SWEDISH UNIVERSITIES & UNIVERSITY COLLEGES

SHORT VERSION OF ANNUAL REPORT 2003

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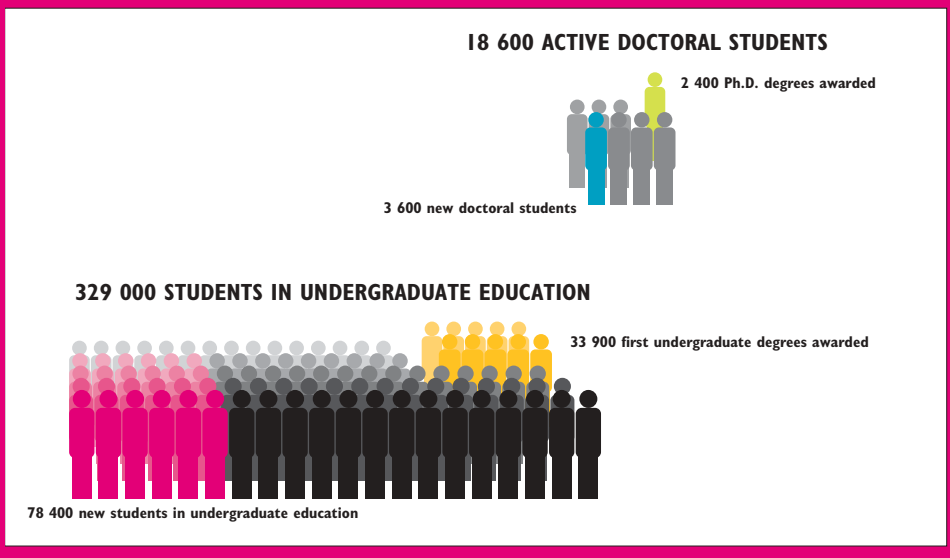
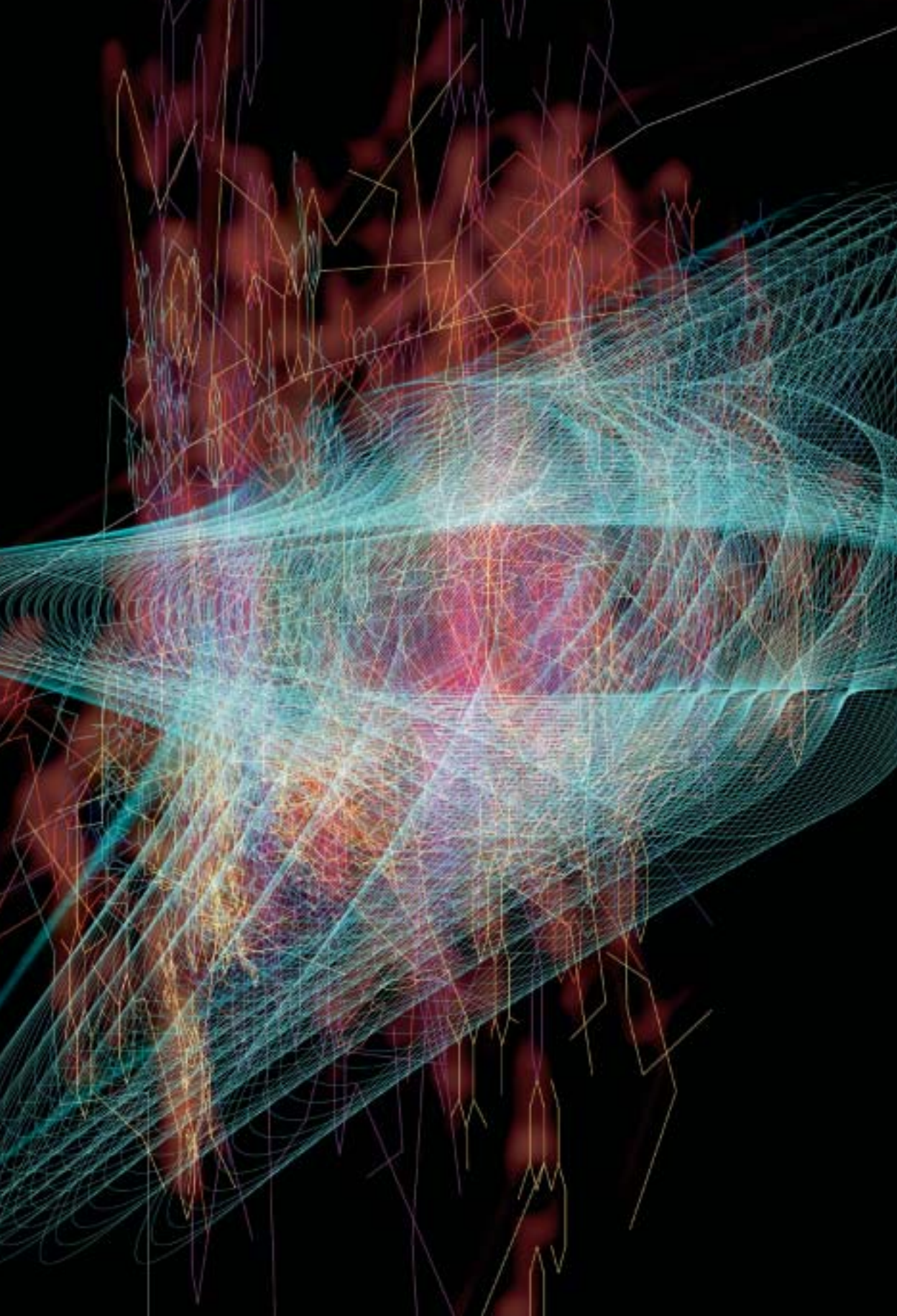


Number of students in undergraduate and postgraduate education academic year 2001/02.

INTRODUCTION

This summary of the *Swedish Universities and University Colleges Annual Report* 2003 gives an outline picture of higher education activities in Sweden. The report summarizes developments prior to and including 2002 fiscal year and cover state and private universities and university colleges. The report also presents some indicators about Swedish higher education in an international perspective. Furthermore there is a basic description of the academic structure in Sweden and the regulatory framework under the heading *Facts about higher education in Sweden.* 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. ■



TRENDS AND DEVELOPMENTS

Undergraduate programmes

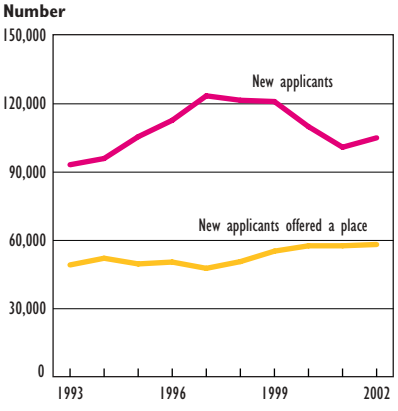
The number of students in higher education rose during 2002 by seven per cent. This is the largest increase since 1993/94. This major rise in student figures also constitutes a major step towards the 50 per cent objective, i.e. that fifty per cent of an age cohort should have entered higher education by the age of 25.

Despite expansion and the large numbers of new enrolments, there are still more applicants than places on offer. Of the total of 105,100 applicants at the beginning of the autumn semester 2002 who had not previously taken courses in higher education, 55 per cent or 58,200 were offered places. The proportion was somewhat higher for men than for women, 57 per cent compared to 54 per cent. The difference between men and women has therefore evened out a little. Compared with the situation five years ago the number of women enrolled has risen by 23 per cent whereas the number of men enrolled has risen by 13 per cent. The differences between the proportions of men and women enrolled is largely linked to their choice of programmes.

Large numbers of applicants to programmes in the social sciences

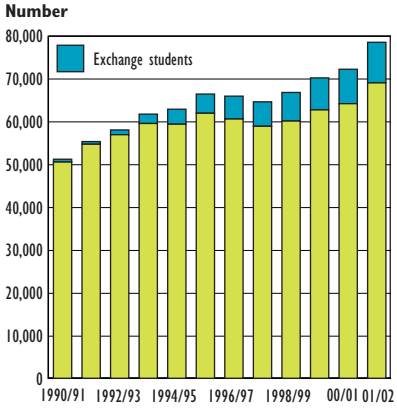
Programmes which attract the largest numbers of applicants are those in the social sciences, law and business administration. The next largest areas are the caring sciences, including social care. These are followed by engineering and manufacture, education and teacher training and finally the natural sciences and mathematics.

Fairly rapid changes are taking place in the pattern of applications, but these changes are of course smaller in terms of the broad subject areas above than for individual programmes, which can sometimes fluctuate radically. One example can be found in the increased interest in IT programmes during the latter half of the 90s and the ensuing decline in recent years.



New applicants, not previously participating in higher education, and number of new applicants offered a place autumn semesters 1993–2002. Just over a half of those applying for the autum term of 2002 were offered a place.

The total number of applicants has changed relatively little in the last few years. The number of first-choice applications for the autumn semester of 2003 to programmes for which enrolment is coordinated by the National Admissions Office to Higher Eduation – which includes most programmes – declined by two per cent.

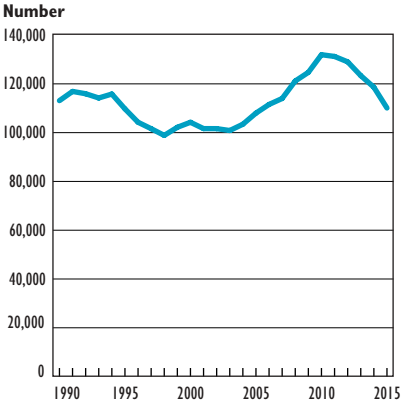


New students in undergraduate education academic years 1990/91–2001/02. The number of new students in 2001/02 were 78,400. Of those were 12 per cent exchange students.

Over 70,000 new students

The number of students beginning courses in higher education rose to 78,400 during the academic year of 2001/02. This is almost nine per cent more than in the preceding year and also constitutes a new record influx of students. In three years, therefore, the number of beginners has risen by 18 per cent after a period with only small changes in beginner numbers during the second half of the 90s.

The number of beginners also includes guest students from other countries, i.e. students from universities abroad who are studying for one or more semesters in Sweden within the framework of an exchange agreement between a Swedish and a foreign university. This group also includes "free movers", students who have applied on their own initiative to study in Sweden for a short period. During the academic year 2001/02 the number of guest students amounted to 9,500, or approximately twelve per cent of all beginners.



The number of 20-year-olds 1990–2015. The number of 20-year-olds will increase and reach a maximum in 2010.

Close to the 50 per cent objective

The major increase in beginner figures during the last two years means that a major step has been taken towards the 50 per cent objective, in other words the goal laid down by the government that 50 per cent of an age cohort should have begun courses in higher education by the age of 25.

The transfer pattern that applied during the academic year of 2001/02 shows that the proportion of those beginning by the age of 25 is 46 per cent. The large difference in enrolment figures between men and women means that women have already passed the 50 per cent mark and the current level is 53 per cent, whereas the corresponding figure for men is only 39 per cent.

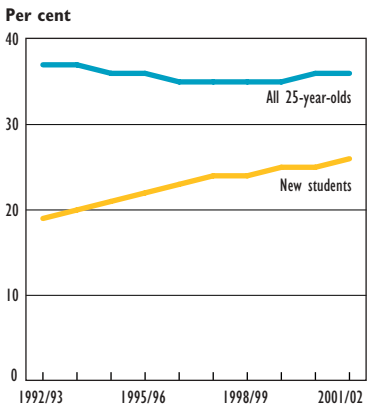
We are now facing a rapid increase in the size of age cohorts. Up until 2010 the number of 20-year-olds in the population will rise by 30 per cent – from just over 100,000 at the moment to just over 130,000 by 2010. This means, therefore, that considerable expansion of the higher education system will be required if the transfer rate is not to decline. In order to provide places for half of the additional 30,000 in these age cohorts a total of 15,000 new places must be available for beginners during a ten-year period. Moreover each newly enrolled student – if current trends persist – will require a place for additional three years on average. This means that capacity has to expand by 60,000 full-time equivalents during the next ten years to cope with the increase in the size of cohorts of young people. In addition, additional measures may be needed in the context of lifelong learning. This applies provided that all other things are equal.

Widening participation

The expansion of the number of places offered in higher education during the last ten years has led to widening participation in higher education. The number of students with working-class backgrounds has risen from 20 per cent of beginners in the academic year 1993/94 to 26 per cent in 2001/02.

However, young people with working class backgrounds are still underrepresented in higher education. The 26 per cent of students with working class backgrounds recorded during the academic year 2001/02 should be compared with the proportion in the population as a whole, where they constitute 35 per cent of the corresponding age group.

The differences between various social categories become even greater if account is taken of the programmes students opt for. The largest proportion of young people from the higher social classes can be found in programmes in medicine and other long programmes with large numbers of applicants, whereas the proportion with working-class backgrounds is higher in short programmes in nursing and social care, teacher training programmes and in engineering.

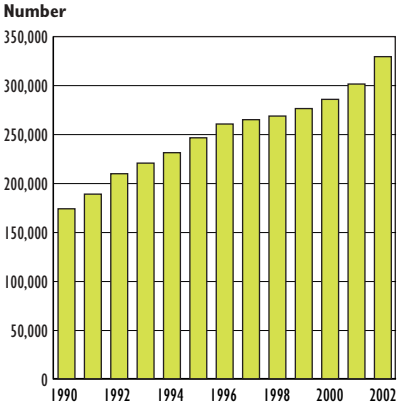


The proportion with working-class background among new students and in the whole population 1992/93–2001/02. Students from working-class homes are still underrepresented in higher education, but a certain levelling has taken place during the 1990s.

The link between ethnic background and transfer to higher education is more complex than the link with social background, one reason being that attitudes to higher education vary among immigrants from different countries. Recruitment to higher education is fundamentally based on these attitudes, which are to a great extent dependent on parental occupations and education and the patterns that otherwise prevail in different neighbourhoods.

During the academic year 2001/02, 15 per cent of those beginning higher education (excluding exchange students) had a foreign background. This is roughly the same proportion as for the corresponding age groups in the population at large. The proportion of students with foreign backgrounds has risen by three percentage points over four years, which – at least in part – could be the outcome of endeavours in recent years to broaden recruitment. To some extent, however, the rise in the proportion of students with foreign backgrounds could also depend on the increasing numbers of students attracted to Sweden by the possibilities offered to study here.

The differences between groups with different nationalities is large, which can be attributed to both social and cultural factors. Iranians are well represented in higher education, and the same applies to young people from Scandinavia and from western European countries, whereas immigrant groups from the African countries are markedly underrepresented.



Students in undergraduate education autumn semesters 1990–2002, head counts. The rate of growth between 2001 and 2002 has not been as high since the beginning of the 1990s.

Half of the students are older than 25

During the autumn semester of 2002 there were about 329,000 students in higher education. This is a rise of 9.3 per cent in one year. This is the highest figure so far and it is also the largest increase during one year since the beginning of the 90s. The increase has been more or less the same for both men and women, so that there has been no change in the ratio of 60 per cent women to 40 per cent men among the student population.

Participation in studies is highest in the 21-24 age group, where one out of every three women and every four men is a

student. The numbers in higher education among this group is almost twice as high as it is for those aged 19 and 20.

The ratio is most uneven among the oldest students. In the 30–39 age groups the proportion of women is almost twice as large as for men. In the 40-49 and 50-59 age groups three out of every four students are women.

The wide age range in the student body means that there are major differences in the circumstances of students. Three-quarters of the students who are 24 or below live alone and only a small percentage of this age group have children. Nearly a third are living in student rooms or flats. Among the students who are 30 or over, nearly three-quarters are living with a partner or married and the majority have children.

Lifelong learning

Half of the students are over 25, a third are over 30, just over ten per cent over 40 and three per cent are older than 50. Lifelong learning is therefore fairly extensive in higher education in Sweden. Moreover, the proportions of every age group over 25 taking courses in higher education are growing. In many cases these proportions have doubled in the last ten years.

Lifelong learning is to a large extent a question of the participation in higher education by women. In all age groups over 30 the number of women taking courses in higher education is at least twice as large as the number of men.

"Lifelong learning" is a concept that has different meanings for different individuals. For some a higher education course at the age of 40 is their first experience of higher education. For others it is a question either of in-service training or of further education linked to previous programmes in higher education. The latter could well form part of a "recurrent education" programme.

Studying abroad

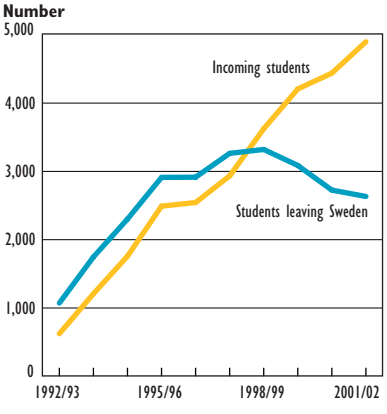
The number of Swedish students studying abroad was more or less the same in the academic year of 2001/02 as in the previous year. On the other hand, the number of students coming to Sweden to study continues to rise. Nearly 23,000 young

Swedes are studying in higher education abroad as "free movers". To these should be added the 4,500 who travel abroad within the framework of an exchange programme. In other words, during the academic year of 2001/02 27,5000 Swedish students were undergraduate students in higher education systems abroad.

Most of those who study abroad do so for only one or two semesters and as part of a programme at a Swedish higher education institution. However, a small number take a complete programme abroad. The vast majority study in Europe, mainly in the United Kingdom, Spain and France, but the USA is the single country that receives the largest number – almost 4,600. The USA and the United Kingdom each accept about 20 per cent of the number who travel on their own initiative. Just over 30 per cent choose Spain, Australia and France. This means that five countries receive around three-quarters of those who travel independently. Almost 2,300 Swedes studied in Australia in 2001/02, a sevenfold increase over 1995/96. Italy, New Zealand and Malta are also receiving increasing numbers of Swedish students, as are the Scandinavian countries. There has been a particularly large increase in the numbers studying in Denmark, which is now the sixth most popular country. It accepted 1,000 Swedish students in 2001/02, of whom 300 were enrolled for medicine.

The largest subject areas for those who arrange their own studies abroad are the humanities and art, the choice of nearly half of these students in 2001/02. They are followed by the social sciences, economics and law, with about 25 per cent, whereas the proportions taking courses in the other eight subject areas vary between one and five per cent each.

In addition to the students who travel independently there are those who travel under the aegis of some form of exchange programme organised by a Swedish higher education institution in connection with its courses. These amounted to about 4,500 in 2001/02. The largest exchange programme is the European Erasmus programme, which accounts for just over half of the total number of these exchanges. The Erasmus programme re-



Exchange students in the European Erasmus programme 1992/93–2001/02. From 1998/99 there are more incoming students than students leaving Sweden.

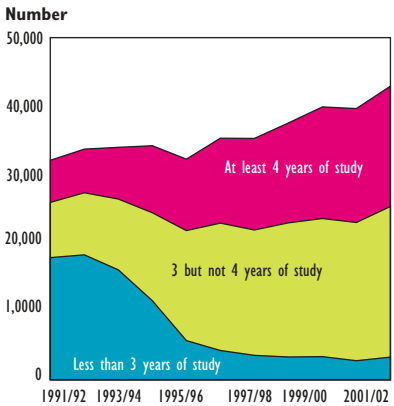
quires an agreement between two institutions in the different countries. If full use is made of the exchange agreement, equal numbers of students should travel in each direction. From its inception in 1992/93 until 1997/98 the number of students leaving Sweden was 400 more than the number of incoming students. From 1998/99 onwards this relationship has changed so that now there are more incoming students. In recent years, as well, the number of students travelling from Sweden has declined. This development is not unique for Sweden but has also been observed in Finland, the Netherlands, Norway and the United Kingdom.

More degrees

The total number of degrees awarded amounted to 42,950 in 2001/02, but many students are awarded more than one qualification, for example a university certificate in engineering, followed by a bachelor's degree, or a bachelor's degree followed by a master's. This means that the total number of individuals leaving higher education with degrees is considerably lower. The number of individuals awarded their first degrees during the academic year 2001/02 was 33,900. This was an increase of seven per cent compared with the previous year. And the number of students awarded their first degrees has risen by 24 per cent since 1991/92.

Compared to ten years ago, therefore, the influx of individuals with degrees into the labour market has increased drastically, which is important in view of the fact that the relatively well-educated 1940s cohort will soon be retiring. In addition to those awarded degrees, a considerable number of students enter the labour market without qualifications even though they have undergone educational programmes of a comparable standard.

Increasing numbers of degrees are being awarded to teachers, nurses, and for various engineering programmes, vocational groups to whom large numbers of degrees are awarded. Apart from the teaching qualifications, the largest number of professional degrees awarded are master's degrees in engineering, with a total of 3,900, and nursing degrees, totalling 3,100.



Number of degrees in undergraduate education academic years 1991/92–2001/02. Programmes that require less than three years of study have decreased while the number of longer programmes has increased.

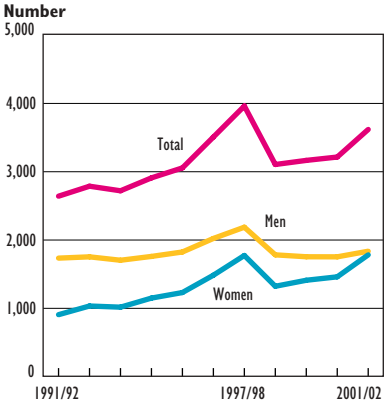
Just over 60 per cent of all degrees are awarded to women. Several programmes have uneven or severely uneven gender balances and these ratios are becoming increasingly uneven. There is a general tendency for the proportion of women to rise in all programmes except those where the ceiling has already been reached, or in other words where the proportion of women is already approaching 100 per cent. For more and more programmes this means that the gender ratio is shifting from an even balance to a predominance of women.

During the academic year of 2001/02 the proportion of women awarded a diploma or bachelor's degree in engineering was 29 per cent and among those awarded a master's degree 27 per cent. The tendency for the proportion of women on engineering programmes to increase is by far the most positive development during the 90s where gender differences in various programmes are concerned. Admittedly, the proportions of men in programmes where women have traditionally predominated have risen but these changes have been minor.

Postgraduate programmes

During the last year the number of new enrolments in postgraduate programmes has risen again after remaining more or less constant for a few years. And the gender balance among newly enrolled postgraduate students is virtually even – 49 per cent women and 51 per cent men.

All in all, just over 3,600 students began postgraduate studies during the academic year of 2001/02. This is ten per cent more than in the previous year and the first year with a distinct rise in the number of beginners after the reform of postgraduate education in the spring of 1998 with its more stringent requirement that financing had to be arranged for the entire period of study. Of the beginners an estimated 500 (15 per cent) were guest students, or in other words students with undergraduate



New postgraduate students 1991/92–2001/02. Academic year 2001/02 there were more than 3,600 new postgraduate students. The decline in the number of first-time postgraduate students after 1997/98 is linked to the 1998 reform with its more stringent funding requirements.

degrees from other countries who came to Sweden in order to pursue doctoral studies.

Even gender balance

The number of women who began postgraduate studies has never been as large as during the academic year 2001/02 and the gender balance among newly enrolled students is virtually even, 49 per cent women and 51 per cent men. This is a considerable change over ten years. Only one out of every three newly enrolled students in 1991/92 was a woman. This change can be expressed by saying that in ten years the number of women beginning postgraduate studies has doubled while the number of men is more or less unchanged. The largest proportion of women can be found among beginners in medicine – 61 per cent, but in the humanities and social sciences this number is over 50 per cent as well. In the natural sciences the proportion of women is 43 per cent and in the engineering sciences women constitute 30 per cent.

More appointments to postgraduate studentships

Altogether there were 18,600 postgraduate students during the autumn semester of 2001 (with an activity level of at least ten per cent). Almost half of the active postgraduate students, 46 per cent, were employed on postgraduate studentships and 14 per cent had a postgraduate study grant. Industrial studentships and posts in higher education provided funding for 17 per cent and scholarships for 13 per cent. The remainder (ten per cent) either received study assistance, had some other form of finance (which they had organised themselves) or a medical post at a teaching hospital.

The proportion of newly enrolled postgraduate students with appointments to postgraduate studentships has risen gradually from 17 per cent in the academic year 1991/92 to 36 per cent in 2001/02. The largest group with postgraduate studentships can be found in engineering. During the academic year 2001/02 this figure was 60 per cent. They are followed by the natural sciences, and the humanities and social sciences with about 35 per cent.

Research schools

In 2001 the government established 16 research schools to start. The main responsibility for each school devolves on its "host institution" and there are a number of "partnership institutions". The research schools are intended to promote cooperation between various higher education institutions and research environments.

In the spring semester of 2002 the research schools had almost 180 students. The aim was to award 400 doctorates by 2007, which means that both considerably more students and rapid completion of the programmes will be required if it is to be achieved. However, these special research schools account for only a small proportion of postgraduate students as a whole.

A considerably larger proportion of the students beginning their studies at the research schools have postgraduate studentships than in postgraduate programmes as a whole. Altogether, 79 per cent of the newly enrolled postgraduate students at the research schools were funded in this way in 2001/02.

Few postgraduate students with working-class backgrounds

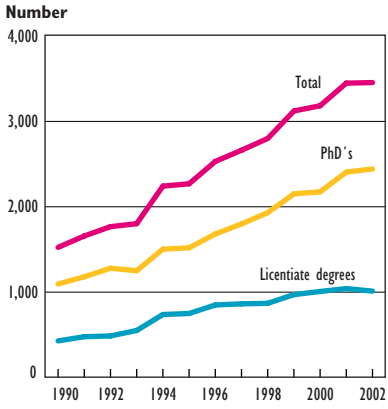
The social composition of newly enrolled postgraduate students (below the age of 35) as a group differs markedly from the population as a whole, which indicates extremely uneven social recruitment. During the academic year of 2000/01 beginners whose parents were senior salaried employees or intermediate level non-manual employees were overrepresented. This group accounted for 45 per cent of the beginners, even though in the overall population (at roughly corresponding ages) it represents only 18 per cent. The converse applies to beginners who are the sons or daughters of workers, lower level non-manual employees, self-employed entrepreneurs or farmers. Only 13 per cent of newly enrolled postgraduate students had working class origins. This group accounts for 35 per cent of the population as a whole.

Twofold increase in the number of degrees over ten years

During the last ten years the number of postgraduate degrees awarded has almost doubled. The number of doctorates has increased by 90 per cent to just over 2,400 in 2002. The number of licentiate degrees awarded during the same period has risen from a bare 500 to just over 1,000.

Almost one-third of all the PhD's were awarded in the discipline of medicine, 756. In the humanities-social sciences discipline 662 doctorates were awarded, in the engineering sciences 554, in the natural sciences 361, and at the Swedish University of Agricultural Sciences the figure was 110.

The proportion of women among those awarded postgraduate degrees rose to 44 per cent in 2002. The largest proportion of women receiving doctorates, 55 per cent, can be found in medicine. In the humanities-social sciences discipline this figure is 48 per cent, at the Swedish University of Agricultural Sciences 47 per cent and in the natural sciences 39 per cent. The smallest proportion of women, 24 per cent, are awarded PhD's for the engineering sciences.

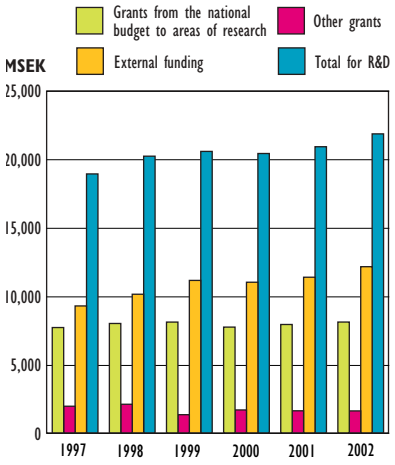


Postgraduate degrees 1990–2002. The number of PhD´s has more than doubled during the period.

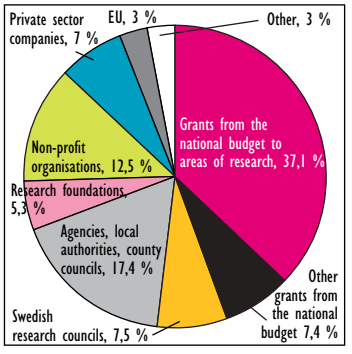
Research

The resources for research and postgraduate programmes at higher education institutions grew by 4.5 per cent during 2002, which is considerably more than the average for the most recent five-year period. Altogether the expenditure of the higher education institutions on research and postgraduate programmes during 2002 was almost SEK 22 billion. This is approximately one per cent of Sweden's GDP (Gross Domestic Product).

The total revenues for research at higher education institutions continue to rise. Since 1987 these revenues have risen in fixed terms by SEK 2.9 billion and during the budget year 2002 amounted to SEK 21.8 billion. This means that resources have increased by 15 per cent during the period.



Resources for R&D at institutions of higher education 1997–2002 (2002 prices). External funding accounted for almost all of the increase of the resources for R&D.



Allocation of resources for R&D at institutions of higher education 2002. Grants from the national budget to areas of research dominates, but external funding has increased to about 55 per cent.

Between 2001 and 2002 revenues for research and postgraduate programmes rose by 4.5 per cent, which is a larger increase than in the preceding years. External funding accounted for almost all of this increase.

The older universities and specialist institutions preponderate where research resources are concerned. Since the middle of the 90s, however, there has been a gradual increase in resources for the new higher education institutions. In 2002 these accounted for 9.6 per cent of research revenues whereas the older universities and specialist institutions received 90.4 per cent.

Continued increase in external funding

Over a twenty-year perspective, there have been major changes in the funding of research in higher education institutions. At the beginning of the 80s two-thirds of the research was funded by the state through faculty grants for research and postgraduate programmes and other forms of direct state allocations while external funding accounted for only one-third. During the 80s the proportion of external funding expanded substantially to decline somewhat during the first half of the 90s. Since 1995 an increase has again taken place. In recent years there has been some abatement of the rate of this increase. During the budget year 2002, just over 55 per cent of the research and postgraduate programmes at higher education institutions were funded externally. Appropriations to the research disciplines and other forms of direct state allocations therefore accounted for almost 45 per cent.

But even though the proportion of direct funding from the state is declining, public funding still plays a predominant role. This proportion has admittedly declined but still amounts to about 80 per cent, provided that funding from the research foundations and the EU, which together account for eight per cent, is included under this heading.

There are major differences in the degree of external funding from discipline to discipline. In the engineering sciences two-thirds of the research is externally financed and in medicine and the social sciences just over half. The lowest proportion of

external financing goes to the humanities, veterinary medicine and dentistry.

Half of the resources for research go to medicine and engineering

The largest disciplines were medicine and engineering, which together received half of the resources for R&D. The natural sciences accounted for just over 17 per cent while the corresponding figure for the social sciences was 11 per cent. A comparison with 1995/96 reveals that the humanities and social sciences have increased their share of R&D resources as have medicine and engineering. The natural sciences together with forestry and agricultural sciences have, on the other hand, somewhat smaller shares of R&D resources compared to 1995/96.

Even though medicine, engineering and the natural sciences account for the lion's share of R&D revenues at the higher education institutions, the humanities and social sciences have experienced major increases since the mid-90s. For the humanities this increase is 30 per cent and for the social sciences 39 per cent. Where the humanities are concerned, revenues for both languages and the arts subjects have risen and in the social sciences the largest rise has been for computer and system sciences and for statistics. There have also been major increases for social science and economics subjects.

The discipline of medicine has seen a rise of 18 per cent since 1995/96. These rises have, for instance, affected chemistry and social medicine. There has also been a substantial rise in specialised areas such as medicine while resources for surgery, physiology and pharmacology have declined.

The engineering sciences have risen by 21 per cent. Biotechnology has experienced the largest increase but there have also been substantial rises for industrial engineering and economics and for electrical engineering, electronics and photonics. On the other hand R&D resources have declined somewhat for chemical engineering and engineering mechanics.

In the natural sciences, where there has been a rise of six per cent since the mid-90s, there has been an increase in the resources for chemistry while earth sciences have declined.

Research area	per cent
Humanities, theology	6,5
Law	0,9
Social sciences	11,3
Mathematics	2,0
Science	17,4
Technology	23,0
Agriculture	4,8
Medicine	27,6
Odontology	1,2
Pharmacy/pharmacology	0,5
Veterinary medicin	0,7
Other	4,1
Total	**100,0**

Allocation of resources for R&D on subject areas at institutions of higher education 2001. Medicine and technology accounts for about half of the resources for R&D.

The largest reductions in R&D resources have taken place in forestry and agricultural sciences and in landscape planning. There have also been reductions for dentistry and pharmaceutics. Overall the development in R&D resources between 1995/96 and 2001 have resulted in an increase of twelve per cent.

Finance

The higher education institutions continued to expand during 2002. The expenditure of the higher education institutions rose in current prices by just over eight per cent to SEK 41.5 billion. In volume, i. e. if rising costs are taken into account, this means an increase of four per cent. This increase was divided relatively evenly over both undergraduate programmes and research.

Almost two-thirds of the activities at higher education institutions, 65 per cent, are financed by direct allocations from the state for undergraduate programmes or research. Other funding also comes mainly from the state in the form of allocations made to the higher education institutions by the Swedish Research Council, or financial undertakings by local authorities or county councils. If the funding that derives from the research foundations created from the retirement pensions funds is also regarded as public funding, the public purse accounted for 88 per cent of the funding of higher education institutions during 2002.

Just under half of the activities of the higher education institutions, 45 per cent, are related to undergraduate programmes. Just over half, 55 per cent, concern research and postgraduate programmes.

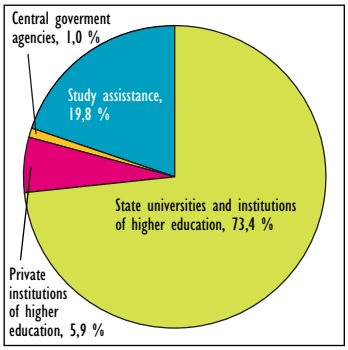
Two per cent of the GDP

The total expenditure for the activities of the higher education institutions, SEK 41.5 billion, amounted to almost 1.8 per cent of Sweden's GDP in 2002. However, in calculating the costs

of the higher education sector in Sweden, the costs of financial assistance to students and the central agencies should also be included. If these costs are taken into account, expenditure on study assistance being the largest, the total was SEK 52.3 billion. This represents 2.2 per cent of the GDP.

The costs for financial assistance to students in higher education amounted in 2002 to SEK 10.3 billion. This means that study assistance accounts for almost 40 per cent of the total state expenditure on undergraduate programmes.

International comparisons show that the proportion of the GDP allocated to higher education and research is relatively high in Sweden. The most recent OECD comparisons, published in *Education at a Glance* in October 2002, place Sweden fifth among the 25 OECD countries. (In this comparison which uses figures from 1999 and does not include the costs of study assistance the proportion of the GDP allocated to higher education in Sweden is 1.7 per cent.)



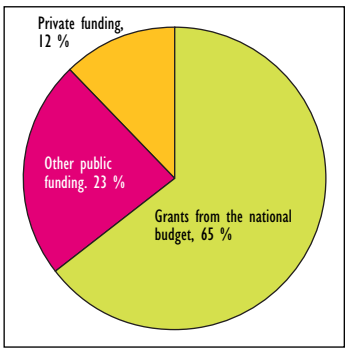
Allocation of total expenditure in the higher education sector 2002. The total expenditure was 52.3 billion SEK.

Increase in direct allocations

In 2002 continuation could be seen of the tendency that began in 2000 for the proportion of the activities of higher education institutions funded by direct allocations to rise – after a couple of decades with an almost uninterrupted rise in the proportion of external funding.

The proportion of activities receiving direct funding amounted to 65 per cent in 2002. This is a major rise compared to the previous year. Most of this change can, however, be explained by the reorganisation of the financing of programmes in the health sciences, which were previously funded by the county councils but will receive their allocations from the state from 2002 and onwards – like all other programmes in higher education.

In addition to state funding allocated directly to the institutions concerned, in 2002 the public sector contributed an additional 23 per cent of the revenues of the higher education institutions. These revenues came, for instance, from the local authorities and county councils, government agencies, the

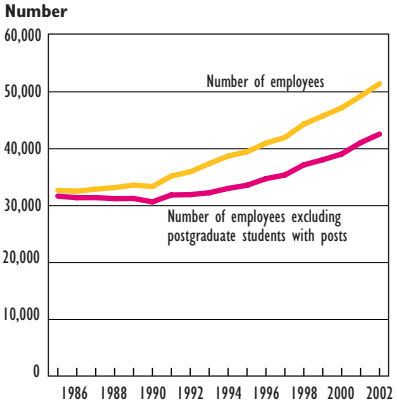


Allocation of revenues at institutions of higher education 2002. The public sector accounts for 88 per cent of the revenues at institutions of higher education.

Swedish Research Council and the research foundations created using funds from the retirement pension investment scheme. Only twelve per cent of the revenues of the higher education institutions came from private companies and foundations. The public sector therefore accounted for just over SEK 36 billion and the private sector for about SEK 5 billion. However, revenues from private sources of finance have risen steadily during the last five years.

Naturally the overall funding situations varies from institution to institution. State funding forms a larger proportion of the funding received by smaller institutions than by the largest universities, and this is primarily due to the different ratios of undergraduate programmes to research. Undergraduate programmes are almost entirely funded by the state, whereas there are many different sources of finance for research. In 2002, state funding accounted for 87 per cent of revenues for undergraduate programmes and for 45 per cent of the revenues for research and research programmes.

Staff



Number of employees at institutions of higher education 1985–2002 (full time equivalents). The number of employees including postgraduate students with posts has risen by 57 per cent since 1985.

During 2002 the numbers employed by the higher education institutions have risen by four per cent. This increase is as large for teaching and research staff as for administrative and technical staff. The number of professors has increased most, which is the outcome of the promotion reform, which enabled senior lecturers with the appropriate qualifications to be employed as professors.

The expansion of higher education is clearly reflected in the rise in the number of employees at the higher education institutions. Since 1985, the total number of employees, expressed as full-time equivalents and including postgraduate students with posts, has risen by 57 per cent. During the period there has been a major increase in the number of postgraduate students and if

they are excluded, the increase in staff amounts to 34 per cent. The transfer of the colleges of health sciences from the county councils to state institutions accounts for some of the increase during the latter half of the 90s, approximately 2,200 individuals. From 2001 and onwards, private programme providers are also included, which means an addition of about 600 people. The proportion of women among the total numbers employed during the period has varied between 45 and 50 per cent. The highest proportion was recorded in 2002.

In 2002, a total of 51,430 individuals (in full-time equivalents) were employed by the higher education institutions. This is roughly one quarter of all those employed by the state. In comparison with 2001, the changes in the numbers employed in higher education mean that the total number rose by 4.5 per cent. If postgraduate students are excluded, the number of employees amounted to 42,580, an increase of 3.7 per cent from 2001. The largest increase could be observed for postgraduate students, where the rise was 8.4 per cent. There was a rise of 7.2 per cent in the number of professors and 6.1 per cent in administrative staff.

Long-term developments reveal major differences between various groups of teaching and research staff. The number of professors has risen without interruption since 1985 with a striking increase during the last year, resulting mainly from the promotion reform allowing qualified senior lecturers to be employed as professors. There has also been an increase in the number of senior lecturers, with the exception of 2000, which was again a result of the promotion reform.

The number of post-doctoral research appointments doubled during the latter half of the 80s but has remained more or less the same since then and has even declined somewhat in recent years. There has been a substantial increase in the number of junior lecturers, mainly since 1997. Much of this increase can be attributed to the incorporation of the colleges of health sciences into state institutions.

Largest increase in the social sciences and engineering

In 2002 there were 5,350 teachers and researchers in the social sciences, which means that this is the largest subject area. In the engineering sciences the number was 4,370. The humanities, theology, natural sciences and medicine each employed about 3,000 teachers and researchers.

In most subject areas an increase can be seen in the numbers of teaching and research staff during 2002. The estimated increase, overall, is about four per cent during 2002. As the number of full-time students rose by just over seven per cent between 2001 and 2002, there is a continuation of the trend observed previously for the number of full-time students to rise more rapidly than the number of teaching and research staff. As a result the student teacher ratio continues to rise.

Largest proportion of teachers with doctorates in the natural sciences and medicine

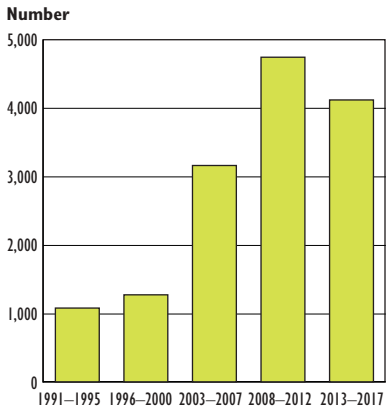
The proportion of teaching and research staff with doctorates is an important quality indicator. This figure has been rising steadily and in 2002 amounted to 48 per cent. Teaching and research staff is a category that includes not only professors, post-doctoral appointments, senior and junior lecturers and guest teachers and hourly-paid teachers but also other members of the staff who teach or conduct research like, for instance, teaching assistants, researchers and research assistants. Technical and administrative staff whose duties also involve teaching or research are also included, such as research engineers, project managers etc.

Those appointed to posts as professors, research assistants and senior lecturers usually hold a PhD and it is in these groups that the proportion with doctorates is highest. Among professors 90 per cent have a Swedish doctorate or an equivalent foreign degree. The proportion of research assistants with PhD's is 92 per cent, and the corresponding figure for senior lecturers is 84 per cent. On the whole there are no obvious differences in the proportions of women and men in these categories of teaching staff with doctorates with variations of merely one or two percentage points.

Ageing teachers

The number of teaching and research staff at the higher education institutions who will be retiring in the near future is rising rapidly. During the next five-year period about 3,200 staff will reach retirement age. During the period 2008-2012 this number will rise to 4,700 and then decline somewhat during the following five-year period, 2013-2017, to 4,100. In comparison, it can be pointed out that during the 90s the corresponding figure was just under 1,200. The possibility of continuing to work until the age of 67 may alter these figures to some extent. These calculations are based on the assumption that retirement age is 65.

The largest increase in the number of retirements will take place at the same time as there is a major increase in the cohorts entering higher education. The 20-24 age cohort will increase by more than 25 per cent from current figures and reach its maximum in 2013, according to the latest population forecasts from Statistics Sweden. This will be followed by a rapid reduction so that the figures around 2020 will be more or less the same as today.



Teachers and researchers who reach retirement age. The number of retirements will increase especially during the period 2008–2017.

Increasing need of teachers and researchers

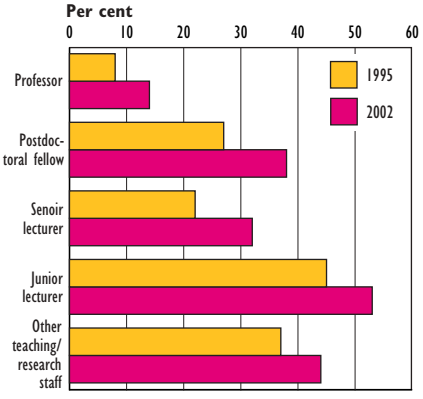
The impending generation shift will augment the need of additional teaching and research staff. But the future replacement of staff who retire is merely one of the factors that require the appointment of new staff. Another is the number of undergraduate places offered.

The objective that 50 per cent of each age cohort is to begin higher education by the age of 25 will require an expansion of undergraduate programmes as the number of young people in these age groups will rise rapidly. To avoid a decline in the student-teacher ratio, the number of teachers must rise in proportion to the number of places offered.

The pronounced increase in the numbers completing postgraduate programmes that has resulted from the twofold expansion of the number of places offered during the 90s, however, has led to a major enlargement of the recruitment base. Generally

speaking, this provides a possibility of replacing the teachers who retire and coping with increased demands in the future. But this will also, of course, depend on how well the higher education institutions can compete with other employers on the labour market. And there are major differences between the different subject areas, both in term of anticipated retirements and the volume of those completing postgraduate courses.

In the competition between the higher education institutions and other employers, career possibilities in higher education are one short-term factor that will have significant impact on the possibility of meeting staffing needs in the long term. The preliminary results of a questionnaire survey of the situation of postgraduate students conducted by the National Agency for Higher Education suggest, for instance, that about half of these students do not want to continue to work in higher education. Here, the insecure terms of employment are one of the factors that play an important role.



The proportion of women among teachers and researchers 1995 and 2002. The proportion of women is increasing but only 14 per cent of the professors are women.

Rising proportion of women

Half of all those employed by the higher education institutions are women. But there are major differences between different categories of staff. The highest proportion of women can be found among administrative staff and librarians, where the figures are 78 and 74 per cent. The proportion of women among teaching and research staff has risen successively. In 2002 women constituted 39 per cent of this group as a whole. Professors are the group with the smallest proportion of women. This figure has, however, risen since the mid-90s from 8 to14 per cent. The proportions have also risen in other categories of teaching staff. On the other hand, a decline can be seen in post-doctoral appointments between 2001 and 2002.

Labour market

On the whole graduates from higher education get a stronger position in the labour market than those who leave the educational system at an earlier stage. But there are major differences between groups with different qualifications and the situation is affected to a large extent by the economic climate.

About 30 per cent of an age cohort graduate from a higher education institution. As each age cohort consists on average of about 100,000 individuals, this means that with each age cohort the labour market receives an additional 30,000 graduates.

To this should be added the number of individuals who have taken courses in higher education without, for various reasons, graduating. This group comprises about 10,000 individuals with no less than three years of higher education.

Every year, in other words, a considerable number of individuals who have undergone higher education enter the labour market. Only half as many of those leaving the labour market because of retirement have any form of higher education. As every new age-cohort enters the labour market, therefore, a substantial upgrading of the skills of the labour force takes place. In addition, a number of older people return to the labour market after completing in-service or further education at higher education institutions.

There will therefore be more than enough individuals leaving the system of higher education to fill the gaps left by the retirement of qualified personnel. This will also continue to apply in the future, when the age cohorts entering the labour market decline in size and retirements increase in number. But what applies on average, will not of course apply to specific qualifications and the need may arise in certain areas for more rapid skill enhancement than can be provided by the replacement of those retiring by the newly qualified.

Relatively sound starting point

The labour market situation for groups with various qualifications is of course dependent on the programmes they have

completed, but it can be said that on the whole the more time spent in education the better. Generally speaking, the labour market regards degrees more favourably than secondary-school certificates, which in their turn are more valuable than the grades awarded in the compulsory school system.

One measure of the impact of educational programmes can be found in unemployment statistics. Irrespective of the economic climate, unemployment is highest among those who have only completed their compulsory schooling and lowest for those with academic qualifications. During 2002, for instance, unemployment among those with higher education was 2.5 per cent. The corresponding figure for those with secondary school certificates was 4.1 per cent, and 6 per cent for those who left school at 16.

Establishment in the labour market

Of those awarded degrees by higher education institutions in the academic year 1999/2000, approximately 80 per were established in the labour market by 2001, or in other words one year after qualifying. The survey also reveals large variations among the various forms of qualification.

Engineers, doctors and nurses are three large groups with a high degree of establishment in the labour market – with proportions that are close to 90 per cent. The establishment rate for most of the groups awarded qualifications lay in the interval between 70 and 90 per cent in 2001. Some large groups with less positive figures are those with qualifications in the fine arts, of whom only one-third had a footing in the labour market one year after qualifying. Those with bachelors or masters degrees in the humanities also had a relatively low level of establishment – between 40 and 50 per cent. For other groups with master's degrees the average proportion of those who establish themselves is around 80 per cent, and for those with bachelor's degrees about 75 per cent.

Foreign backgrounds delay establishment

The proportions of newly graduates establishing themselves in the labour market recorded previously are 80 per cent for

those with Swedish backgrounds and 72 per cent for those with foreign backgrounds. This continues to apply in relation to the labour market in 2001 and those who qualified in 1999/2000. Of just over 30,000 students awarded qualifications in 1999/2000 (and who did not continue to study) 10 per cent had foreign backgrounds, or were, in other words, first or second generation immigrants. In this context both parents have to have been born abroad before a student is considered to have a foreign background. The rest are classified as having a Swedish background.

It is difficult to find any way of explaining the differences between the establishment of newly qualified students who come from Swedish and foreign backgrounds that excludes the possibility that discrimination is practised in the Swedish labour market. Particular weight has to be given to this finding as the students are identical in the respects that are most relevant in terms of the labour market – they have completed the same programmes and they have identical qualifications.

Evaluation results

2002 saw the second year of the cycle of evaluations of subjects and programmes. Familiar problems are referred to in their findings – scarcity of resources in many subjects and major differences in the terms on which postgraduate programmes are offered are two examples. However, the main impression is that the quality of most offerings is high and that there are relatively small differences between the various institutions.

During the year the second round of audits of the quality assurance procedures at the institutions was completed. This also marks the end of these audits. In the future the National Agency will devote its energies to the cycle of evaluations of undergraduate and postgraduate programmes. 2002 was the second year of the six required to evaluate all subjects and programmes.

The audits of quality assurance procedures at the higher education institutions came into being as a means of enhancing quality after the 1993 reform. These audits have mainly focused on quality assurance systems. What they have revealed most clearly is perhaps the major differences between the institutions. Some of them have – or at least appear to have – relatively well developed quality assurance systems. At others, after nearly a decade, these systems have not yet left the drawing board.

According to the appraisals, improvements have been made in most of the institutions between the first and second audit. These are most obvious where the governance and organisation of the institutions are concerned. In this area, just over 70 per cent of the institutions can account for improvement measures. On matters that affect the way in which the institutions work with aims and strategies, evaluations, student influence, internationalisation and educational development progress is reported by almost half of the institutions. In some areas, however, developments appear to have been less positive, among them in-service training.

The general conclusion drawn in the audits is that at virtually all the institutions – with only a few exceptions – developments seem to have taken a positive direction since the previous round, but that in general only little progress has been made. One-third of the institutions are still considered to be in the initial planning phase, in which systematic quality assurance only exists as a concept.

Evaluations of subjects and programmes

During the evaluation of subjects and programmes conducted in 2001 and 2002, the first third of the evaluation programme has been completed. These evaluations also include appraisals of postgraduate programmes in the various subjects.

Eleven programmes and subjects were evaluated during 2002. These evaluations have not resulted in any withdrawal of the right to award degrees, but 38 warnings have been issued which means that the higher education institutions concerned must demonstrate rapid improvements if they are to retain

this right. Several of the warnings involved the right to award university certificates in engineering (25 cases) and there were an additional 7 warnings relating to bachelor's degrees and 2 concerning master's programmes.

The evaluations made in 2002 repeat many of the general observations made in the previous year. The lack of resources means in many cases that there are fewer laboratory sessions.

In both environmental studies and courses leading to the award of certificates in engineering, a large number of programmes have been initiated that are marketed as new to attract more students. Not infrequently these programmes are offered to groups of 10-20 students, which results in less efficient use of resources. And in some cases, attempts to attract students lead to the establishment of surplus places.

In certain cases, heterogeneous groups of students and inadequate pre-entry knowledge among students of history, chemistry, and programmes in environmental studies and engineering make it difficult to organise effective teaching.

In view of the restricted study environments in which postgraduate programmes are offered in several subjects and the difficulties that some subjects experience in obtaining external funding, greater cooperation between the institutions is required. Complying with the 1998 reform of postgraduate education has led to a wide variation in the conditions under which doctoral students pursue their studies. The differences can be large even within the same institution. The self-financing that is very common in some cases can lead to wide variations in the financial circumstances of postgraduate students.

Formalised student influence functions well in most cases, in the sense that the students are represented in official bodies. In this year's evaluations, however, in small environments in particular, the students consider that informal influence is preferable.

In addition to the appraisals of the degree programmes included in the evaluations of subjects and vocation qualifications, the National Agency for Higher Education also reviews the applications from institutions to award degrees of various kinds. During 2002 these appraisals have mainly covered two kinds of programme, vocational qualifications in the health sciences and the general right to award master's degrees. ■

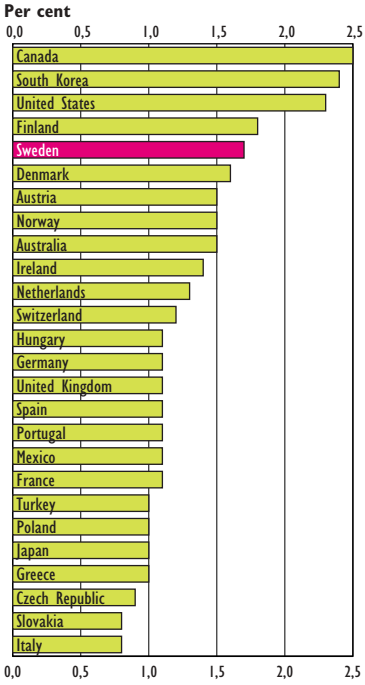
INTERNATIONAL COMPARISONS

The major expansion in higher education in Sweden is paralleled by developments in several of the OECD countries. This is shown by the comparisons between these countries presented in *Education at a Glance 2002*. The rate of expansion of higher education institutions during the first half of the 90s is close to the average for the OECD as a whole.

This section contains a presentation of some of the indicators developed in the course of the OECD Indicators of Education Systems project (INES). A large number of countries participate in this project. Since the beginning of the 90s, the results have been presented in the OECD publication *Education at a Glance (EaG)*. The latest edition of this publication was issued in October 2002 and is the source of the information presented here.

Since the middle of the 70s classification of programmes has been systematised using the International Classification of Education (ISCED). The possibility of comparing educational statistics from different countries has improved radically, especially in the 90s. However, there are still problems with the definitions of statistical variables, for instance, which means that these comparisons must be used cautiously.

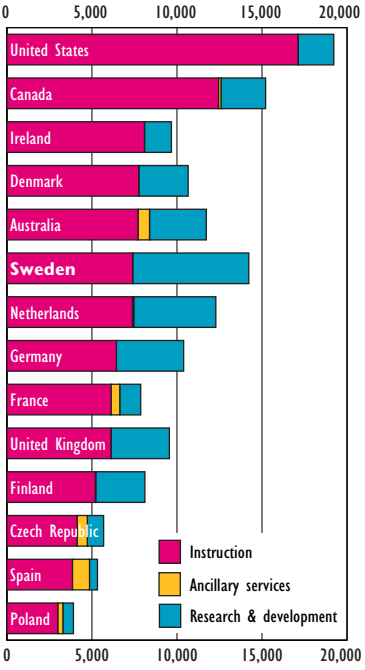
In ISCED 97 undergraduate programmes are classified as level 5, and postgraduate programmes level 6. Level 5 is divided into 5A and 5B. 5A refers to programmes in higher education that last for three years or more and offer preparation for professions that demand a high level of theoretical training, such as medicine, dentistry and architecture. Completed programmes on level 5A also confer eligibility for postgraduate programmes. Level 5B includes programmes in higher education that normally last for 2-3 years and have a more practical or vocational nature. It should be added that the division between 5A and 5B varies from country to country, which gives rise to certain problems when making comparisons.



Educational expenditure as a percentage of the GDP for tertiary education 1999. Canada, South Korea and the USA allocate the largest proportion of their GDP to the higher education sector. The expenditure exclude study support but include expenditure for research at institution of higher education.

Substantial resources for higher education in Sweden

When the resources for education and research are related to the GDP Sweden ranks high in several of the EaG indicators.



Expenditure per student on instruction, ancillary services and research and development 1999. (US dollars converted using purchasing power parities.) Even if you exclude the expenditure for research and development the expenditure for instruction is relatively high in Sweden.

Canada, South Korea and the USA are the OECD countries that have for many years allocated the largest proportion of their GDP to the higher education sector. The percentage is 2.3-2.5 per cent. They are followed by Finland, Sweden and Denmark with 1.6-1.8 per cent. In calculating this figure the resources available to the higher education institutions for both education and research are taken into account. The indicator is therefore affected by the way in which the countries organise research funding. Countries where a great deal of the research takes place in the higher education sector are ranked high and vice versa.

The OECD also accounts for the costs per student in a number of countries, divided into the costs for education, research and ancillary services. This last item includes student accommodation etc. which in some countries is financed via the higher education institutions. This indicator is interesting for Sweden, as about half of the costs in higher education are devoted to research and postgraduate programmes. In other countries research and development (R&D) is organised to a greater extent outside the higher education sector. Among the countries that have been able to supply data for this indicator, the USA, Canada and Ireland have the highest education costs per student. They are followed by Denmark, Australia and Sweden, which also have relatively high education costs per student.

Expansion during the 90s

Many countries expanded their higher education systems during the 90s. Between 1995 and 2000, on average the number of students in higher education increased by 24 per cent in the OECD countries. In Sweden the figure was 22 per cent. This means that the expansion of higher education that started at the beginning of the 90s also continued later during the decade, but not to the same extent as during its first half.

There are major differences in the rate of expansion in different countries. To some extent these differences can be explained in terms of the point of departure. The countries in which the

rate of expansion was low during the 90s, among them the USA, Germany and the Netherlands already had extensive participation in higher education in 1990 and have retained and to some extent increased this high level. In other countries, the rate of expansion has been larger. In South Korea, Poland, the Czech Republic and Hungary, the number of students rose by more than 48 per cent between 1995 and 2000, but this was from a relatively low initial level.

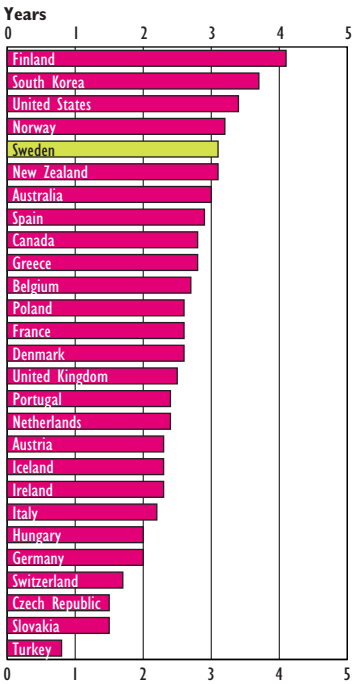
Many new students in Sweden

Sweden enrols a large number of beginners in higher education in relation to its population when all age groups are taken into account. Only Finland and New Zealand have higher proportions of beginners. For Sweden this proportion is 67 per cent, which can be compared with the OECD average of 45 per cent. This applies to beginners in ISCED level 5A. The proportion is the aggregate of the relative frequencies of beginners in all age groups.

Sweden, together with Iceland and New Zealand has the highest median age among beginner students in higher education. In Sweden the median age is just under 23. In most countries the median age is about 20. Ireland has the highest proportion of young beginners, of whom 80 per cent are under 20. Beginners in France, Slovakia and the Czech Republic are also young. Sweden stands out in contrast to these countries, as only 20 per cent of its beginners are under 20 and 20 per cent are over 32, which is the highest proportion among all the OECD countries, although Denmark, Iceland and Norway also have a relatively large proportion of beginners at more advanced ages.

Just over three years in higher education

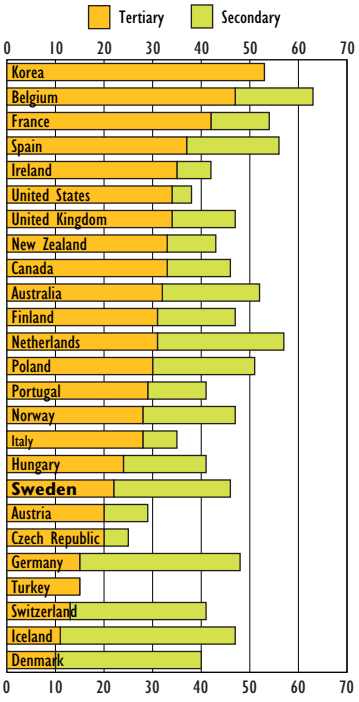
One of the indicators in *EaG* describes the number of years a higher education programme is expected to take. This is derived from the aggregate of the relative frequency of participation for each age cohort over 17. The indicator provides a general measurement of the volume of higher education and depends on both the number of students involved and how long they study. The average figure for the OECD countries is 2.5 years.



Expected years of tertiary education for all 17-year olds, 2000 (undergraduate education and post-graduate training).

In Finland, South Korea and the USA 17-yearr-olds can expect their higher education to take 3.4-4.1 years. In Sweden a 17-year-old can look forward to 3.1 years of higher education.

If, instead, this indicator is adjusted to show how many years of education a 5-year-old can anticipate, Sweden heads the field with 20.2 years. The average figure for the OECD countries in this case in 16.8 years. In nearly all countries women can look forward to a longer education than men. Swedish women can anticipate 22 years of education and the men 18.6. The average for all countries is 17.1 years for women and16.6 for men. However, there are major differences between countries. In South Korea, Switzerland and the Netherlands, for example, men can expect longer periods of education than women.



Net enrolment rates at the age of 20 in public and private education 1999. Many countries have a higher proportion of 20-year-olds in higher education than Sweden – where many persons begin higher education later.

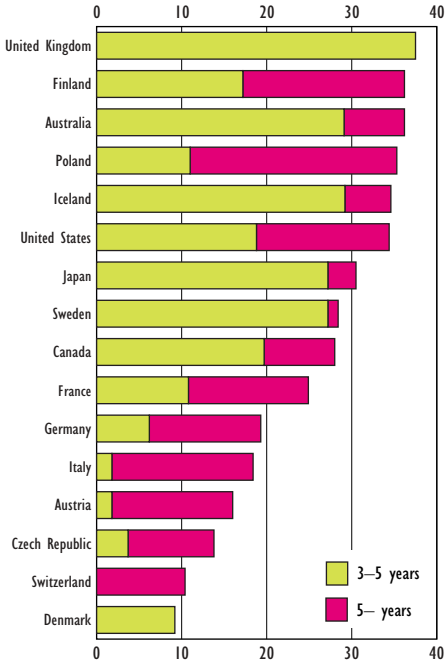
Small proportion of 19–20-year-olds in the higher education

One factor about Sweden that has attracted attention is the relatively small number of young people in higher education. In 1999, 22 per cent of those aged 20 were participating in higher education programmes and 24 per cent in upper-secondary programmes. In South Korea, Belgium and France the proportion of 20-year-olds in higher education was 42-53 per cent. Comparison of 19-year-olds yields the same result.

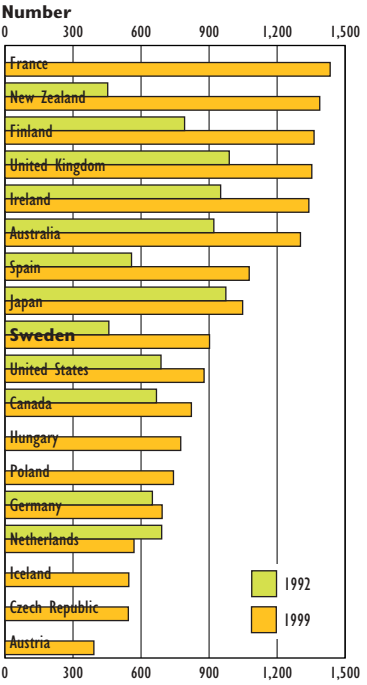
It is worth noting in this context that 95 per cent of 18-year-olds are undergoing education in Sweden, which is the highest proportion among the OECD countries. But Sweden also has the largest rate of withdrawal from education immediately after leaving the upper-secondary schools.

Large proportion of qualifications in health sciences and medicine

When the number of higher education qualifications awarded (ISCED 5A) is related to the number of individuals in the age cohorts to which they are typically awarded, Sweden is in the middle rank of OECD countries. The average for all countries was 25.9 per cent and the figure for Sweden was 28.4 per cent in 2000. The corresponding figures in the United Kingdom, Finland and Australia were 36-37 per cent, while Denmark



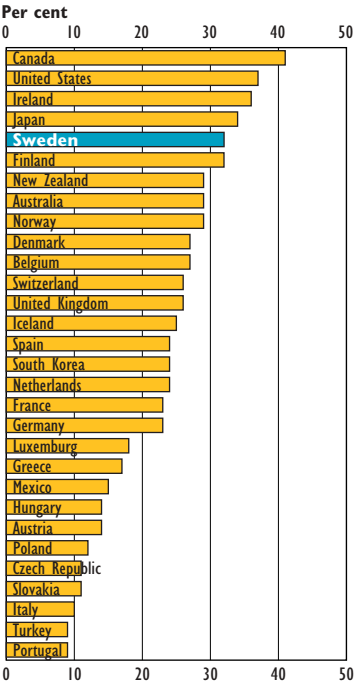
Graduation rates in tertiary education, ISCED 5A first degree, 2000. Sweden can be found somewhere in the middle of the list of countries.



Number of science graduates (ISCED 5A) per 100,000 persons in the labour force 25–34 years of age, 1992 and 1999. Sweden and many other countries have placed great emphasis in science and engineering.

had the lowest proportion of all. The Danish result is due to the attribution of many programmes that in other countries would be classified as higher education to the upper-secondary level. Germany and Italy also have relatively small proportions at 18-19 per cent. In the latter case, however, a large number of programmes last for five years or longer.

There are differences between the countries in the range of disciplines (ISCED 5A) in which qualifications are awarded. Norway and Sweden are the countries where the highest proportion of qualifications are awarded in medicine and the health sciences. On the other hand, Sweden awards a relatively small proportion of qualifications in the social sciences, 22 per cent, whereas the average is 34 per cent. The corresponding figure in Sweden for engineering and the natural sciences is 29 per cent, which is above average, while South Korea, Germany and Finland top the list with 38, 33 and 32 per cent.



Percentage of the population 25–64 years of age that has attained tertiary education, 2001. In Sweden 32 per cent of the population has attained tertiary education.

Sweden close to OECD average in the natural sciences and engineering

Sweden's focus on engineering and the natural sciences during the 90s has doubled the number of qualifications awarded in these subjects in relation to the numbers aged 25–34 in the labour force. This means that Sweden, which in 1992 occupied a very low position in this comparison, has now advanced to the middle of the scale.

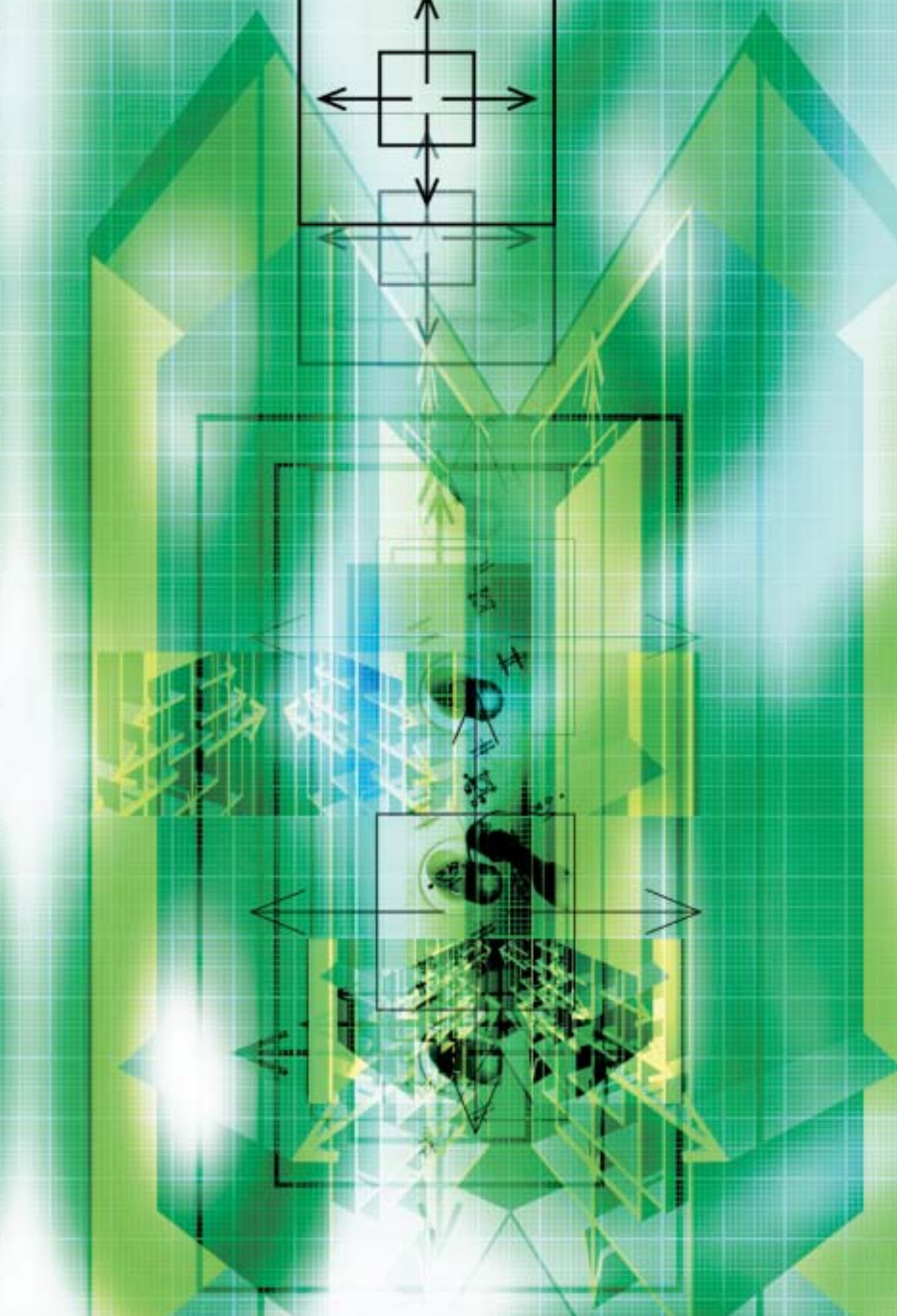
Other countries have also made major endeavours in this area. In New Zealand the number of qualifications awarded was three times as large in 1999 as at the beginning of the 90s. Spain, like Sweden, has doubled the number and in Finland as well the number has risen distinctly. On the other hand only a small rise can be noted in Germany and Japan, and in the Netherlands the figure was lower in 1999 than in 1992.

Where postgraduate degrees are concerned, Sweden heads the list, together with Switzerland, Germany and Finland. In the case of Sweden, the number of postgraduate degrees related to the size a typical age cohort is 2.5 per cent. In Austria, the United Kingdom and the USA postgraduate degrees have been awarded to a relatively large proportion of the population.

A well-educated population

Four-fifths of the population of Sweden have completed upper-secondary schooling at least, which places Sweden in the upper-third of the scale for the OECD countries. In Canada 41 per cent of the population in the age range 25-64 have undergone higher education. This is the highest proportion in all the countries. Sweden is ranked fifth with 32 per cent. These figures include all forms of higher education, or in other words the ISCED levels 5B, 5A and 6.

If the comparison is restricted to levels 5A and 6 –which for Sweden means higher education programmes lasting three years or longer and postgraduate programmes – Sweden ranks somewhat lower – in ninth place with a figure of 17 per cent. ■



FACTS ABOUT HIGHER EDUCATION IN SWEDEN

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 330,000 in 2002. 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.

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. 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.

In the academic year 2001/2002 there were 329,000 students in undergraduate education. 78,400 of these were new students. First degrees were awarded to 33,900 candidates. There were 18,600 active postgraduate students. 3,600 of these were new to postgraduate studies, and the number of doctoral degrees awarded were just over 2,400.

The reforms of 1977 and 1993

The higher education system in Sweden 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 undergraduate 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 undergraduate 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. In 1995, the National Agency for Higher Education was established as the national agency for matters relating to institutions of higher education. Its tasks include quality assessments, supervision, reviews, development of higher education, research and analysis, evaluations of foreign education and provision of study information. 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 2003 there are some fifty institutions of higher education in Sweden run by either central government or private interests.

The state-run part of the higher education sector comprises 11 universities plus the Karolinska Institute and the Royal Institute of Technology, 7 independent colleges of art and 16 university colleges including the Stockholm Institute of Education and the Stockholm University College of Physical Education and Sports. In all there are 36 state-run institutions of higher education.

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

Rules relating to undergraduate education

To be admitted to undergraduate education the applicant must satisfy the general eligibility requirements, which are the same for all courses and programmes of education. General 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 employed 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 general 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.

Numerus clausus is used for all study programmes and courses. 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.

Degrees

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. Students themselves are also able to combine different courses into a degree.

Sweden has a system of credit points, one week of successful full-time study is equivalent to one credit point. One academic year usually yields 40 credit points.

Degrees in undergraduate education are divided into general degrees and professional degrees.

General degrees. A Master's degree ("magisterexamen med ämnesdjup") is obtained after studies totalling at least 160 credit points (the equivalent of four years' full-time study), of which 80 credit points must be in the major subject. The major subject must also include one thesis comprising at least 20 credit points or two projects of 10 credit points each.

A Master´s degree ("magisterexamen med ämnesbredd") is also obtained after studies totalling at least 40 credit points. A prerequisite in this case is a general or professionel degree of at least 120 credit points or a comparable foreign degree.

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

A University Diploma is obtained after studies totalling at least 80 credit points ("högskoleexamen").

Professional degrees. In addition to the general degrees there are some sixty 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. Programmes leading to professional degrees vary in length depending on their character.

Study assistance

In the new study assistance scheme introduced on July 1, 2001 the total amount payable to students remains the same as in the previous scheme, but the grant element has been raised from 27.7 per cent to 34.5 per cent of the total. Study assistance is calculated on a weekly basis and is paid for periods of four weeks, currently at the rate of SEK 6,774 every four weeks.

Study assistance can be paid for a maximum of 240 weeks, or in other words 12 semesters or 6 academic years. This applies up to the age of 40. Thereafter entitlement to study assistance diminishes progressively and ends at the age of 51.

Repayment of the loan element is based on an annuity system and in normal cases the total debt should have been repaid in 25 years or before the borrower reaches the age of 60. The annual amount repayable is limited to five per cent of an individual's annual income.

Since 1989 it has also been possible to receive study assistance for studies outside Sweden. The terms on which this is payable are more or less the same as for studies in Sweden, but it is only available for full-time programmes that last for at least 13 weeks.

Rules relating to postgraduate training

Postgraduate training is based on undergraduate education of at least 120 credit points. Furthermore, the faculty board in question may stipulate additional requirements for admission. An assessment is also made of an applicant's capacity for completing postgraduate studies.

Postgraduate training nominally comprises 160 credit points (four years) and lead to a PhD. A PhD student must complete a number of taught 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. A Licentiate degree can be obtained after a minimum of two years and comprises at least 80 credit points.

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.

New regulations has been introduced to enable other institutions of higher education to 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.

The University College of Kalmar has been granted the area of research of Natural Science, the University College of Karlskrona/Ronneby the area of research of Technology and the University College of Malmö the area of research of Medicine. As of 2001 the University College of Mälardalen has been granted the area of research of Technology and the Mid-Sweden University College the area of research of Natural Science. 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 state funding allocated to each faculty. There is also funding from external sources such as research councils. The faculty boards decide whether the state 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 that can be 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 GDP going to R&D is some 4.3 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 undergraduate education.

For the most part, research and postgraduate training take place at universities and specialized professional institutions of higher education. But the university colleges are gradually expanding in research and postgraduate training.

Funding higher education and research

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. 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.

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.

Research and postgraduate training are funded by way of special grants from the national budget to the institutions of higher education in question. Resources for research and postgraduate training from central government are 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.

The grants from the national budget for undergraduate education and research/postgraduate training, which are allocated directly to the institutions of higher education, make up about 65 per cent of the resources of these institutions. The remaining portion comprises external resources for research and contract work mostly provided by research councils and sectoral agencies, together with local authorities, county councils and private sector companies.

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 is run by a governing board. The Government appoints the Chair of the board. It is stipulated that the Government should appoint a Chair who is not employed at the institution of higher education in question. The governing 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 governing 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.

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 decide not to create specific decision-making bodies for basic higher education, the faculty boards are also 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), junior lecturers (including visiting junior lecturers), postdoctoral fellows, part-time teachers (paid on an hourly basis) and guest teachers.

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

Data about students, staff and finance

Students	Academic year 2001/02	Proportion of women
New higher education students	78,400	59 %
Registered undergraduates (autumn term 2002)	329,000	60 %
Undergraduate degrees (number of individuals)	33,900	60 %

	Fiscal year 2002	
New postgraduate students	3,600	49 %
Active research students	18,600	45 %
Doctoral degrees	2,400	44 %
"Licentiate" degrees	1,000	35 %

Staff	Fiscal year 2002	
Staff (FTE) at state and private universities and university colleges	51,400	49 %
of which teaching and research staff	23,300	39 %
Proportion of teaching and research staff with doctoral degree	48 %	35%

Costs (M SEK, current prices)	Fiscal year 2002
Total higher education cost of which	52,300
State universities and other institutions of higher education	38,400
Private universities and university colleges	3,100
Student financial support	10,300
Central government agencies	500

Universities and University Colleges in sweden

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
Karlstad University
Växjö University
Örebro University
Blekinge Institute of Technology
Kalmar University College
Malmö University College
Mid-Sweden University College
Mälardalen University College

Private sector

Chalmers University of Technology
Stockholm School of Economics
Jönköping University College

University Colleges

State

Borås University College
Dalarna University College
Gotland University College
Gävle University College

Halmstad University College
Kristianstad University College
Skövde University College
Stockholm University College of Physical Education and Sports
Stockholm Institute of Education
Södertörn University College
Trollhättan/Uddevalla University College

Private sector

Erica Foundation
Ersta Sköndal University College
Gammelkroppa School of Forestry
Johannelund Theological Institute
Stockholm School of Theology
The Swedish Red Cross University College of Nursing and Health
Sophiahemmet College of Health Sciences
Örebro Theological Seminary
A number of institutions with psychotherapy programmes

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
National Academy of Mime and Acting

Private sector

Beckmans school of design
University College of Music Education in Stockholm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