweden and the regulatory framework under the heading *Higher education in Sweden*. Subsequent sections of the report summarize developments prior to and including 1998 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.



Higher education in Sweden

BRIEF RETROSPECT

The expansion of institutions of higher education

As in other countries, higher education in Sweden has expanded during the second half of the twentieth century. With more and more people having the opportunity to study at colleges and universities, higher education is no longer reserved for the few.

In the mid-1940s, higher education in Sweden was provided at the universities of Uppsala and Lund, at the university colleges of Stockholm and Gothenburg and at a number of specialized professional institutions of higher education in the fields of medicine, economics and technology.

As the result of a number of consecutive central government commissions, higher education has then been subsequently expanded. The university colleges of Stockholm and Gothenburg became universities in the late 1950s. University branches were established in Karlstad, Linköping, Växjö and Örebro during the second half of the 1960s to absorb some of the powerful growth in the number of students. Universities were established in Umeå in 1965 and in Linköping in 1975. Higher education and research in the field of technology were established in Luleå in the early 1970s.

The reform of 1977 transferred tertiary institutions and programmes in the fields of nursing and education to the higher education sector. At the same time a number of university colleges were established in various parts of the country.

More and more students in higher education

The number of students has increased from 16,000 in 1950 to over 305,000 in 1998. The growth in the number of students has varied greatly throughout the period.

In the early 1950s the number of new students enrolling annually was 4,000 and the number of degrees taken was 3,000 per year. (The data include postgraduate students.)

SWEDISH UNIVERSITIES AND UNIVERSITY COLLEGES 1998

Fig. 2. Swedish Universities and University Colleges run by central government, regional authorities and private interests.

In the 1950s the number of students in higher education doubled. The greatest expansion occurred in the 1960s. At the end of the 1960s there were over three times as many students in higher education as at the start of the decade. The number of degrees taken also increased.

The reform of higher education in 1977 extended the definition of higher education and the number of students increased still further. Following this, during the closing years of the 1970s and most of the 1980s, the number of students in higher education remained constant, on the whole. At the end of the 1980s a new period of expansion commenced which has continued throughout the 1990s. Between 1990 and 1998, the number of students in basic higher education increased by 58 per cent.

In the academic year 1997/98, there were 305,600 students in basic higher education. 64,500 of these were new students. The number of degrees taken was 34,700. There were 18,500 active postgraduate students. 3,700 of these were new to postgraduate studies, and 2,700 licentiate degrees and PhDs were taken.

The reforms of 1977 and 1993

The higher education system has been reshaped by two comprehensive reforms in 1977 and 1993. In conjunction with the reform of 1977 practically all post upper-secondary education was brought together under the overall concept of higher education. The volumes and location of higher education and the organizational structure of the institutions was regulated in a rather detailed way by central government from 1977 to 1993. For instance, Parliament decided the number of student places to be allocated to every general study programme and institution of higher education.

In the early 1990s yet another reform of higher education was initiated. A new Higher Education Act and a new Higher Education Ordinance came into force on 1 July 1993. This reduced the detailed influence of central government and a decentralization of decision-making was implemented. The reform meant that central government — once it has laid down certain goals and guidelines that are mainly financial in nature —

transfers decisions about the orientation of the programmes of education in basic higher education to the institutions of higher education themselves in the form of three-year education assignments. Every institution of higher education functions as an admissions agency and takes decisions on the admission of students on the basis of certain general guidelines. An important objective of the 1993 reform of higher education was to give students a greater opportunity of choosing courses for themselves and combining them into a degree. A degree ordinance stipulates the degrees that may be taken.

A new system of allocating resources to basic higher education was introduced as of the academic year 1993/94. Institutions of higher education are now allocated resources based on the number of students registered and their academic performance rather than on the basis of the planned volume of education as was previously the case.

Also the organizational structure of national agencies in the higher education sector has been modified in the 1990s. Institutions of higher education answer directly to the national government. On 1 July 1995, the National Agency for Higher Education was established as the national agency for matters concerning institutions of higher education. The agency has responsibilities in relation to follow-up and evaluation, issues of quality and educational innovation, supervision, protection of legal rights, study information and international matters within the higher education sector. The National Admissions Office to Higher Education is another central agency which coordinates the admission of students and is primarily funded by the institutions of higher education themselves. The National Board of Student Aid administers various forms of study support for students in higher education.

THE HIGHER EDUCATION SECTOR TODAY

In the fiscal year 1998 there were some sixty institutions of higher education in Sweden run by either central government, regional

authorities or private interests.

In 1998, the state-run part of the higher education sector comprised 8 universities plus the Karolinska Institute and the Royal Institute of Technology, 7 independent colleges of art and 19 university colleges including the newly-established Malmö University College and Gotland University College, as well as the Stockholm Institute of Education and the Stockholm University College of Physical Education and Sports. In all there were 36 state-run institutions of higher education.

13 colleges of health sciences were run by county councils, as was also the Ingesund College of Music.

Chalmers University of Technology, the Stockholm School of Economics and the University College of Jönköping were run by private sector governing bodies. There were also 9 smaller private institutions of higher education with the right to award certain degrees of basic higher education.

As of 1999 practically all colleges of health sciences have been incorporated into state-run institutions of higher education.

As of 1999 the University Colleges of Karlstad, Växjö and Örebro have been granted university status.

RULES RELATING TO BASIC HIGHER EDUCATION

Admission to basic higher education

To be admitted to basic higher education the applicant must satisfy the basic eligibility requirements, which are the same for all courses or programmes of education. Basic eligibility is attained by completing an upper secondary school programme and obtaining a pass grade or better in courses comprising at least 90 per cent of the upper secondary credits required in the programme, or by providing proof of an equivalent level of knowledge. People who are at least 25 years old, who have been in work for four years and who have a command of English and Swedish corresponding to that obtained by completing a national upper secondary programme are also considered to have basic eligibility.

Most courses and programmes of education also have course eligibility requirements that vary depending on the subject area and the type of course. Course eligibility requirements in courses open to new students are set out in the form of standard eligibility requirements. The National Agency for Higher Education determines these for programmes leading to a professional degree in accordance with the Degree Ordinance. Standard course requirements are set locally by the institution of higher education in question.

If the number of qualified applicants for a course or a programme exceeds the number of places allotted for new students, a selection process is necessary. At least a third of the places must be allocated on the basis of upper secondary grades, and at least a third on the basis of the national scholastic aptitude test. The national scholastic aptitude test measures knowledge and skills of importance for successful studies in higher education. In addition to grades and the national scholastic aptitude test, selection from qualified applicants can also be made on the basis of previous training, work experience or special tests, such as interviews or tests of skill.

Education and degrees

As of 1 July 1993, all basic higher education is provided in the form of courses. These may be linked to constitute a programme of education with a varying element of individual choice. Students themselves are also able to combine different courses into a degree.

In the Degree Ordinance, the Government has laid down which degrees may be awarded and the objectives for these degrees. Every course and programme of education has a plan decided by the institution of higher education in question. Degrees in basic higher education are divided into general degrees and professional degrees.

General degrees

A Master's degree is obtained after studies totalling at least 160 credits (the equivalent of four years' full-time study), of which 80 credits must be in the major subject. The major subject must also

include one thesis comprising at least 20 credits or two projects of 10 credits each.

A Bachelor's degree is obtained after studies totalling at least 120 credits (the equivalent of three years' full-time study), of which 60 credits must be in the major subject. The major subject must also include one thesis comprising at least 10 credits.

A University Diploma is obtained after studies totalling at least 80 credits.

Professional degrees

In addition to the general degrees there are some fifty professional degrees for which specific objectives are stated in the Degree Ordinance. Medical qualifications, engineering degrees, and agronomics degrees are examples of such professional degrees.

Study funding

It is possible for students to obtain state support to finance their studies in higher education. This support consists of study grants and study loans in combination. To obtain financial support for studies certain requirements must be met. If students have an income, the amount of support may be reduced. To receive study support over a period of years, students must pursue their studies with a certain rate of success. In 1998, the grant portion of study support for an academic year nine months amounted to 17,800 kronor (SEK) and the loan ceiling was 46,100 kronor. The maximum total available government-sponsored study funding for an individual student pursuing full-time studies in 1998 thus amounted to 63,900 kronor.

RULES RELATING TO POSTGRADUATE TRAINING

Admission to postgraduate training

Postgraduate training is based on a basic higher education of at least 120 credits with at least 60 credits in the research subject. Furthermore, the faculty board in question may add other

requirements for admission. An assessment is also made of an applicant's capacity for completing postgraduate studies.

Postgraduate training and degrees

Postgraduate training nominally comprises 160 credits (four years) and leads to a PhD. A Licentiate degree may be taken after two years and comprises at least 80 credits.

A PhD student must complete a number of courses and write a doctoral dissertation. Each student has the right to personal supervision. The dissertation, which constitutes the most important part of postgraduate studies must be defended at a public oral examination.

Institutions with the right to award postgraduate degrees are the universities plus the Karolinska Institute, the Royal Institute of Technology, Chalmers University of Technology, the Swedish University of Agricultural Sciences, the Stockholm School of Economics and the University College of Jönköping. Many of the other institutions of higher education in Sweden collaborate with these institutions in the organization of research training.

As of 1999 other institutions of higher education will also obtain the right to give postgraduate training and award postgraduate degrees. This will occur by way of the Government granting an institution of higher education university status after assessment and approval. Institutions of higher education will also have the possibility of establishing one or more so-called area of research after assessment and approval.

As of 1999, the University Colleges of Karlstad, Växjö and Örebro have been granted university status, thereby gaining the right to carry out postgraduate training and to award postgraduate degrees. From the same year, the University College of Kalmar has been granted the area of research of Natural Science and the University College of Karlskrona/Ronneby the area of research of Technology. Within these designated areas of research, the university colleges in question have the right to carry out postgraduate training and award postgraduate degrees.

Study funding in postgraduate training

Postgraduate training is financed out of the funding allocated to each faculty. There is also funding from external sources such as

research councils. The faculty boards decide whether the earmarked resources should be used for postgraduate posts or for study grants. Both posts and grants run for four years. A grant may also be shared between two postgraduate students. Postgraduate students holding postgraduate posts are obliged to concentrate on their studies, but are allowed to combine them with teaching or other work to a limited extent. A relatively common way of financing postgraduate studies is to combine them with work on a research project which may be externally funded by a research council or a sectoral agency.

In 1998, the rules for funding postgraduate studies were modified. Among other things it is stipulated that only applicants employed in a postgraduate post or awarded a study grant may be admitted to postgraduate training. In other cases the applicant must have guaranteed study funding for the whole period of study. There are certain transitional rules.

RESEARCH WITHIN HIGHER EDUCATION

Sweden is a country that allocates a relatively high proportion of its resources to research and development (R&D). The proportion of the GNP going to R&D is some 3.8 per cent. The higher education sector is responsible for just over a fifth of the resources spent on R&D in Sweden. Most R&D is conducted within private sector companies.

By far the greatest part of publicly funded research takes place at institutions of higher education. Thus institutions of higher education have a central role in the Swedish research system, not merely because they constitute the traditional base for research and postgraduate training, but also because they conduct research on behalf of sectoral public agencies and the private sector. Research activities have also great significance for basic higher education.

For the most part, research and postgraduate training take place at universities and specialized professional institutions of higher education. As of 1997 the university colleges receive special

grants for research. These grants have been increased by the government and the university colleges are gradually expanding in research and postgraduate training. In addition, research at university colleges is funded by research councils, sectoral research bodies and contract work for the private sector, agencies, local authorities and county councils.

FUNDING HIGHER EDUCATION

Funding from the national budget to basic higher education

A new system of allocating resources to basic higher education was introduced in the academic year 1993/94. Institutions of higher education receive an educational assignment for each new three-year period. The allocation of resources depends on results measured in terms of students (calculated in terms of full time equivalent, FTE, students) and study achievements (calculated in terms of annual performance equivalents) at the institutions of higher education in question.

In the education assignments for the period 1997-1999 minimum numbers of certain degrees at the institution of higher education in question are stipulated. Objectives with respect to the lowest number of FTE students as a whole and for the lowest number of FTE students in the science and technology areas are set out for each fiscal year. The education assignment may also stipulate that the number of FTE students must increase or diminish in certain subject areas compared with the preceding three-year period. There is a ceiling sum (maximum funding) which constitutes the highest aggregate compensation for FTE students and annual performance equivalents permitted for the fiscal year in question.

The amounts of compensation for FTE students and annual performance equivalents are determined annually by the national government and set out in its annual budget. The amounts are not the same for different subject areas. At the institutions of higher education all courses are classified by subject area. This classification determines the compensation that will be obtained.

Subject area	Payment per full-time equivalent student (SEK)	Payment for annual performance equivalent (SEK)
Humanities Theology Law Social sciences	13 343	13 968
Science Technology Pharmacy/ pharmacology Nursing	36 037	32 953
Odontology	32 724	40 921
Medicine	44 025	57 740
Education*	25 781	32 658
Other**	30 274	26 067
Design	107 354	68 989
Art	153 087	69 011
Music	92 441	61 762
Opera	220 689	139 248
Theatre	213 882	112 115
Media	216 324	184 021
Dance	150 012	87 470
Physical education and sports	78 563	38 178

Fig. 3. Compensation amounts for basic higher education fiscal year 1998.

* Education methodology aspects of teacher training programmes.

** Journalist and librarian programmes and practical artistic courses in teaching training programmes.

Compensation amounts for the fiscal year 1998 may be seen in **figure 3**.

Funding from the national budget to research and postgraduate training

Research and postgraduate training is funded by way of special grants to the institutions of higher education in question. Up to 1998 the amounts were distributed by central government to the various faculties at the institutions of higher education concerned. As of 1999, resources for research and postgraduate training will no longer be allocated by faculty but will be distributed to four areas of research — humanities/social science, medicine, natural science and technology. There is also a special item to cover compensation for such costs as rent of premises. Certain conditions are attached to the grants. For instance, not less than a certain proportion of the grant must be used to fund postgraduate training. A special grant for artistic development work is distributed to the colleges of art.

External resources

The grants from the national budget for basic higher education and research/postgraduate training, which are allocated directly to state-run institutions of higher education, make up rather more than 60 per cent of the resources of these institutions of higher education. The remaining portion comprises external resources for research and contract work mostly provided by research councils and sectoral agencies, together with local authorities and county councils.

ORGANIZATIONAL STRUCTURE AND TEACHING POSTS

Today the internal organization of institutions of higher education is decided by the institutions themselves. Certain guidelines are laid down in the Higher Education Act and the Higher Education Ordinance.

As previously, each institution of higher education must be

run by a management board. The Government appoints the Chair of the board. Until 1997 the Vice-Chancellor automatically became Chair of the board, but as of 1998 it is stipulated that the Government should appoint a Chair who is not employed at the institution of higher education in question. The management board is composed of the Chair, the Vice-Chancellor and not more than thirteen other members. The Government appoints the majority of the members of the management board. The representatives of the teaching staff are chosen by election within the institution of higher education. The students have the right to be represented by three members. Employee representatives have the right to attend and to speak at board meetings.

The Vice-Chancellor is nominated by the board and employed by Government decision for not more than six years. Other board members are appointed for a period of not more than three years. A Pro-Vice-Chancellor is the Vice-Chancellor's deputy. More than one Pro-Vice-Chancellor may be appointed. An institution of higher education may also appoint Pro-Vice-Chancellors with responsibility for parts of its operations.

By 1998, all institutions of higher education organized on faculty lines had to have faculty boards as the bodies responsible for research and postgraduate training. As of 1999, it is stipulated that all institutions of higher education granted an area of research shall have at least one faculty board. If an institution of higher education should not create specific decision-making bodies for basic higher education, the faculty boards should also be responsible for the basic higher education carried out in their area of study. The Dean of Faculty is the chair of the faculty board. In the decision-making bodies created for matters of research and basic higher education, the teaching staff is always to have the majority. The students have the right to be represented by at least two members on the faculty board and on other bodies dealing with educational matters.

With the exception of the above-mentioned rules concerning governing bodies, faculty boards and other bodies, Swedish institutions of higher education may themselves determine their internal organizational structure and the decision-making bodies and boards required for their purposes.

The Higher Education Ordinance contains regulations with

respect to the employment of teaching staff at institutions of higher education. The categories concerned are: professors (including visiting professors), senior lecturers (including visiting senior lecturers as of 1999), junior lecturers (including visiting junior lecturers as of 1999), postdoctoral fellows, part-time teachers (paid on an hourly basis) and guest teachers. A significant new development in the Higher Education Reform of 1993 is that Government and Parliament no longer determine which professorships are to exist, and they no longer take the final decision as to the employment of professors. Instead, institutions of higher education with a faculty organization themselves make the decisions concerning the professorships they wish to have. During the period from 1 July 1995 to 31 December 1998, it was also possible to create professorships at other institutions of higher education given the approval of the National Agency of Higher Education. This regulation is no longer in force as of 1999, when these other institutions of higher education themselves became eligible to create professorships.

As of 1999, new rules for the employment, recruitment and promotion of teaching staff have been introduced. The rules mean, for instance, that a senior lecturer who satisfies the employment requirements of a professor shall be employed as a professor. Educational skills should be given greater weight in this promotion than before. In addition, recruitment objectives is

specified with a view to increasing the number of women among newly-appointed professors.

Trends and developments

What is happening in the higher education sector? What developments have taken place? How is Swedish higher education faring in an international perspective?

In this section the aim is to focus on certain aspects of the development of higher education and to situate Sweden on a map of international comparisons.

First the major features of recent developments in basic higher education and in postgraduate training will be dealt with, followed by some comments on the level of education in the Swedish population in an international perspective. Finally the development of resources in basic and postgraduate training will be discussed.

BASIC HIGHER EDUCATION

Still stiff competition for places, but the pressure of applicants is perhaps easing slightly

In the autumn of 1998 the pressure of applicants for admission to higher education was still high, although it was slightly easier to gain admission than it had been the previous autumn. But it was still more difficult to enter higher education in the autumn of 1998 than in the early 1990s, when about half of the applicants were offered a place. In the autumn of 1998 this proportion was slightly more than 40 per cent. Despite the great expansion of higher education during the 1990s, the increase in the number of places available has not been able to accommodate the growing numbers of applicants for higher education. The numbers failing to gain admission have grown markedly in the past few years, and as a consequence the queues have grown longer. Those who find

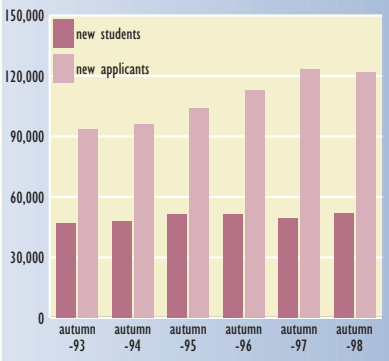


Fig. 4. Number of new students and new applicants, not previously participating in higher education, autumn terms 1993–1998.

the greatest difficulty in gaining admission are for the most part young people aged 19 or 20. **See figure 4.**

Despite stiff competition for places, there are certain signs that the situation may be changing. There were slightly fewer applicants in the autumn of 1998 than there were in the autumn of 1997, and rather more applicants were offered places. The interest shown in higher education by young people at upper secondary school is still great, but is slightly less than it was in 1997 and has fallen to the same level as two years ago. The number of people taking the national scholastic aptitude test has also fallen slightly recently. The numbers applying for admission via the National Admissions Office to Higher Education in the autumn term of 1999 are on the whole similar to the figures for the autumn of 1998. On the other hand, there is a pent-up need for places for people who have applied for admission to higher education in recent years but failed to get in. These people will probably reapply, and even though the pressure of applicants may be easing somewhat, there will still be stiff competition for places.

The number of new students has fallen

In the academic year of 1997/98 there was a drop in the number of new students — that is, students who had not previously pursued courses of higher education. This continued the falling trend recorded in the academic year of 1996/97, which marked the end of the rising trend from the mid-1980s onwards. **See figure 5.**

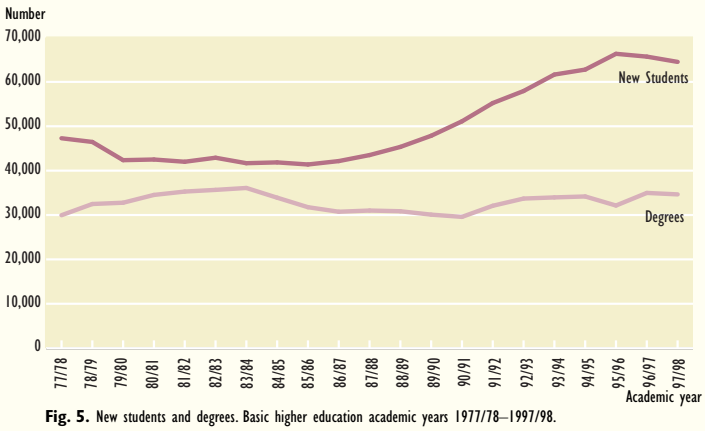


Fig. 5. New students and degrees. Basic higher education academic years 1977/78–1997/98.

This circumstance may seem remarkable given the persistence of a queue for admission to higher education. But in the academic year of 1997/98 — as in 1996/97 — the resources available to institutions of higher education had increasingly to be used for students who had already been admitted, which meant that the institutions were unable to admit new students to the same extent as before.

Even if there has been a fall in the number of new students in the past few years, the number is nevertheless some 65,000, which should be compared with the figure of 50,000 for the early 1990s.

More young people with working-class backgrounds are being admitted to higher education, but the fact of a socially skewed recruitment is only marginally affected

During the 1990s certain changes have taken place in the social backgrounds of those newly admitted to higher education. The proportion of students from the homes of senior white-collar employees fell from 32 to 28 per cent between 1990/91 and 1996/97, while the proportion from working-class homes rose from 10 to 13 per cent during the same period.

Although a certain levelling has thus taken place with respect to the social background of those newly admitted to higher education, the 1990s have not seen any great changes in the socially skewed recruitment traditional in higher education. The proportion of newly admitted students has increased in all background groups. Before the age of 21, of those born in 1976, 54 per cent of those from senior white-collar backgrounds had begun courses of higher education. The corresponding proportion for those from unskilled working-class families was 14 per cent. For those born in 1968 the proportions were 33 per cent and 7 per cent respectively.

More women taking courses in technology

There has been a notable increase in the proportion of women taking courses in technical subjects in recent years. For many years the proportion of women among those starting studies for a diploma in graduate engineering was around 20 per cent. In recent years this proportion has grown, reaching 28 per cent in the

academic year of 1997/98. The number of new admissions to such programmes increased by 650 in the past five-year period. Almost the whole of this increase is accounted for by women — to be precise, the increase comprised 620 women and 30 men.

The proportion of women among those starting shorter engineering programmes has also increased, from 17 per cent in the academic year of 1993/94 to 26 per cent in the academic year of 1997/98.

The total number of students is still increasing slightly

In the academic year of 1997/98, 305,600 students were engaged in short or long-term studies at institutions of higher education. This is an increase of 5,000 over the previous year but still this constitutes the smallest year-on-year increase of the 1990s. **See figure 6.**

The development trend for the number of registered students in the future depends on a number of different factors, such as the influx of new students, the periods of study and the flow of graduates and others that leave higher education. The resources for study places put at the disposal of institutions of higher education by central government are naturally of decisive importance, as is the existence of a sufficiently large pool of applicants for the various programmes on offer. Despite the large total number of applicants for higher education, there are certain courses or programmes to which it is hard to recruit new students.

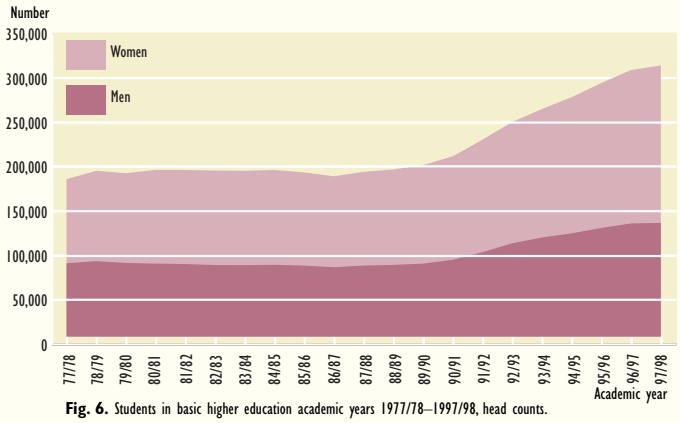


Fig. 6. Students in basic higher education academic years 1977/78–1997/98, head counts.

Extended study periods entail an increase in the total number of students. The number of graduates depends among other things on the procedures for and the rate of taking degrees. The number of degrees taken should increase given the expansion in the number of students. Another consideration is that improvements in the labour market for young people may entail both a reduced interest in higher education and an incentive for those already pursuing courses of higher education to abandon their studies, with or without a degree, and enter employment instead.

Sweden has a low proportion of 19 and 20-year-olds in higher education, but tops the list of OECD countries for 18-year-olds in education

To provide an international perspective on the expansion of higher education in Sweden, some OECD educational indicators from the publication Education at a Glance (EaG) are presented here. How does Sweden fare in this perspective?

One indicator describes the proportion of the population in upper secondary or higher education between the ages of 15 and 20 years. According to the OECD, in comparison with other countries Sweden had a very low proportion of young people of 19 and 20 pursuing educational activities in the academic year of 1995/96 (the most recent available OECD data). Sweden, Austria, Hungary and the Czech Republic had the lowest proportion of all OECD countries. **See figure 7.**

A comparison of the proportion of the 22-25 age group in post-secondary education in the academic year of 1995/96, shows that Sweden is in the middle of the scale of OECD countries. All the countries in question expanded their higher education systems during the 1990s. Despite the powerful expansion of higher education, Sweden occupied roughly the same place in both 1991/92 and 1995/96. The Nordic neighbours (Denmark, Finland, Iceland and Norway) top this list with 24-29 per cent of the 22-25 age group in post-secondary education in 1995/96. The figure for Sweden is 18 per cent, or the 11th place among the OECD countries. In a comparison of 26-29-year-olds in higher education, Sweden is rather higher up the scale, in the 7th place.

On the other hand, Sweden has a very high proportion of 18-

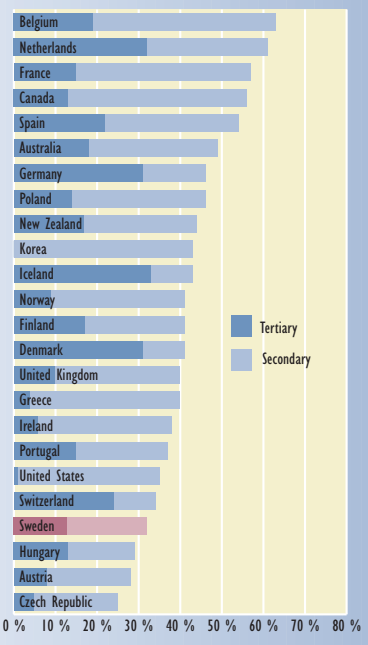


Fig. 7. Net enrolments rates at the age of 20 in public and private institutions 1996 (OECD).

year-olds pursuing educational activities. In the academic year of 1995/96, 93 per cent of all 18-year-olds were taking upper secondary courses of some kind. This is the highest proportion in any OECD country.

A slight increase of the total number of degrees in basic higher education

The expansion of higher education during the 1990s has not yet brought with it a corresponding increase in the number of degrees taken. **See figure 5**. This lag in the number of degrees taken is not unique, however. A similar situation arose in conjunction with the great expansion of higher education in the 1960s. Then too there was a growing gap between new admissions to higher education in a certain year and the number of degrees taken some years later.

A dramatic increase in the number of degrees requiring 3 years or more of study

During the academic year of 1997/98, almost 34,700 degrees were awarded in basic higher education. During the 1990s there has been a marked increase in the number of degrees from long programmes of education, i.e. those taking 3 years or more. In the early 1990s, the proportion of degrees from long programmes was 45 per cent of all degrees. In the academic year of 1997/98, this proportion rose to 90 per cent. This increase is among other things due to the extended study periods of many programmes of education, particularly in the health sciences and education sectors. In addition, the four-year Master´s degree has been introduced.

No change in long-term through-put so far, but a marked drop in the short-term

It takes a long time to determine the definitive frequency of completed degrees within each year-group of new admissions to higher education, i.e. the proportion of each annual admission group finally taking a degree. Marginal increases in the frequency of degrees taken occur long after the commencement of studies. After ten years, an average of 60 per cent of the annual new admissions between 1980 and 1987 had taken a degree.

A study of the frequency of degrees taken over a shorter time-

scale, gives a different picture. After four years, only 22 per cent of those who had begun their studies in 1993 had taken a degree. The corresponding proportion for those who began their studies in 1980 was 40 per cent. Despite the great difference in this frequency of degrees taken, it is still too early to draw any definitive conclusions regarding the long-term situation. It is a clear trend, however, that students are taking longer now between the commencement of their studies and taking a degree. The low frequency of degrees taken after four years is only partly accounted for by extended study periods of programmes. Other explanations need to be found. One is that the programmes and courses of education on offer within higher education are increasingly being sought by people who do not intend to take a degree. The growing intake into higher education and the broadening of the student population this entails give greater prominence to other reasons for studying than taking a degree.

In a survey conducted in the autumn term of 1996, 70 per cent of students responded that their studies involved a lengthy programme of education leading to a degree. The remaining 30 per cent were pursuing studies without a degree as their major goal. Their studies might for instance involve supplementing other previous higher education, or be completely autonomous, forming no part of any multi-year programme of education. One reason for long periods of study may well be that roughly a third of the students who responded are working to some extent alongside their studies.

Still relatively few degrees taken in science and technology

Sweden has a relatively low position with respect to the proportion of degrees taken in programmes of education of at least three years in science and technology related to the number of people in the work force in the 25-34 age group. **See figure 8.**

Every country including Sweden for which figures are available has increased the numbers of degrees taken by scientists and engineers between 1991 and 1995. Sweden had roughly the same position among the OECD countries both in 1991 and 1995. The proportion of degrees taken in the above category is approximately

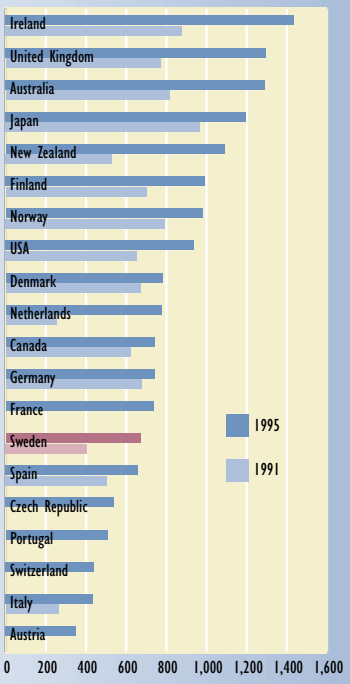


Fig. 8. Number of science graduates per 100,000 persons in the labour force 25–34 years of age, 1995.

twice as great in Ireland, Great Britain and Australia as in Sweden. The rate of increase between 1991 and 1995 has, however, been greater in Sweden than in most other OECD countries.

In Sweden as in many other countries efforts are being made to encourage more people to get higher education in science and technology.

Attitudes to and knowledge of science and technology are improved and stimulated by way of the SciTech project, a joint programme of the National Agency for Education and the National Agency for Higher Education that has been in progress for five years.

To increase recruitment to programmes in science and technology, a basic year has been introduced to provide the previous knowledge required. Since 1995 specially advantageous financial provisions have been made for people already in employment but wishing to pursue studies in science and technology.

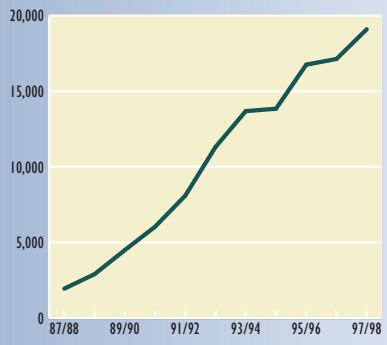


Fig. 9. Number of Swedish persons studying at foreign institutions of higher education on their own initiative ("free movers") 1987/88–1997/98.

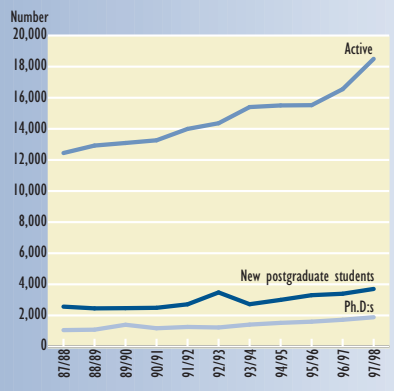


Fig. 10. Active and new postgraduate students and Ph.D:s 1987/88–1997/98.

Cross-border students

Higher education and research are becoming increasingly international in character. Swedish institutions of higher education have traditionally had well-developed routines of cooperation with institutions of higher education in other countries. These often involve agreements on the exchange of students, postgraduate students and teaching staff.

In the academic year 1997/98 25,500 people were studying at foreign institutions of higher education for longer or shorter periods of time. 19,100 of these were "free movers" who arranged their own places abroad. **See figure 9**. There were also 6,400 Swedish students studying abroad on exchange programmes.

The Erasmus programme of the EU covered 3,300 Swedish students studying abroad in 1997/98, with roughly the same number of foreign students coming to Sweden on the same programme.

POSTGRADUATE TRAINING

More students in postgraduate training

The influx of new postgraduate students into postgraduate training has increased markedly over the past ten years, as has the number of degrees taken. The number of new admissions increased by rather more than 50 per cent in this period, reaching 3,700 by the academic year of 1997/98, taking the total number of postgraduate students to around 18,500. **See figure 10.**

These aggregate figures conceal the fact that development has been uneven in different faculty areas, however. In recent years, for instance, there has been a reduction in the number of new postgraduates in the humanities and the social sciences. There may be a number of reasons for this, but the trend is partly connected with the reform of postgraduate training which recently came into force, entailing much greater emphasis on the availability of funding for the total duration of the intended studies. Postgraduate students in the faculties of the humanities and the social sciences have not had the same access to such funding as those in most other faculties.

The medical faculties have shown a great increase in the number of postgraduate students in recent years. Here it is above all the number of women that has grown. This is partly due to the fact that the integration of the colleges of health sciences (formerly run by the county councils) into state institutions of higher education has led to increased opportunities for those with degrees from health sciences programmes to pursue postgraduate training.

A great increase in the number of postgraduate degrees

In contrast to the number of degrees taken in basic higher education, the number of degrees taken in the postgraduate sector shows a marked increase over the past ten years. From a figure of some 1,400 degrees in the academic year of 1988/89 to 2,700 in the academic year of 1997/98.

Internationally speaking, Sweden is well placed. Switzerland comes first of the OECD countries in a comparison of PhD degrees per capita, followed by Sweden, Finland and the Netherlands.

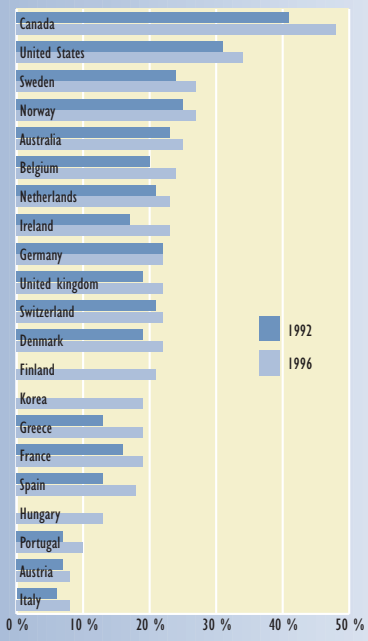


Fig. 11. Percentage of the population 25–64 years of age with tertiary education 1992 and 1996 (OECD).

THE LEVEL OF EDUCATION IN THE POPULATION

The level of education in the Swedish population is rising

Improved educational opportunities have resulted in some three-quarters of the Swedish population now having upper secondary or higher educational qualifications.

The proportion of those with post upper-secondary education has also risen, and in 1998, 27 per cent of the 25-64 age group had some post upper-secondary education. **See figure 11**. During the 1990s the proportion of the population with less than 3 years of post upper-secondary education grew from 11 to 14 per cent. (Those with certificates from the former four-year upper secondary engineering line are also included, as are those with not less than 20 credits in a course of higher education.)

Fewer people under the age of 45 with a long higher education in 1998 than in the early 1990s

The overall proportion of those with a long higher education (of three years or more including postgraduate training) rose from 11 per cent in 1990 to 13 per cent in 1998.

Analysis of various age groups reveals that the whole of the increase during the 1990s occurs within the 45-64 age group. Both the number and the proportion of people with a long higher education in the 25-44 age group fell somewhat between 1991 and 1998. The reason for this rather surprising finding is that young people finishing school in the late 1950s and 1960s did not enter higher education to the same extent as those finishing school in the late 1940s and early 1950s. The rapid expansion of higher education in the 1960s brought with it favourable educational opportunities for those born in the 1940s, while the more restrictive admissions policies of most of the 1980s in conjunction with unchanged capacity of higher education excluded many of those born in the 1960s from such opportunities. In addition, the labour market was bouyant and many young people chose to work rather than to continue their studies after upper secondary school.

The expansion of higher education in the 1990s will generate more noticeable effects only when several more years have lapsed.

A rather higher proportion of people with three years or more of higher education can already be noted for recent years in the 25-34 age group, however.

An international perspective

The low proportion of young people with three years or more of higher education is also reflected in international comparisons. OECD educational statistics show that in comparison with other countries in 1996 Sweden had a very low proportion of people with three years or more of higher education in the 25-34 age group, while the proportion in the 45-54 age group was considerably higher. For the 25-34 age group Sweden was 4 percentage points below the average for OECD countries and 4 percentage points above the average for the 45-54 age group. In this respect Sweden does not follow the pattern in most other countries, where younger age groups are usually better educated than older ones. **See figures 12 and 13.**

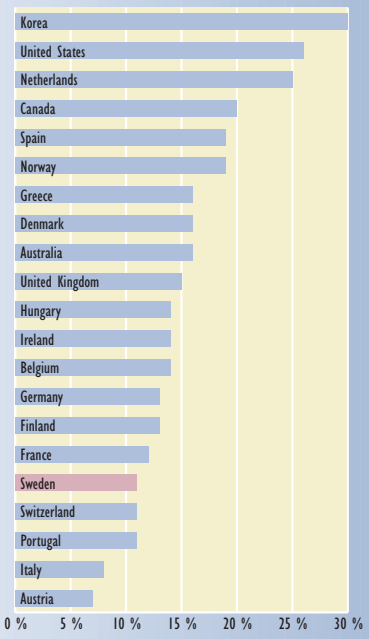


Fig. 12. Percentage of the population 25–34 years of age with at least three years´ tertiary education 1996 (OECD).

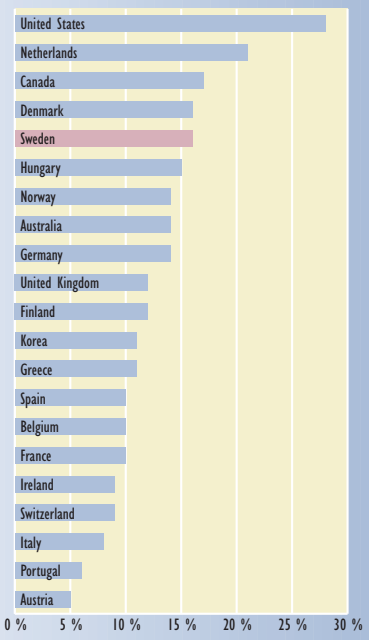


Fig. 13. Percentage of the population 45–54 years of age with at least three years´ tertiary education 1996 (OECD).

RESEARCH

Volume and orientation

A greater amount of research is nowadays being done within the higher education sector. In the fiscal year 1998, 19,000 research-years were carried out at institutions of higher education, an increase of 1000 research-years over the fiscal year 1997. The relative increase was greatest at the university colleges which have obtained permanent resources for research as of the fiscal year 1997. The predominant proportion of research-years is carried out at the universities and specialized professional institutions of higher education.

Sweden performs well in comparisons using published academic articles as a measure of research activity. If the number of articles is related to size of the population, Sweden occupies second place after Switzerland among the OECD countries. Collaborative authorship across national borders is increasing, as is the collaborative authorship of academic articles among

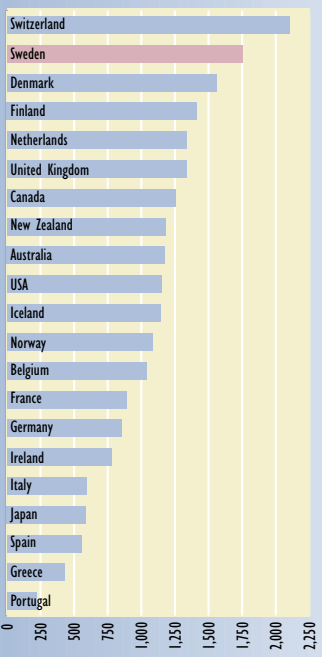


Fig. 14. Number of published scientific articles per million inhabitants 1997.

	Professorships 1998
Total	2,445
Law	59
Humanities	197
Philosophy (incl. thematic research)	45
Theology	29
Social sciences	361
Odontology	50
Medicine	574
Pharmacy/pharmacology	12
Agriculture	188
Mathematics/science	303
Technology	565
Arts	62

Fig. 15. Number of professorships 1998.

researchers in Sweden. **See figure 14.**

The number of professorships at institutions of higher education is increasing. In 1997 there were 2,445 professorships at Sweden's institutions of higher education. During 1998, 135 new professorships were established while 48 professorships were discontinued. Thus, there was a net increase of 87 professorships. **See figure 15.**

Collaboration with the society at large has come into sharper focus

Institutions of higher education are expected to collaborate with their local communities, the business community, the public sector and activities for the benefit of the general public and provide information about their activities. This "third assignment", as it is known, has come into sharper focus in recent years and is now explicitly formulated in the Higher Education Act.

Regarding collaboration with the business community, institutions of higher education in the field of technology quite naturally have many available channels of contact, such as research centres, industrial research institutes, technology parks, holding companies, contract research, industrial postgraduate students and competence centres.

Most institutions of higher education have initiated special units to take care of contacts with the business community and the community in general, working life centres to support the transition of students to professional employment, special bodies for cooperation between the institution of higher education and the region in which it is located, etc.

Many institutions of higher education have special technology parks and "incubator units" to facilitate for researchers wishing to start companies. Many collaborative projects are wholly or partially funded by EU structural funds, the Foundation for Strategic Research, the Foundation for the Development of Knowledge and Competence, NUTEK (the Swedish National Board for Industrial and Technical Development), the Institute for Working Life, etc.

RESOURCES

The total costs of the higher education sector in the fiscal year 1998 were 39.2 thousand million kronor including the costs of study support and of the national agencies. In relation to 1997, costs increased by 1 thousand million kronor at fixed prices. The higher education sector's proportion of the total costs of education in Sweden remains unchanged at approximately 30 per cent. **See figure 16.**

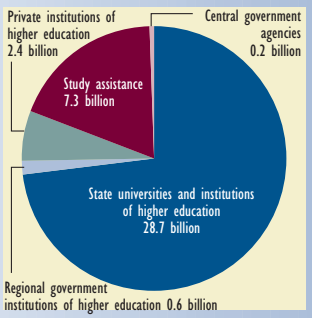


Fig. 16. Allocation of total expenditure in the higher education sector fiscal year 1998 (SEK billion). The total cost was SEK 39.2 billion.

A large proportion of the gross national product goes to the higher education sector

OECD statistics for 1995 show that Sweden is highly placed with respect to a number of indicators related to resources for higher education and research. In relation to the proportion of the gross national product (GNP) going to the higher education sector, Sweden and Finland have the highest figures in Europe. The USA, Canada, Australia and Korea have even higher figures, however. **See figure 17.** Sweden also has a high cost per student in higher education. What is more, the costs per student for the system of study support are among the highest in the OECD.

A common objection to international statistics in relation to Sweden is that data for Sweden are significantly influenced by the fact that a large proportion of research in this country takes place at institutions of higher education rather than at independent institutes or other research organizations outside the higher education sector as is often the case in other countries. This circumstance is corroborated by data that show that Sweden has the highest costs for research and development at institutions of higher education within the OECD as a proportion of GNP. Provisional results from a pilot study at the OECD indicate, however, that even when research costs are excluded, Sweden still comes high on the list when resources for higher education are compared between countries.

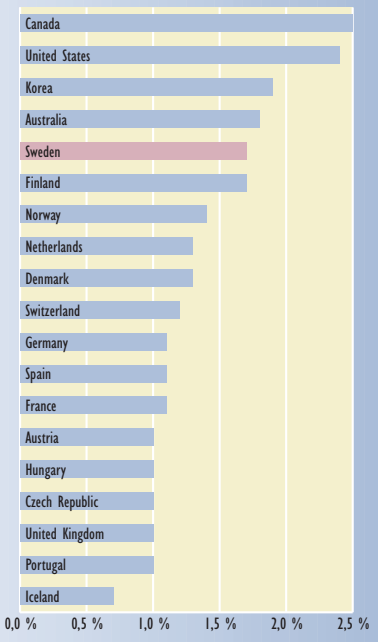


Fig. 17. Educational expenditure as a percentage of GNP for tertiary education 1995 (excluding study support but including expenditure for research at institutions of higher education) (OECD).

Resources for basic higher education are not in synch with the pressure of applicants

During the first three-year period with the new system for allocating resources to basic higher education (1993/94-

1995/96), Swedish institutions of higher education admitted many more students than there was financial scope for in the national government appropriations they received. This was done, among other things, to satisfy as far as possible the greatly increased demand for higher education. A combination of government cuts, decided for national budgetary reasons, in conjunction with the obligation of the institutions to serve students already pursuing their programmes of education, gave rise to large financial deficits in operations for the financial years of 1996 and 1997. To balance their finances the institutions had among other things to reduce the number of new admissions, which resulted in longer queues for places.

A fact that illustrates the resource situation is that the government decision to increase resources to allow for 32,000 extra places of study in 1997 and 1998 only led to an increase of 11,000 full-year students. Other factors behind this gap are extended study periods and a shift from places requiring less resources in the humanities and the social sciences to those requiring more resources in areas such as science and technology.

Sweden tops the OECD statistics for R&D

According to Statistics Sweden, the total cost of R&D in Sweden in 1997 amounted to approximately 65 billion kronor. This corresponds to just over 3.8 per cent of GNP and puts Sweden at the top of the OECD figures. Three-quarters of this was carried out by private companies, 22 per cent in the higher education sector and the remainder in other areas of the public sector and in the non-profit private sector. The higher education sector's proportion of the costs for R&D was almost 30 per cent in the early 1990s. It has since fallen, mainly as a result of the powerful growth of R&D resources in the private business sector, principally concentrated within a few large manufacturing companies. Despite the reduced proportion of the total cost of R&D in Sweden, the resources for research and postgraduate training in the higher education sector have been almost doubled over the past ten years (fixed prices).

Problems of balance when the proportion of

direct national government grants to research and postgraduate training is falling, and external funding is increasing

In the early 1980s, two-thirds of research and postgraduate training at institutions of higher education was funded by faculty grants and other direct government grants to the institutions. By 1998 this proportion had fallen to a half, which means that half of the research activities carried out in the higher education sector are dependent on external providers of funding, mainly research councils, sectoral agencies, etc., but now also, and increasingly research foundations and EU funds. The proportion of publicly funded activities in research and postgraduate training at institutions of higher education fell during the same period from rather more than 90 per cent to around 75 per cent.

Growth in external funding provides better opportunities for institutions of higher education to collaborate with the communities in which they are located, but also means that the control of research decisions moves outside the institutions. Purely scientific and academic criteria for research efforts have been facing growing competition from criteria decided by external parties. To restore the balance, increased basic resources are necessary for research and postgraduate training at institutions of higher education.

STAFF

During the fiscal year 1998, a total of 46,700 year-equivalents were performed at institutions of higher education (both public and private organizers). In total terms this means an increase by 4 per cent since the academic year 1995/96. The proportion of women was 47 per cent.

Teaching staff increased by 3.5 per cent

After stagnating in 1997, the number of teaching staff at institutions of higher education is now rising again. In the financial year 1998, 21,800 year-equivalents were performed by lecturers and researchers. This represents an increase of 3.5 per

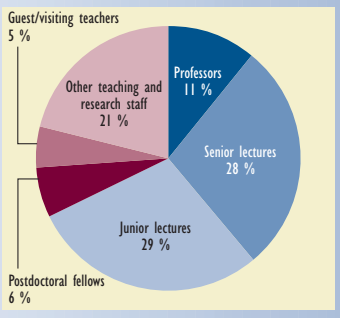


Fig. 18. Percentage allocation of teachers and research staff at institutions of higher education 1998.

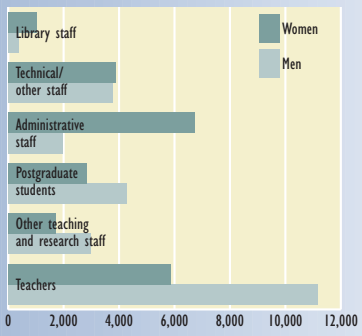


Fig. 19. Number of year-equivalents 1998.

cent over 1997. More than half of this increase involved women. **See figure 18.**

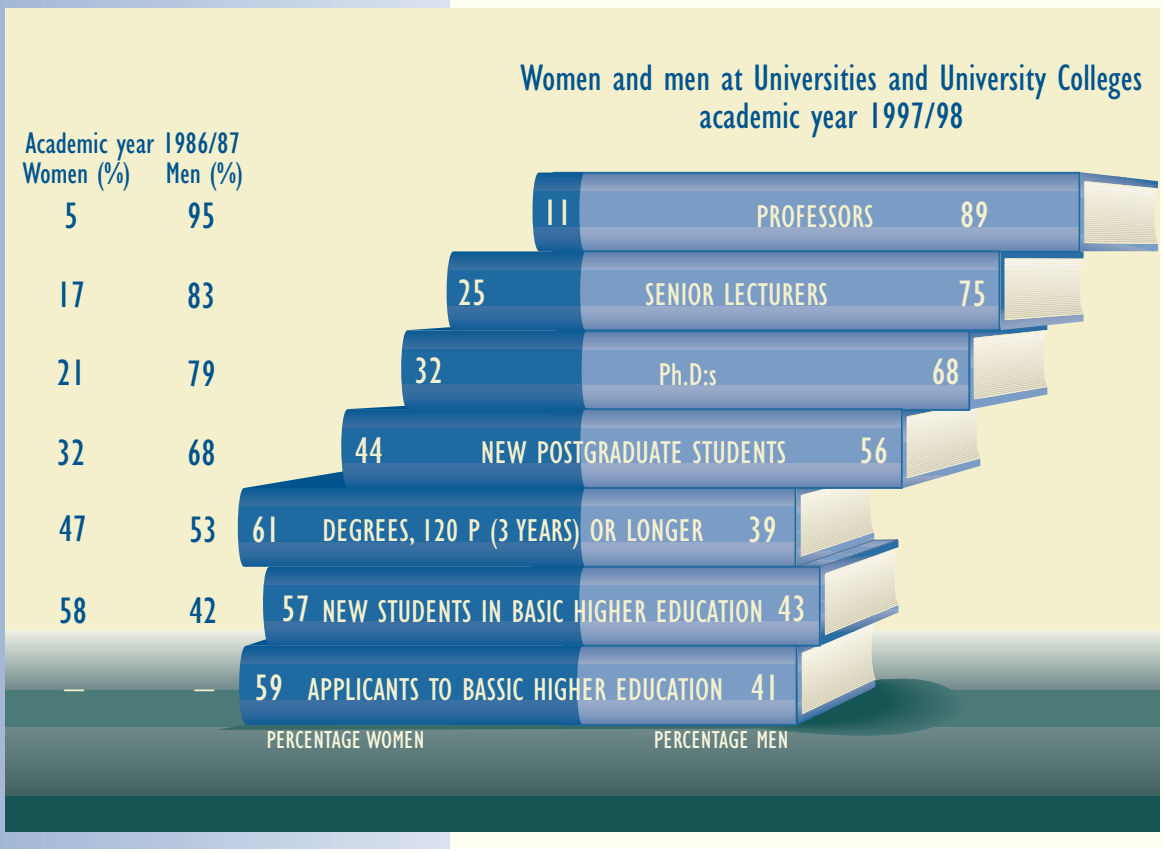
More and more teaching staff have PhDs. Of the year-equivalents performed by professors, senior lecturers, junior lecturers and postgraduate fellows — 16,000 in all — 53 per cent were performed by individuals with PhDs.

More women among professors

Among teaching staff and researchers, a third of the year-equivalents were performed by women while the proportion of women among administrative and library staff was 78 and 72 per cent respectively. Thus the gender distribution among teaching staff and researchers is skewed. **See figure 19**. Viewed in a longer term perspective, however, a levelling-out has taken place. In the most recent ten-year period, women have more than doubled their proportion among professors — from 5 to 11 per cent — and among senior lecturers from 17 to 25 per cent. The proportion of women in postgraduate training has risen markedly. **See figure 20.**

Most institutions of higher education have prepared equal opportunity plans with a view to even out the gender imbalance present in higher education and research.

Fig. 20.



It is a high-priority objective to increase the number of women in programmes of education in science and technology. This is done by measures such as information drives and designing programmes to make better use of women's experience.

Big differences in the distribution of women and men among teaching and research staff continue at institutions of higher education. Certain institutions report that they have achieved the recruitment objectives decided by the national government with respect to the recruitment of new female professors. At some institutions of higher education, however, considerable efforts will be necessary if the final objectives are to be achieved in 1999.

FACTS ABOUT THE HIGHER EDUCATION SECTOR IN 1998

Students	**Academic year 1997/98**	**Change from 1996/97**	**Proportion of women 1997/98**
New higher education students	64,510	-2 %	57 %
Registered undergraduates	305,580	+1 %	58 %
Undergraduate degrees	34,650	-2 %	60 %
New postgraduate students	3,700	+4 %	44 %
Active research students	18,500	+5 %	42 %
Doctoral degrees	1,880	+9 %	32 %
"Licentiate" degrees	850	+1 %	32 %
	Fiscal year 1998	**Change from 1997**	**Proportion of women 1998**
Total full-time equivalent students	251,000	+0,5 %	56 %
of whom			
Universities and specialized professional institutions of higher education	161,370	+0,5 %	53 %
University colleges (excl. arts and health sc.)	79,120	+13 %	59 %
University colleges of fine arts	2,030	-2 %	60 %
University colleges of health sciences	8,340	-51 %	89 %
Total annual performance equivalents	207,890	+0,8 %	54 %
for studentsof which			
Universities and specialized professional	132,820	+1,5 %	52 %

institutions of higher education		
University colleges (excl. arts and health sc.) 54 %	57,680	+12 %
University colleges of fine arts 59 %	1,920	-3 %
University colleges of health sciences 89 %	8,340	-47 %*

Staff

Staff (FTE) at state, regional authority and private universities and university colleges 47 %	46,690	+4 %
of wich all teaching personnel 35 %	21,800	+4 %
Proportion of professors, senior lecturers, junior lecturers and postdoctoral fellows with doctoral degree 23 %	53 %	0 %

Costs (M SEK, current prices)	**Fiscal year 1998**	**Fiscal year 1997**

UNIVERSITIES AND UNIVERSITY COLLEGES IN SWEDEN 1998

Total higher education cost	39,200	37,600
of which		
State universities and institutions of higher education	28,700	26,800
University colleges of health sciences	600*	1,100*
Private universities and university colleges	2,400	2,300
Student financial support	7,300	7,200
Other	200	200
Net operational cost of state universities and institutions of higher education	28,700	26,800
of which		
Universities and specialized professional institutions of higher education	23,550	22,500
University colleges (excl. fine arts)	5,010	4,100
University colleges of fine arts	400	380

*Some university colleges of health sciences have been incorporated into state-run institutions of higher education.

UNIVERSITIES AND INSTITUTIONS OF HIGHER EDUCATION WITH THE RIGHT TO AWARD POSTGRADUATE DEGREES

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

Ersta Sköndal University College
Gammelkroppa School of Forestry
Johannelund Theological Institute
Stockholm School of Theology
Örebro Theological Seminary

UNIVERSITY COLLEGES OF ARTS

State

University College of Dance
University College of Film, Radio, Televsion 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
Jönköping University College of Health Sciences
West-Sweden University College, Skövde
West-Sweden University College, Vänersborg
Värmland University College of Health and Caring Sciences
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
Lund/Helsingborg College for Health Sciences
Malmö College for Health Sciences
Växjö College for Health Sciences

Private-sector

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

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* As of 1999 the University Colleges of Karlstad, Växjö and