Center for
Higher Education
Policy Studies

CHEPS – International Higher Education Monitor
Trend report

Lining up higher education

Trends in selected higher education statistics in ten Western countries

Frans Kaiser
Harm Hillegers
Iwen Legro

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1. Introduction

The past decade, the demand for international comparative quantitative information on higher education has grown tremendously, especially in Europe. The Bologna process as well as the Lisbon process have revived the interest for quantitative information on the development of national higher education systems. Quantitative information, and especially indicators, are a cornerstone of the new EU Open Method of Co-ordination. Comparison of the own national scores on indicators with the scores of the rest is seen as an important driving force for the development or adjustment of national policies to move towards the Lisbon objectives. The demand for quantitative information is furthermore fuelled by 'broader' globalisation processes, like WTO GATS.
The growing demand has evoked a growing supply. OECD is working on education indicators for over 15 years and the annual publication of Education at a Glance has become in many countries an event that triggers national debate on (higher) education policy. In the EU, education statistics did not receive much attention, since education was a national policy area on which the EU had little to say. Since the Lisbon declaration, this has changed, and Eurostat has improved its collection and publication of education indicators.
If supply of international education statistics has increased so much over the last few years, why then develop a separate database in the International Higher Education Monitor? First of all the IHEM project started around ten years ago, when the international interest for higher education statistics was still relatively low. The Dutch Ministry of Education, Culture and Sciences however had realised that being a small and open economy, it is crucial to know what is going on in the outside world. Facing a number of challenges that followed the massification of Dutch higher education, the Ministry looked for information (both quantitative and qualitative) to monitor developments and experiences regarding the specific Dutch higher education policy agenda. This focus on higher education (in contrast to the general education focus of the international data projects) and the use of the Dutch policy context as the starting point for the analyses were the second and third reason to start up and maintain the IHEM.
A fourth reason to maintain the IHEM is reflected in the underlying trendreport. The existing international dataprojects do not allow for trendanalyses, or do so only to a very limited extent. This lack of a trend perspective is partly due to the frequent changes in definitions used in the international dataprojects. In the IHEM, national data are the basis for the trendanalyses. This may have a serious drawback: limited comparability of absolute levels. Within the OECD-INES project large numbers of experts have discussed (and still are discussing) definitions to make the results as comparable as possible. The results of these discussions may differ from the choices made in the IHEM. The latter choices are made on the basis of the experience of the researchers involved, and on national expert opinions. Clearly, comparability has high priority in formulating definitions. The choice of the breakdowns is partly driven to support or illustrate certain higher education policy issues. This may lead to different classifications, groupings and breakdowns, which makes the results (in terms of absolute levels) not always fully compatible with the results published by OECD or Eurostat. However, using national data consistently through time, this may lead to consistent time series, allowing trendanalyses. Certainly, breaks occur in these timeseries, but in many cases such breaks illustrate a change in the national higher education system that is worthwhile noticing.

The scope of the IHEM database is limited. Time and capacity keep us from including all 25 EU-members states or go even beyond that and give a full report on all possible aspects of higher education systems. The choice of countries and indicators is the result of discussions with the Ministry in which criteria of feasibility and relevance are the mayor yardsticks. The set of countries includes Australia, Austria, Finland, Flanders (the Dutch speaking part of Belgium), France, Germany, the Netherlands, Portugal, Sweden and the United Kingdom. Portugal is new to the set and the tables for that country are still under construction.

The report covers trend information on inputs to the higher education systems (new entrants, public expenditure) the process (enrolment, rate of participation and staff) and outputs (graduates).

The enrolment related statistics (new entrants, enrolment and graduates) are broken down by type of program and by discipline. Within the programs, a distinction is made between undergraduate programs and postgraduate programs. Although this classification does not fit all ten systems seamlessly, it is considered to be important to separate these two types. This distinction plays an important role in discussions regarding the role of the government and the individual student in higher education (e.g. the balance between social and private returns). Undergraduate programs deliver a first degree, enabling graduates a proper access to the labor market. Postgraduate programs can be seen as 'added-on' programs that improve knowledge and skills levels and improve the changes on successful entry in certain segments of the labor market.
The following chapters provide a kaleidoscopic picture of the trends in higher education in the ten countries reviewed. Whether conclusions regarding overall trends can be drawn will be discussed in the final chapter.

2. Trends in total higher education by type of institution

In this section an overview will be presented of the main quantitative trends in the ten higher education systems and the types of higher education institutions in those systems. The overview includes a short description of the trends in the number of new entrants, the number of students enrolled and the number of graduates by type of institution, both for the 1995-2000 and the 2000-2002 time-period.[1] Data refer to the undergraduates level.

2.1.1 Australia

The Australian higher education system is a unified system, comprising universities only.
The number of new entrants in Australian universities shows a considerable increase of 15% over the 1995-2000 time-period (199.680 new entrants in 2000). In the subsequent years the number of new entrants grew at a slightly higher rate to 230.939 new entrants in 2003.
With 221.459 students in 1995 and 705.122 students 2003, enrolment in Australian universities shows a growth of 15% and 18% over the 1995-2000 and 2000-2002 time-period. The strong growth in 2002 and 2003 is quite remarkable, since the number of new entrants does not show a similar pattern.
The number of graduates from universities in Australia shows a steady growth of 13% from 102.233 graduates in 1995 to 115.465 graduates in 2000. In 2002 and 2002, the number of graduates grew to 131.853 in 2002 (+14% over two years).

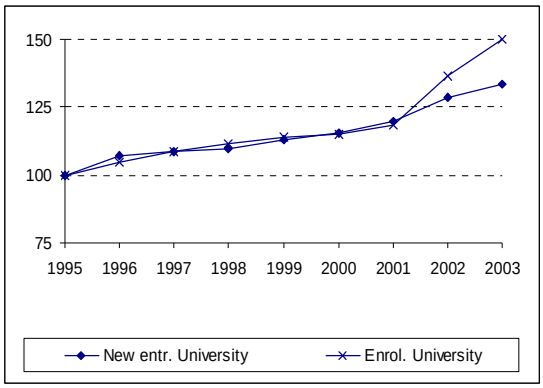


Figure 1: Australia

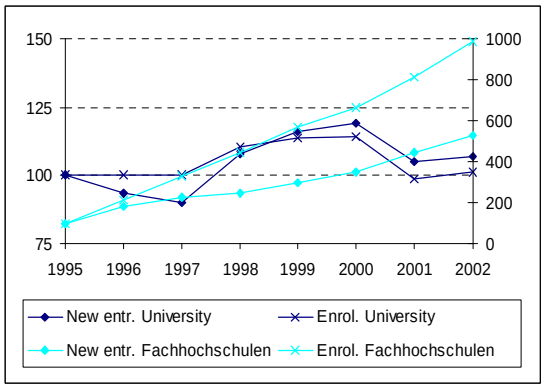


Figure 2: Austria

2.1.2 Austria

The Austrian system of higher education consists of two sectors: the university sector, comprising twelve universities and six schools of music and art (*Hochschulen künstlerische Richtung*) and the non-university sector comprising twelve vocational colleges (*Fachhochschulen)*.
The differences between the types of institutions are considerable. The number of new entrants in universities increased by 19% during the 1995-2000 period to 31.656 students in 2000. In the following years the number of new entrants decreased by 10% to a total number of 28.416 students in 2002. This decrease coincides with the introduction of tuition fees for university students. At the *Kunsthochschulen* the number of new entrants decreased slightly to a total number of 876 in 2000. At *Fachhochschulen* the number of new entrants has grown at a steady, strong pace, from 1.215 in 1995 to 4.217 new entrants in 2000 and 6.464 in 2002.

[1] If the growth in part of the system has been over 50%, a second axis (to the right) appears with a different scale.

The total number of students in universities in Austria has increased by 14% in the time-period 1995-2000 to 252.916 in 2000 followed by a decrease of 11% to a number of 224.269 students in 2002. A similar pattern can be observed at *Kunsthochschulen* where the total number of students increased by 14% over the time-period 1995-2000 and then decreased to 7574 (-2%). At *Fachhochschulen* the growing trend was not interrupted; it grew in an almost straight line from 1761 in 1995 to 17.409 in 2002.
The number of graduates at universities shows an increase of 34% over the time-period 1995-2000 to 14.365 students graduating from universities in 2000. In 2001 this upward trend stopped as the number of graduates decreased by 379 graduates (-1%) The growth for the *Kunsthochschulen* is 11% over the same time-period to 719 graduates in 2000. Comparable statistics about the graduates of *Fachhochschulen* are not yet available, as the *Fachhochschulen* were founded in 1994. However statistics show a considerable increase in the number of graduates at *Fachhochschulen* from 114 graduates in 1996 to 1.981 graduates in 2000 and 2.376 in 2001.

2.1.3 Flanders

The Flemish higher education system consists of two sectors: the university sector and the non-university sector (Hogeschool). Before the 1994 reform, two types of non-university higher education institutions existed: non-university higher education of the short type (HOKT) and non-university higher education of the long type (HOLT). Since the reform of 1994, 29 *hogescholen* offer the former HOKT and HOLT programs under the name of one-cycle and two-cycle non-university higher education.
The university sector in Flanders is smaller than the non-university sector: 56.839 versus 99.661 students in 2002. At university level the number of new entrants shows a decrease of 10% to 12.610 students in 2000. Since then, inflow in university programs has stabilized. Over the same time-period the non-university sector shows a growth of 6% to 26.766 new entrants in 2000. This growth was not sustained during 2001 and 2002 (25.627 in 2002; -4%)
Enrolment in universities hasn't seen any significant changes in the time-period 1995-2000 (57.486 in 1995 and 56.740 students in 2000; 56.839 in 2002) whereas the number of students in the non-university sector shows an increase of 9% with 99.258 in 2000. Since 2000, growth has been negligible.
In both the university and the non-university sector, the number of graduates shows an increase of respectively 14% (9.368 in 2000, 9.690 in 2001) and 9% over the time-period 1995-2000 (21.473 in 2000, 22.545 in 2001).

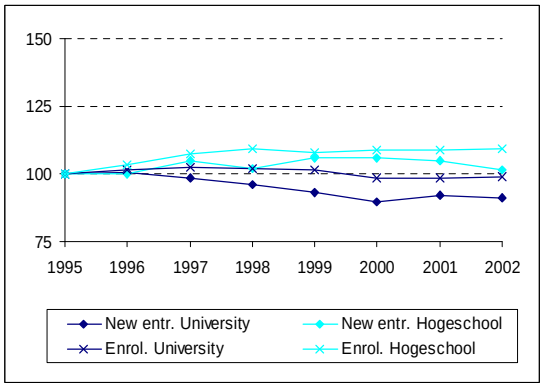


Figure 3: Flanders

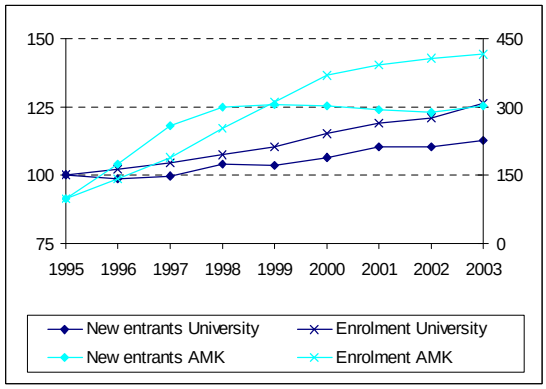


Figure 4: Finland

2.1.4 Finland

The Finnish system of higher education consists of two types of institutions: universities and polytechnics (*AMK*). The Finnish university sector consists of twenty institutions: ten multi-faculty universities, four art academies, three schools of economics and business administration, and three universities of technology. There are 29 AMKs. The majority of the *AMK* were upgraded from upper secondary vocational schools in the early 1990s.

The number of new entrants at Finnish universities shows a growth of 7% over the time-period 1995-2000, and continued to grow in 2001 and 2002. The growth of the number new entrants at *AMK* is 203% over the same time-period. Most of this growth was in the second half of the 1990s; since 1998, the number of AMK new entrants has been relatively stable. In 1996 the number of new entrants at *AMK* surpassed the number of new entrants at universities (19.157 versus 18.465).

The total number of students at university is still higher than the total number of students at *AMK* (147.075 versus 129.218 in 2003), but the growth pattern shows that over the time-period 1995-2000 the total number of students at *AMK* has grown by 267%. In the same time-period the total number of students at universities only increased by 15%. Since 2000, enrolment in both types of higher education institutions has continued to grow.

The same pattern can be seen in the number of graduates. At the university level the growth pattern over the time-period 1995-2000 shows an increase of 24%, with 14.031 graduates in 2000. Looking at the same time-period for *AMK*, this growth is 636% (1.924 graduates in 1995 and 14.153 graduates in 2000). In the year 2000 the number of graduates from *AMK* have outgrown the number of graduates from Finnish universities for the first time (14.153 versus 14.031) and also in the time-period 2000-2002 growth at AMKs is much higher than at universities (5% growth in universities versus 45% growth in *AMK*).

2.1.5 France

In general, seven types of French higher education institutions can be discerned. Within the university sector there are universities, *Instituts Universitaires de Technologie* (IUT), and *Instituts universitaires de formation des maîtres* (IUFM). The non-university sector comprises *Grandes écoles* (a divers group of specialist and very selective schools, providing long programs), special classes or programs offered at Lycées: *Sections de technicien supérieur* (STS) and *Classes Préparatoires aux Grandes Écoles* (CPGE), and other *écoles.*

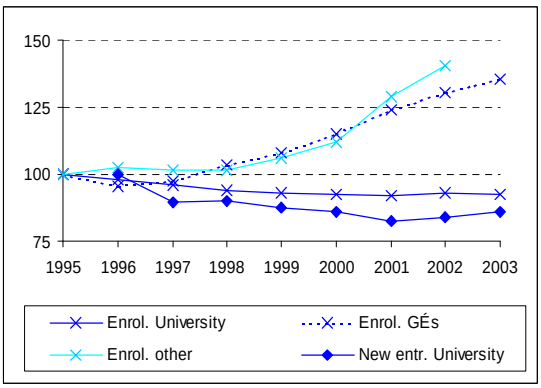


Figure 5: France, long programs

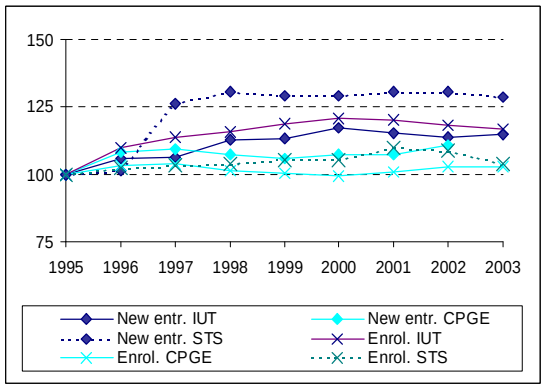


Figure 6: Franc, short programs

The decrease in the number of new entrants in university has stopped in 2001, since which year the number of new entrants has grown again. A similar pattern can be observed in enrolment in universities. Enrolment in *Grandes Écoles* and 'other' types of higher education have grown at a steady pace. The number of new entrants in the two main types of institutions providing short programs (IUT and STS) has grown in the 1990s, but since 2000, growth has turned into (subtle) decrease. At CPGE, growth has not been that strong during the 1990s, but since 2000 the trendline goes up. Enrolment shows a similar pattern as the trends in new entrants.

2.1.6 Germany

The German public higher education system is basically a binary system with on the one hand the university sector, comprising universities (including colleges of art and music (*Kunsthochschulen, Hochschulen für Musik und für Schauspiel)* and on the other hand 80 non-university institutions (*Fachhochschulen*).

Both German universities and *Fachhochschulen* show a steady growth pattern in the number of new entrants in the time-period 1995-2000. The universities grow from 179.943 in 1995 to 243.869 new entrants in 2000. In the following years this trend continues with a growth of 13% in the time-period 2000-2002 to a number of 243.869 new entrants in universities in 2002. German *Fachhochschulen* show a comparable increase of 20% over the time-period 1995-2000 (82.464 in 1995 to 98.904 new entrants in 2000, 121.597 in 2003).
Enrolment in universities shows a decrease of 5% over the time-period 1995-2000. After the year 2000 this trend changes into a significant increase of 6% over the time-period 2000-2002 to a number of 1.422.688 students in universities in 2002. The same trend can be seen at *Fachhochschulen* with a slight increase of 2% over the time-period 1995-2000 followed by a considerable increase of 13% over the time-period 2000-2002 to 516.545 students in 2002.
The number of graduates in both German universities and *Fachhochschulen* shows a decrease over the time-periods 1995-2000 and 2000-2002. An 8% decrease for universities and a 12% decrease for *Fachhochschulen* over the time-period 1995-2000, followed by a 5% decrease for universities and a close to 0% decrease for *Fachhochschulen* over the time-period 2000-2002.

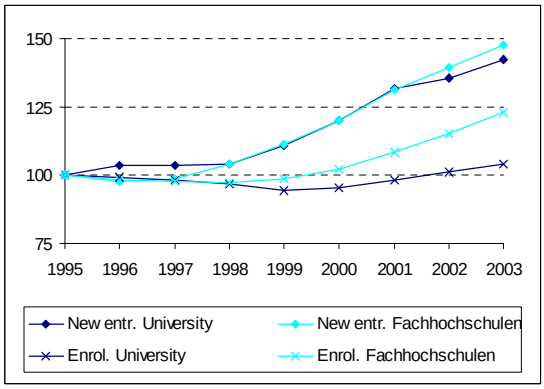


Figure 7: Germany

2.1.7 The Netherlands

The Dutch higher education system has a binary structure with on one side of the divide the universities and on the other side higher vocational education (*HBO or Hogescholen*).

Over the time-period 1995-2000 there has been a significant increase in the number of new entrants in both universities and *HBO* (12% versus 26%). For *HBO*, a decrease of 5% can be seen over time-period 2000-2002 to a number of 80.280 new entrants in 2002, whereas the number of new entrants in universities grows with 10% over the same time-period to 35.540 in 2002. In 2003, the number of new entrants in HBO went up again.
The number of students in Dutch universities shows a decrease of 6% over the time-period 1995-2000 with a minimum of 159.457 in 1997, followed by an increase of 8% over the time-period 2000-2002 with 180.890 in 2002. The enrolment of *HBO* shows a 16% increase over the time-period 1995-2000 (315.300 students in 2000), and a 3% increase over the time-period 2000-2002.
A big difference can be seen in the growth pattern of graduates for universities and *HBO*. Where the number of graduates from universities decreases with 23% over the time-period 1995-2000, the number for *HBO* show a considerable increase of 12% over the same time-period. In the time-period 2000-2002 this trend remains the same with an 8% decrease for universities and a 9% increase in the number of graduates from *HBO*.

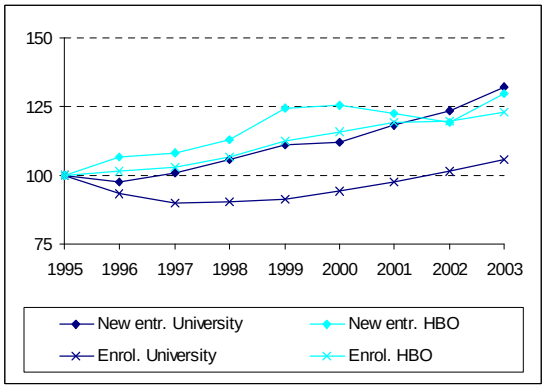


Figure 8: The Netherlands

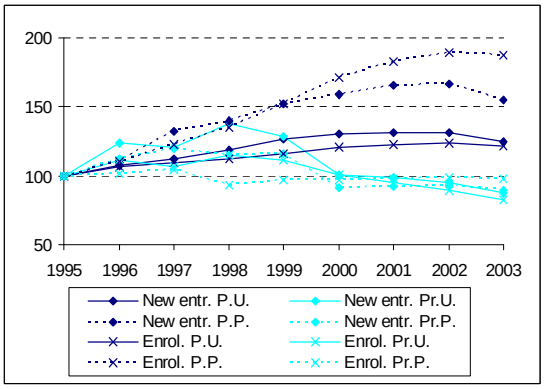


Figure 9: Portugal

2.1.8 Portugal

Portugal has a binary system of higher education that provides both university education and polytechnic education, through the infrastructure of public and private higher education institutions.

The number of new entrants in public universities increases with 30% over the time period 1995-2000 with 29.141 new entrants in 2000 and the number does not change significantly in the subsequent years. Over the same time-period the number of new entrants in private universities is stable but has a peak in 1998 with 18.050 new entrants. After the 1995-2000 time-period the number of new entrants in private universities decreases with 5%, over the 2000-2002 time-period with 12.405 new entrants in 2002. The public polytechnic schools show an increasing number of new entrants whereas the number decreases in private polytechnic schools (respectively a 59% increase versus a 9% decrease over the 1995-2000 time-period). Over the 2000-2002 time-period the number of new entrants in both public (5% to 21.774 new entrants in 2002) and private (2% to 20.910 new entrants in 2002) polytechnic schools increased.
Both public universities and public polytechnic schools show a considerable increase in the number of students (respectively 177.995 and 100.481 students in 2000). The private universities and private polytechnic schools show a decline or remain relatively stable (respectively 43.949 and 59.501 students in 2000) over the 1995-2000 time-period.

2003 seems to be a turning point since enrolment and the number of new entrants was in 2003 lower than in 2002 for all types of higher education. The number of graduates shows a growth pattern in both public and private sectors over the time-period 1995-2000. In the subsequent years the pattern remains the same for all types of education except for private universities that show a decrease of 18% over the 2000-2002 time-period, with 4.825 graduates in 2002.

2.1.9 Sweden

The Swedish higher education system is often considered to be a fairly homogeneous system of tertiary level institutions (*högskolan*). Within this homogeneity, four types of higher education institutions are discerned: universities, colleges of art and music, colleges (*mindre* and *medelstora högskolor*) and colleges of health science (*Värdhögskolor*)[2].
The number of new entrants in universities in Sweden has increased a remarkable 45% over the 1995-2000 time-period to 57.226 in 2000. Over the 2000-2002 time-period this number has increased another 15% to 65.935 new entrants in 2002. A comparable trend can be seen in the Swedish college of arts (42% over the 1995-2000 time-period) where the number of new entrants in 2002 is 737. A 36% decrease can be seen in the number of new entrants in colleges in Sweden over the 1995-2000 time-period followed by an 20% increase over the 2000-2002 time-period.
Swedish university enrolment shows a 52% increase over the 1995-2000 time-period (186.485 versus 284.240 students), followed by a 16% increase over the subsequent years to a total of 330.386 students in Swedish universities 2002. The number of students in Swedish college of arts shows again a comparable trend with respectively a 44% and 16% increase over the 1995-2000 and 2000-2002 time-periods (3.714 students in 2002). Enrolment in Swedish colleges decreased 25% over the 1995-2002 time-period followed by a 29% increase over the 2000-2002 time-period.
The number of graduates in universities shows a growth of 66% over the 1995-2000 time-period (383.93 in 2002), whereas the number of graduates in colleges and colleges of art shows a decrease of respectively 31% and 11% over the same time-period (8.401 and 341 graduates in 2002).

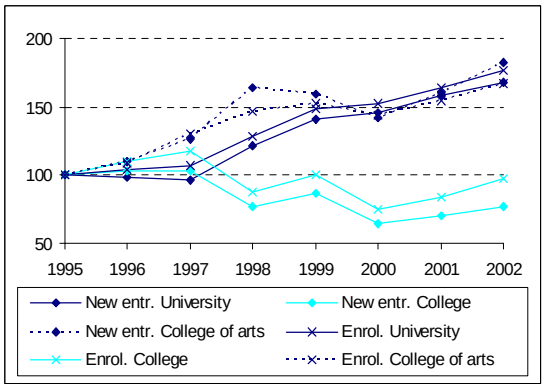


Figure 10: Sweden

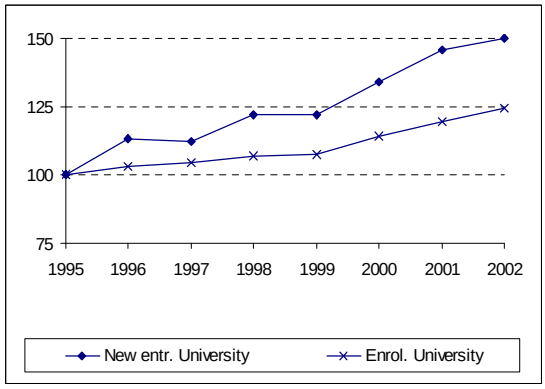


Figure 11: UK

2.1.10 UK

The number of new entrants in UK universities shows a steady growth with a 34% increase over 1995-2000 time-period (485.434 in 1995 versus 650.210 in 2000) and 12% over the 2000-2002 time-period (727.890 new entrants in 2002).

[2] Most colleges of health science merged into universities and colleges in the late 1990s. Therefore they are not included in the graphs

Enrolment in UK universities increased with 14% from 1.349.975 students in 1995 to 1.541.925 students in 2000, followed by a 9% increase to 1.677.615 students 2002.
The number of graduates shows an increase of respectively 15% and 10% over the 1995-2000 and 2000-2002 time-periods to 393.440 graduates in 2002.

3. Rate of participation

3.1 Introduction

One of the key conditions for the development towards a knowledge-based society is to have a population (or labor force) that has a high level of educational attainment. An indicator often mentioned in this respect is the participation rate in higher education. If a large part of the population has participated in higher education, the supply of knowledge workers will be larger, which is considered to be one of the key growth factors for national economies. In addition, it is assumed that more higher educated people will lead to a society with more active citizenship and more social cohesion.

3.2 Definitions

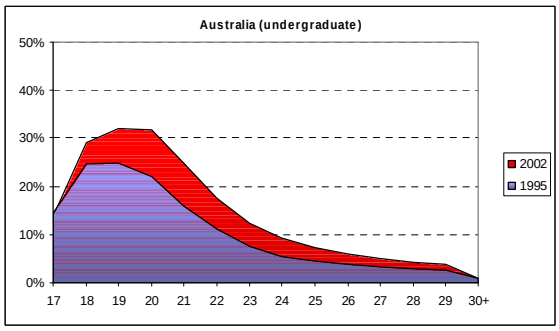
The rate of participation is therefore an important indicator for (higher education) policy makers. Unfortunately, there is not a common authorative definition of rate of participation in higher education. In an earlier version of this trend report (Boezerooij 1999) several definitions were discussed. The conclusion was that gross rates of participation should be avoided and that net rates of participation should be used only.

The net rate of participation consists of the ratios of the number of students aged X and the size of the population aged X, with X the age-groups that are relevant for enrolment in higher education. These ratios can be depicted in graphs like the ones presented below. The shaded areas represent the rate of participation for one year. Comparing areas of two years may give a general idea of whether the rate of participation has changed (area has grown or decreased) and if there has been a shift in the age composition of higher education participation.

3.3 Results

In the following graphs the net rates of participation are presented for each age group within the 17-years olds to the 30+ olds age range, for the year 1995 (blue) and 2002 (red).
The graphical displays of the net rates of participation show some remarkable differences in the overall rate of participation (the surface of the area), the structure of the rate of participation (the shape of the area) and the changes over the period 1995-2002. Based on visual inspection of the graphs we conclude that Finland and France have a relatively high overall rate of participation, whereas Germany and Austria have a relatively low rate of participation. Because of the differences in the shapes of the graphs, it is difficult to assess by visual inspection how the other countries rank regarding their overall rate of participation.

There are three general patterns regarding the age-composition of participation in higher education. The first pattern is the early peak, followed by a flat tail. This pattern can be seen in Flanders and France, as well as in the Anglo-Saxon higher education systems (Australia and the UK). In these countries a substantial part of undergraduate education consists of ‘short’ programs (>three years). Enrolment in Flemish one-cycle programs at hogescholen, the French STS, IUT and the Licence program, and the British and Australian sub-degree and first degree programs skew the graphs heavily to the left.
The second pattern is also skewed to the left (the younger age groups) but the peak is less high and participation in the older groups is more significant. This pattern can be found in Finland, the Netherlands and Sweden. Short programs are absent or not very popular in these countries.
The third pattern is the evenly distributed pattern that can be found in Austria and Germany. Short programs are absent and the duration of stay in these two systems is relatively long.


Australia (undergraduate)
50%
40%
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17 18 19 20 21 22 23 24 25 26 27 28 29 30+
2002
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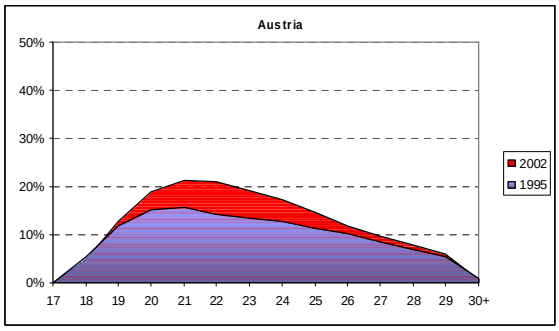
Austria
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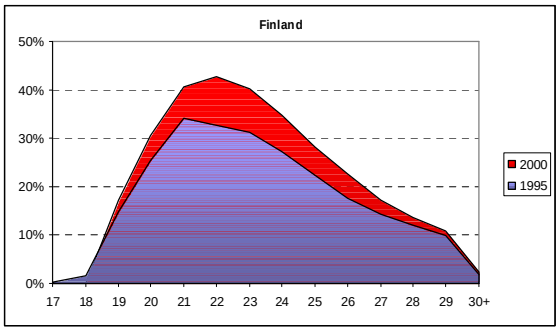
Finland
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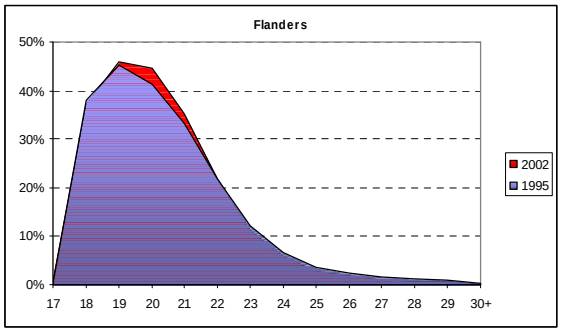
Flanders
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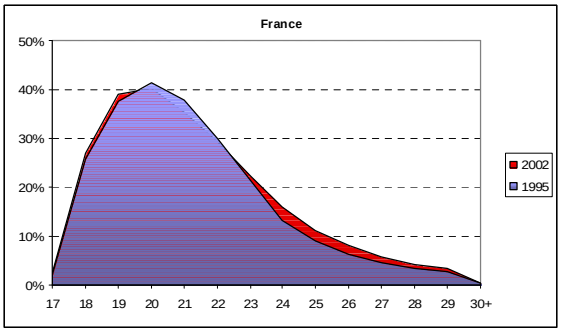
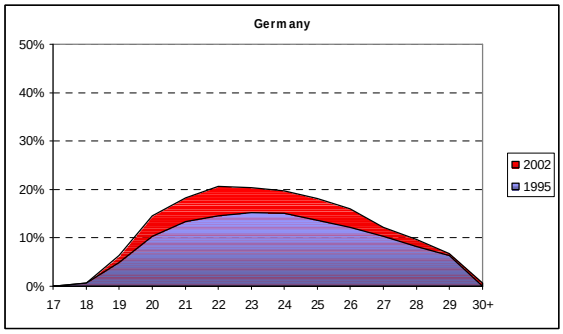

France
50%
40%
30%
20%
10%
0%
17 18 19 20 21 22 23 24 25 26 27 28 29 30+
2002
1995


Germany
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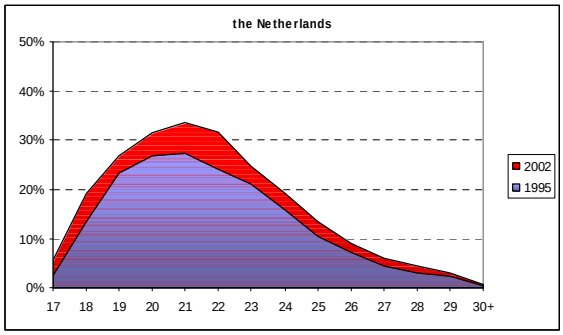
the Netherlands
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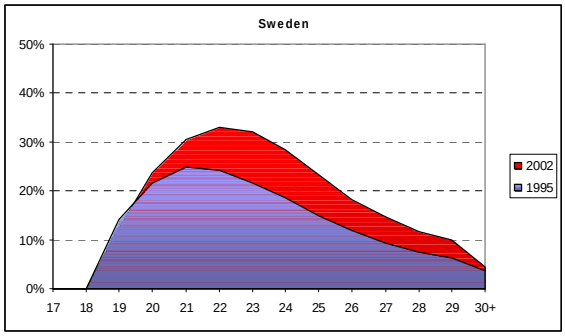
Sweden
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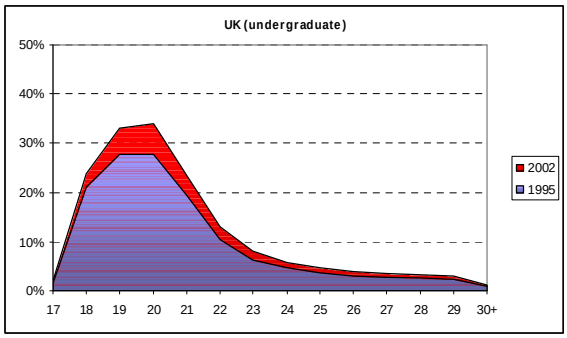
2002
1995


UK (undergraduate)
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40%
30%
20%
10%
0%
17 18 19 20 21 22 23 24 25 26 27 28 29 30+
2002
1995

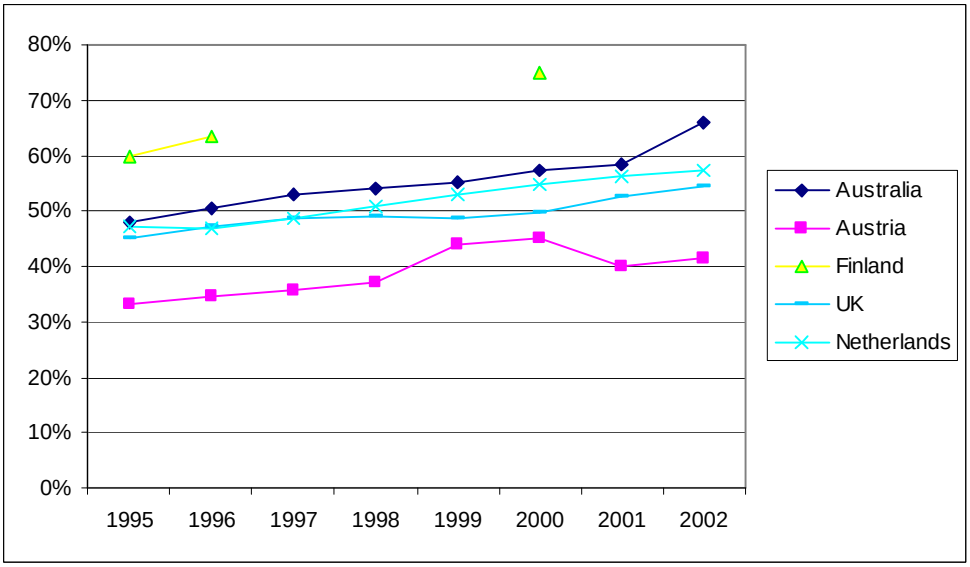
The graphs show also that in seven out of nine systems, the rate of participation has grown in the period 1995-2002. Only in France and Flanders the rate of participation has been stable (or even decreased).
Six of the seven countries where the rate of participation has grown show a shift to the right: participation in older age groups has grown stronger than in the younger age groups[3]. Germany is the only country in which the 'peak' has shifted to the left.

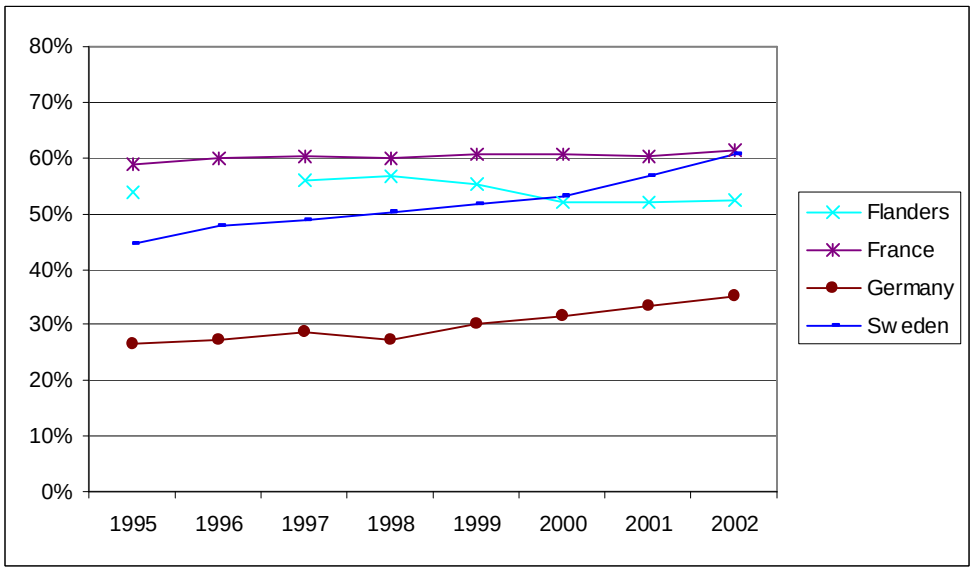
Although visual inspection of these graphs gives valuable insights in rates of participation, these graphs do not provide a numerical result that can be compared easily through time and across countries. For that purpose a single rate per year should be calculated. In this report we do this in two steps. First we sum the ratios (enrolment age X by population age X) for all individual age groups for each year. The resulting figures have two flaws. The first problem is the low face validity. The 'common' interpretation of a rate of participation is the part of a cohort that participates in higher education. Since the scores may exceed 100% this is difficult to interpret. The second flaw originates from institutional differences between national higher education systems. The length of programs differs substantially between countries (as well as between types of programs within countries). Summing the ratios will overestimate the rate of participation in countries with relatively long programs and underestimate it in countries with relatively short programs. To 'correct' for this, we divide the sum of ratios by the nominal length of programs. The choice of the nominal length is a compromise between the (in general) longer time to completion and the shorter duration of stay of students leaving higher education without a degree.

Figure 12 shows that the overall rate of participation is highest in Finland and lowest in Germany. Furthermore it confirms the observation that France and Flanders are the only two countries in which growth has been insignificant (or even negative in the Flemish case).
The growth rate is relatively strong in Sweden and Australia. The latter is due to a strong increase in participation in 2002.
A peculiar line is the Austrian one. In 1999 and 2000, the rate of participation was much higher than in the previous and later years. This may be related to the introduction of tuition fees in the late 1990s.

[3] This can easily be seen by identifying the age group with the highest ratio.

Figure 12: Net rate of participation, sum scores divided by length of program, 1995-2002





4. Number of graduates by type of program

4.1 Introduction

Undergraduate programs are programs that lead to a first degree that has a 'civil effect': with this degree, a graduate can enter the labour market as a higher education degree holder. Programs that do not lead to such a degree (like programs leading to an intermediate degree) are not taken into account here. Postgraduate programs are programs that build on completion of undergraduate programs. Holding an undergraduate degree is a prerequisite for entering those programs.
This classification is based on the Anglo-Saxon systems in which the sub degree programs and bachelor programs are the undergraduate programs and the master, Doctorate and other (specialist postgraduate programs are the postgraduate programs. This model is also underlying the national reforms that in most European higher education systems are undertaken, within the framework of the Bologna process. However, the traditional degree structures of continental European higher education systems do not readily fit into this new structure. In many countries long (university) programs, equivalent to master programs, are considered to be the first degrees and therefore have to be classified as undergraduate programs. The comparability of the data of Anglo-Saxon systems and continental system may therefore be compromised. This problem will be solved by the time the Bologna process will be completed. Till that time we need to be careful in comparing the results between the two types of systems.

4.2 Undergraduate programs

4.2.1 Australia

There are three types of undergraduate programs offered by Australian universities: the bachelor program, the associate degree program and other undergraduate programs. The bachelor program is the main undergraduate program, which can serve as a first entry degree for labor market and as an entry degree into postgraduate degree programs. The associate degree is a short sub-degree program, which was created in the mid 1990s. The third category comprises a number of short sub-degree programs.
The number of students graduating with a bachelor's degree increased with 14% over the period 1995-2000. This trend continued in the early 2000s with an average rate of increase of about 6% per year, amounting to 126.825 students in 2002. The associate degree is relative new. Since 1999, the number of associate degrees awarded has grown steadily at a yearly growth rate of around 8%. The number of other undergraduate degrees awarded shows an erratic pattern, with a decrease in the late 1990s and a sharp increase in 2001.

4.2.2 Austria

University undergraduate studies comprise a number of long (four to five years) programs that are captured here as *Diplomstudien*. *Fachhochschulen* offer the degrees of *Magister FH* and *Diplom-Ingenieur FH*, which are more vocational oriented than university programs.

The number of graduates receiving a *Diplom* degree at Austrian universities increased with 34% over the period 1995-2000. Since the *Fachhochschule* is a newly established type of education (started in 1992), the number of students graduating each year is still growing fast. The first 114 students graduated in 1996. In 2001 this number was 2.376.

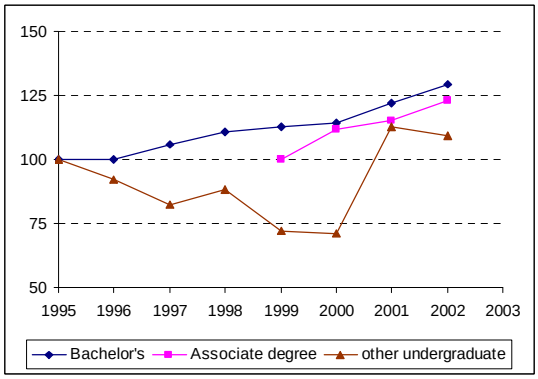


Figure 13: Australia

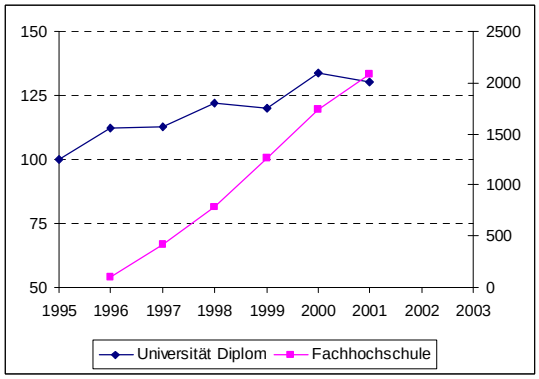


Figure 14: Austria

4.2.3 Finland

From 1997 on, new degree regulations apply to all fields of study. At universitiesthere is a "lower academic degree", usually called the Bachelor's degree (*kandidaatin tutkinto*) and a "higher academic degree", called the Master's degree (*maisterin tutkinto*). The AMKs offer a Bachelor degree.
The majority of graduates at Finnish Universities receive a Master's degree. The number of students receiving a Master's degree increased by 17% over the 1995-2000 period and is still steadily rising. Although the number of students graduating with a Bachelor's degree is a lot smaller than the number of Master's (2.883 versus 12.411 in 2003), this number is growing rapidly. The period 1995-2000 showed a 73% increase of students graduating with a Bachelor's degree, and this number is still growing twice as fast as the Master's.
At the Finnish AMK, ten years after its creation, the number of graduates is still growing at a very strong pace and amounts to 20.502 in 2003, which already exceeds the number of university graduates.

4.2.4 Flanders

University education leads to the degree of *Licentie*. Since the reform of 1994, non-university (HOBU) higher education programs are divided into two types. In the first type, the programs which prior to the reform were referred to as HOKT (short-term higher education) are included. These short programs lead to the degree of G*egradueerde*. The second type in non-university higher education are the programs of two cycles (before the reform of 1994 known as the HOLT (higher education of the long type)). The final degree of the long program, rewarded after the second cycle, is the Licentiaat (*Licentie*).

The total number of graduates at university programs leading to a *Licentie* has grown by 14% over the 1995-2000 time-period to 9.690 graduates in 2001.
The number of graduates with a *Gegradueerde* degree (17.861 in 2001) has increased at a similar pace over the last decade. The number of students graduating from the HOLT program which leads to a *Licentie* degree decreased till 1997, after which year the output has grown along lines similar to the other programs.

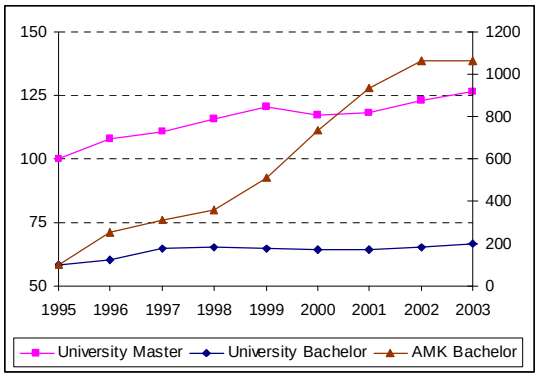


Figure 15: Finland

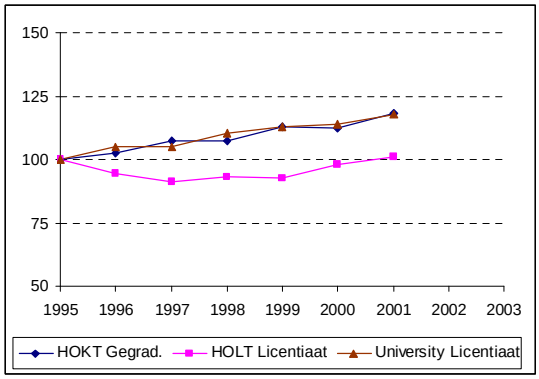
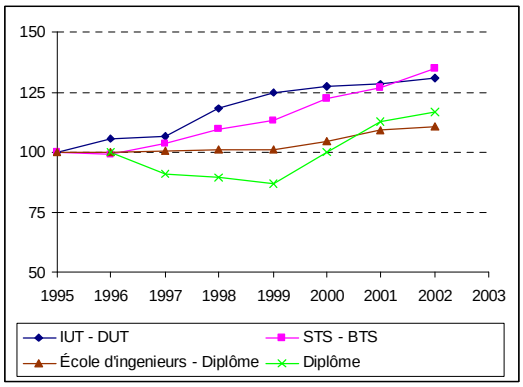


Figure 16: Flanders

4.2.5 France

The French higher education system comprises a wide variety of education institutions, each providing a number of undergraduate programs. French university program (UG) are located in the first and second (the third cycle comprises the postgraduate programs). In the **first cycle** of two years, the following degrees can be obtained*: diplôme d'etudes universitaires générales* (DEUG) and the *diplôme d'études universitaires scientifiques et techniques* (DEUST, meant to be a final qualification). In the **second cycle**, there are the following degrees: *licence* (one year after the DEUG), *maîtrise* (two years after the DEUG), and a number of specialised *maitrise* degrees. In the IUT, short DUT programs are offered, and in the STS, two-year vocational degrees (BTS) are provided. In the other major part of the higher education system, the *Grandes écoles*, a variety of long programs is offered, which is captured here under the name *diplôme*. A distinction has been made between engineering schools and other *Grandes Écoles*.

The number of students completing the DEUG program has decreased with 5% over the 1995-2000 period and the years 2000-2002 showed no change in this downward trend. The number of graduates in the DEUG program was 118.423 in 2002. The smallest program of the first cycle, with only 2.512 graduates in 2002, is DEUST. The number of students completing the DEUST program increased with 35% over the 1995-2000 period and is still growing. The number of university graduates with a *Licence* degree increased with 8% over the 1995-2000 period and grew to 138.201 in 2002. The number of students graduating from French universities with a *Maîtrise* degree is slowly increasing and amounted to 96.034 graduates in 2002.
In the non-university sector, the STS program remains by far the largest program, with 103.629 BTS graduates in 2002. This represents a large increase of 25% in the last 7 years. Such an increase can also be seen in the number of graduates in the IUT program. This number increased 27% from 1995 to 2000. In 2002 the number of IUT graduates with a DUT degree was 48.877.
The output of the engineering schools has been stable in the 1990s and started to grow after 1999. The number of degrees awarded at the other GEs decreased during the late 1990s but it picked up by the turn of the century.



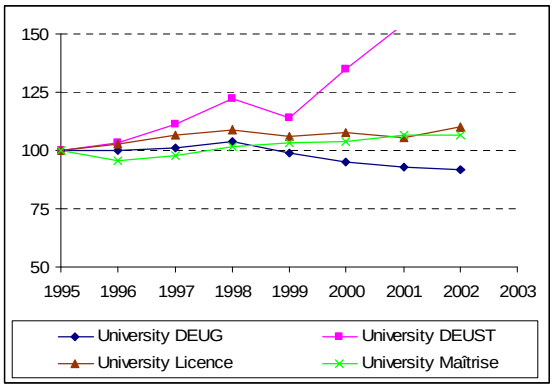


Figure 17: France IUT, STS, Grandes Écoles *Figure 18: FranceUniversité*

4.2.6 Germany

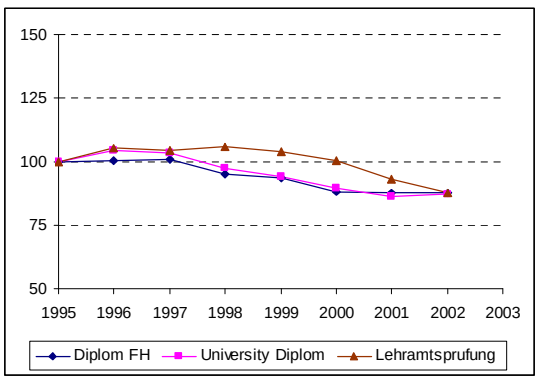
The main undergraduate degree offered at German universities is the *Diplom.*The *Fachhochschulen* offer programs leading to the degree of *Diplom FH*. The extension (FH) is made to distinguish them from the university degree *Diplom*.

The total number of graduates at universities (*Diplom*) decreased by 10% over the 1995-2000 time-period. For the time-period 2000-2002 the number of graduates keeps decreasing with 3% to 92.201 in 2002. The number of *Fachhochschulen* graduates is also decreasing. Over the time-period 1995-2000 the decrease was 12%, however, this number seems to have stabilized over the last year. The number of *Fachhochschulen* graduates was 65.929 in 2002.

4.2.7 The Netherlands

Universities offer the general degrees *doctorandus (drs.)* and the degrees *ingenieur (ir.)* (technical sciences) and *meester* (*mr.*) (law). The *hogescholen* grant the degree *baccalaureus*, and for the engineering programs the degree *ingenieur (ing.).*Since the introduction of the BaMa structure, these degrees will die out and the new bachelor and master degrees will replace them.

The number of graduates at universities shows a rather big decrease of 23% over the 1995-2000 time period and this trend seems to continue into the 21st century. The number of university graduates was 20.890 in 2002. Where the number of university graduates is decreasing, the number of *hogescholen* graduates is increasing. This number rose to 61.070 in 2002 which means a 22% increase from 1995.



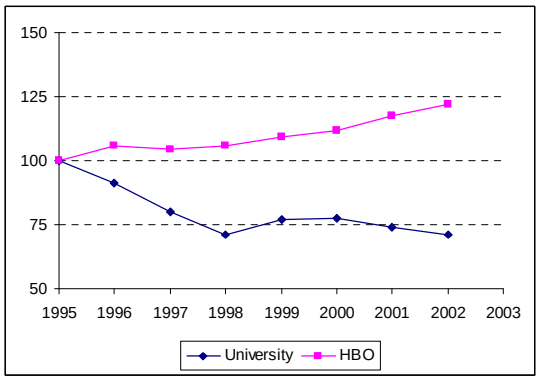


Figure 19: Germany *Figure 20:The Netherlands*

4.2.8 Sweden

The 1993 Degree ordinance transformed the existing 500 study programs at university level into two broad degree categories: general degrees and professional degrees. Three different general degrees are now awarded: the traditional Bachelor's degree (*kandidatexamen*), the university diploma (*högskoleexamen*), and the Master's degree (*magisterexamen*). Professional degrees (*yrkesexamen*) are awarded upon completion of programs leading to specific professions, e.g. medicine, dentistry, teacher training, engineering, nursing, design, etc.

The number of students graduating with a bachelor's (*kandidatexamen*) degree was 10.982 in 2002. This is an increase of 88% from 1995. The number of 9.054 Master's degrees in 2002 represents an even larger increase of 250% from 1995.
The number of university diplomas (*högskoleexamen*) has doubled since 1995 to 1.087 in 2002. The number of Professional program degrees (*yrkesexamen*) increases by a couple percent per year and amounts to 25.107 graduates in 2002.

4.2.9 UK

Universities offer both undergraduate and postgraduate degrees. The latter belongs to doctorate education and is dealt with in the next section. The undergraduate programs comprise sub-degree programs and Bachelor's programs. Four different types of sub-degrees exist, namely: the National Certificate, the Higher Vocational Certificate, the National Diploma, and the Higher National Diploma (HND). As a specific variant on the diploma course, the Diploma in Higher Education (DipHE) exists, which is specific for the field of Education.

The total number of Bachelors' degrees conferred grew by 9% over the time-period 1995-2000, to 282.385 graduates in 2002. The same time-period shows a large growth in the number of sub-degrees by 43% (111.055 graduates in 2002).

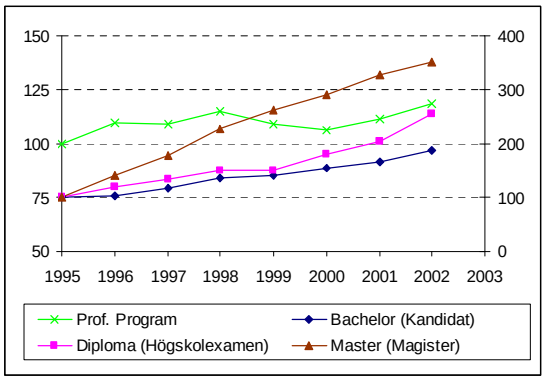


Figure 21: Sweden

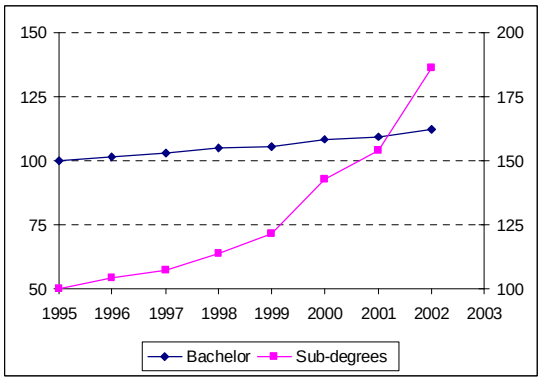


Figure 22: United Kingdom

4.2.10 Summary

Looking at the development of the output of higher education, in terms of graduates from undergraduate programs, we observe a strong growth (<50%) in Austrian *Fachhochschule* degrees, Finnish AMK degrees and university bachelors, Swedish general program degrees and sub-degrees in the UK. Growth has been negligible or even negative in the French DEUG, and the French long degree programs, all Germany programs as well as in the Dutch university programs. In the remaining programs, growth has been modest.

4.3 Postgraduate programs

4.3.1 Australia

The number of Australian students graduating with a Master's degree in Australia has been growing very fast over the last couple of years. From 14.058 graduates in 1995 there has been an increase of 154% to 35.659 in 2002. The number of students graduating with a doctorate degree has also been growing, although not as fast as the Master's degrees. In 1995 the number of graduates with a doctorate degree was 2.491. This figure has grown to 4.418 in 2002, which means a 77% increase compared to 1995.
The number of other postgraduates grew by 11% over the period 1995-2000 to 24.712 in 2000. In the period 2000-2002 growth has accelerated somewhat resulting in a 16% growth over this period and 28.702 other postgraduates in 2002.

4.3.2 Austria

The postgraduate degree in Austria is the *Doktor (NSVS)* degree. The number of graduates graduating with a *Doktor* degree has decreased over the years. Over the 1995-1999 time-period the number decreased from 2.769 to 1.786, which is a 36% decrease. The year 1999 seemed to be a turning point since the number has been growing again from 1999 on, up to 2.124 in 2001. The drop in 1998 is due to a change in reporting method (regarding medicine).

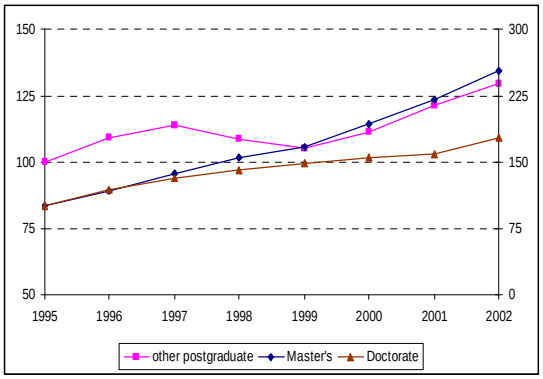


Figure 23: Australia

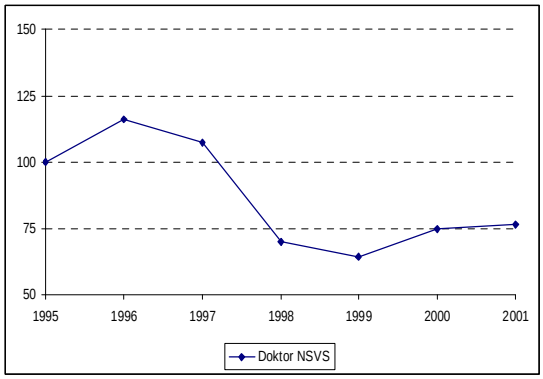


Figure 24: Austria

4.3.3 Finland

The number of Finnish postgraduates has been increasing steadily over the last couple of years. The number of students graduating from the program that leads to a doctor's degree grew from 765 in 1995 to 1.156 in 2000, which is a 51% increase. This trend continues into this century with an annual growth rate of about 2%, leading to 1.257 graduates in 2003.

4.3.4 Flanders

All three types of Flemish postgraduate programs have been growing for the last couple of years. The number of graduates with a doctor's degree (598 in 1995) increased with 21% over the 1995-2000 time-period to 723 graduates in 2000. This trend continues in 2001 with an annual growth rate of 12% that years, amounting to 811 graduates with a doctor's degree. The *GAS (gediplomeerd in de aanvullende studies)* and the GGS *(gediplomeerd in de gespecialiseerde studies)* degrees have also been growing over the last couple of years. The number of *GAS* graduates grew with 22% over the 1995-2000 time-period while the number of *GGS* grew faster with 51% over that same period. The amount of GAS and GGS graduates in 2001 was respectively 1.852 and 1.836.

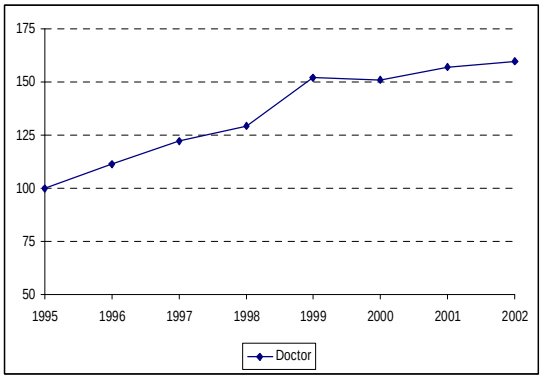


Figure 25:Finland

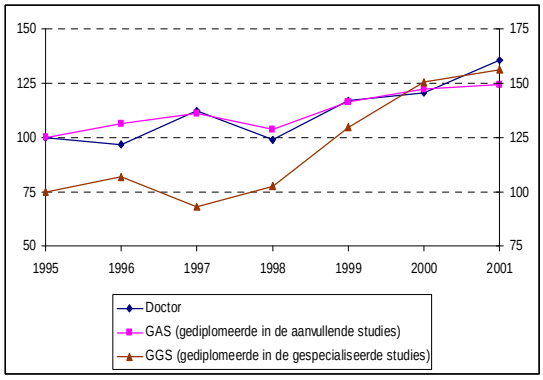


Figure 26: Flanders

4.3.5 France

After a drop of 11% to 23.525 (2000) in the 1995-2000 period, the number of *DEA* program graduates is back at its 1995 level, with 26.529 students graduating in 2002. The number of graduates in the professional *DESS* program increased very fast over the 1995-2000 time-period with annual growth rates of about 8% percent, resulting in 33.312 graduates in 2000. This growth seems to have accelerated in the last couple of years to approximately 15% annually, which has brought the number of *DESS* graduates to 44.466 in 2002.
The two smallest postgraduate programs, *DES/DIS* and doctorate, remained stable over the 1995-2000 period at respectively 3.500 and 10.000 graduates each year.

4.3.6 Germany

Although the number of German students graduating with a doctor's degree increased with 15% over the 1995-2000 time-period to 25.780 this number decreased again in the following years. The total number of graduates with a doctor's degree was 23.838 in 2002, which is an 8% decrease from 2000.

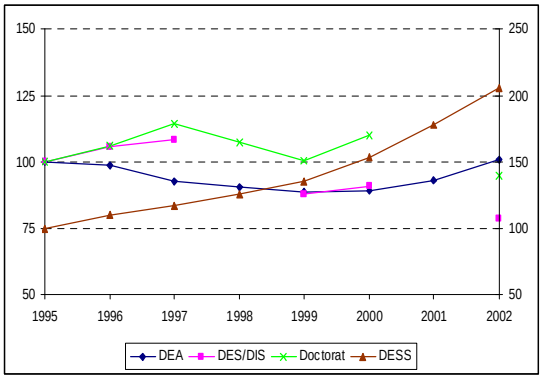


Figure 27: France

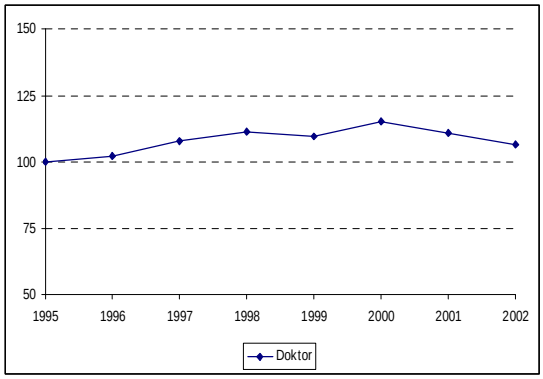


Figure 28: Germany

4.3.7 The Netherlands

Over the time-period 1995-2000, the number of Dutch doctorate graduates remained rather stable around 2.600 students. The last couple of years showed a minor increase.

4.3.8 Sweden

The number of Swedish students graduating with a doctor's degree has increased significantly over the last couple of years. Over the 1995-2000 time-period the number increased with 49% to 2.388 in 2000. The years 2001 and 2002 show no changes in this trend. With an 8% increase over the years 2000-2002 the total amount of doctor's degree graduates amounts to 2.588 in 2002. For the postgraduate *Licenciat* program, the story is more or less the same, although the growth rate is somewhat lower. The 1995-2000 time-period showed a 25% increase to 1.027 in 2000. However, 2002 showed a pretty sharp decrease of 7% compared to the preceding year which amount means 984 graduates in that year.

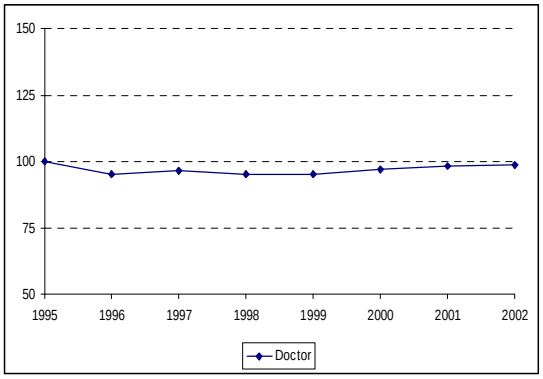


Figure 29: The Netherlands

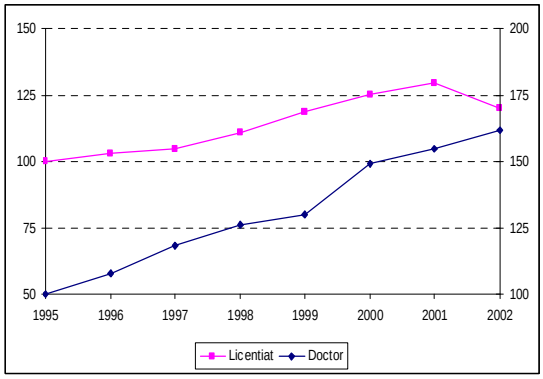


Figure 30: Sweden

4.3.9 United Kingdom

All three types of postgraduate programs in the United Kingdom have grown over the last couple of years. The fastest growing number of graduates can be seen in the master's program, which grew by 65% in the 1995-2001 time-period to a total of 76.155 in 2001. The number of British students graduating with a doctor's degree increased with 45% over the 1995-2000 time-period to 14.120 in 2000. In the following years up to 2002 this growth seems to have continued with 5% over that period to 14.875 postgraduates graduating with a doctor's degree.
The remaining category of *other postgraduates* also grew although not as fast as the others. The number increased with 23% over the years 1995-2000 to 60.315. In the following years, the number continued to grow to 65.470 in 2002.

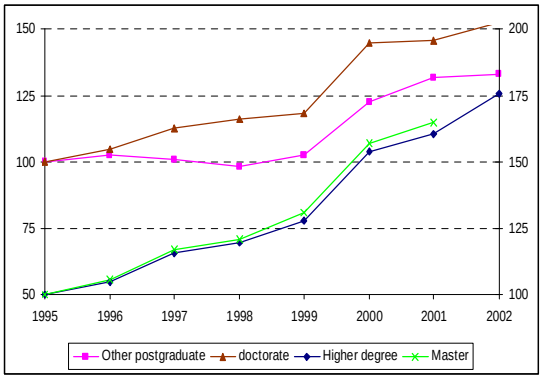


Figure 31: United Kingdom

4.3.10 Summary

There are two systems in which the Master degree is seen as postgraduate program: Australia and the UK. In both countries there has been a strong increase in the number of graduates of those programs.
The number of graduates from doctorate programs has grown strongly in Australia, Finland, Flanders, Sweden and the UK. In Austria, France, Germany and the Netherlands the output of PhDs has remained stable or even decreased.
Other postgraduate programs, most of which provide a specialised training, have grown strongly in terms of graduates in Flanders and France. In Australia and the UK graduation from those programs has grown as well but as strongly.

5. Undergraduate enrolment and graduates by discipline

The classifications used in national sources regarding discipline vary considerably across the ten countries. In order to present an overview of the number of students by discipline, the data taken from the national statistics have been mapped into the format of the main disciplines used in the Dutch HOOP reports. In describing the breakdown by discipline, the main disciplines will be identified, as well as changes in the proportion of the total number of students in the various disciplines.

5.1 Undergraduate enrolment by discipline

5.1.1 Australia[4]

The largest disciplines in terms of bachelor enrolment are Economics (24%), Social Sciences (22%) and Natural Sciences (17%). Seen over the 1995-2003 time-period, the share of students in Economics (22% to 24%) and Natural Sciences (15% to 17%) gradually increased, whereas the share of students in other disciplines has been shrinking. Especially Social Sciences (24% to 22%) and Technical Sciences (11% to 9%) lost a lot.

In the relatively small associate degree program, the Social Sciences (43%) and Technical Sciences (24%) are by far the largest disciplines. The share Social Sciences has in the total number of associate degree student is also the fastest growing of all, with a increase in share of 108% over the years 2000-2002.

For the other undergraduate program, the largest disciplines are Social Sciences (45%), Economics (15%) and Agriculture (13%). Social Sciences has increased its share enormously from just 14% in 2000 to 45% in 2003, whereas Agriculture and Natural Sciences seem to be losing a lot, respectively 30% and 48% over the 2000-2003 time-period.

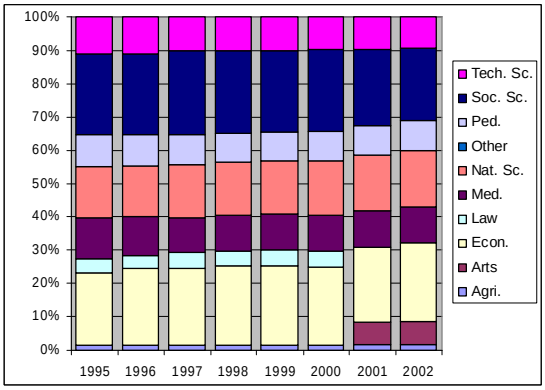


Figure 33:Distribution of enrolment by discipline, University Bachelor

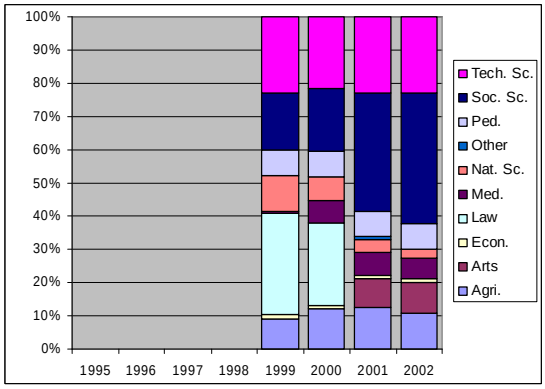


Figure 32:Distribution of enrolment by discipline, University Associate degree

[4] In 2001 a new classification system was introduced, which may lead to breaks in time series.

5.1.2 Austria

In Austrian universities, the most popular disciplines are Economics (28%), Technical Sciences (15%) and Humanities and Social Sciences (14%). Economics and Medicine are slowly winning terrain; both disciplines' shares increased by 5% over the 2000-2002 period. Law, Technical Sciences and to a lesser extent Natural Sciences are all losing share. Over the 1995-2002 time-period, the percentage of students enrolled in Law decreased from 12% to 8%, Technical Sciences fell from 20% to 15% and Natural Sciences from 9% to 8%.

At the *Fachhochschulen* (FH), there are three categories: Technical Sciences (54% in 2002) and Economics (42% in 2002) and Humanities (including media, social and other). During the second half of the nineties, Economics was the largest discipilne. Its share increased by 23% in 2002, making it the largest discipline.

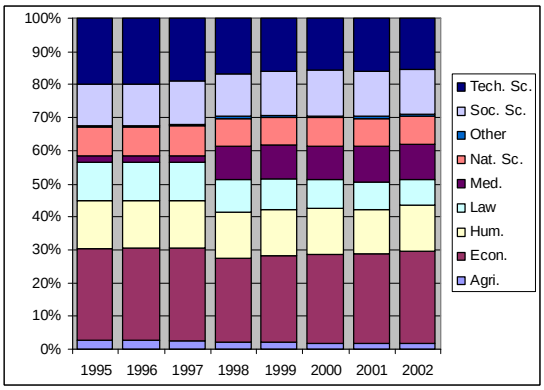


Figure 35:Distribution of enrolment by discipline, University Diplom

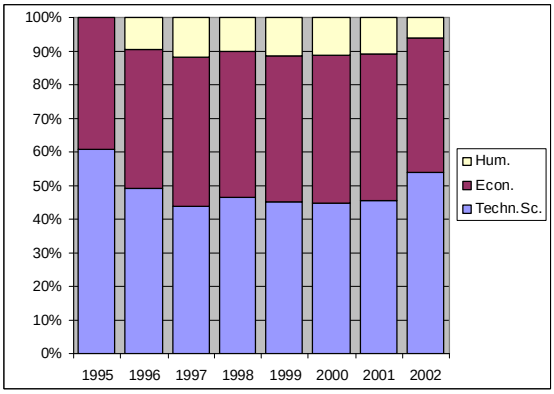


Figure 34:Distribution of enrolment by discipline, Fachhochschule Diplom/Magister

5.1.3 Finland

For the Finnish bachelor program, the main disciplines in 2003 were Social Sciences (49%), Natural Sciences (23%) and Arts (14%). Over the time-period 1995-2003, Law went down with 42% from a share of 11% to 6%, while Social Sciences lost 20%. Growing disciplines are Natural Sciences and Arts, both with a 40% increase of share over the 1995-2003 period.

For the much bigger Master program, the largest disciplines are Natural and Technical Sciences (both 21%) and Social Sciences, Economics, Humanities and Arts (all around 15%). In terms of growth, most disciplines remain rather stable. The only real growth can be seen in Technical Sciences, which increased from 20% in 1995 to 22% in 2003.

The Finnish AMK program's main disciplines are Economics and Technical Sciences (both 33%) and Health (20%). Fast growers are Arts, with a 73% increase over the 1995-2003 time-period, and Health, with a 30% increase over that same period.

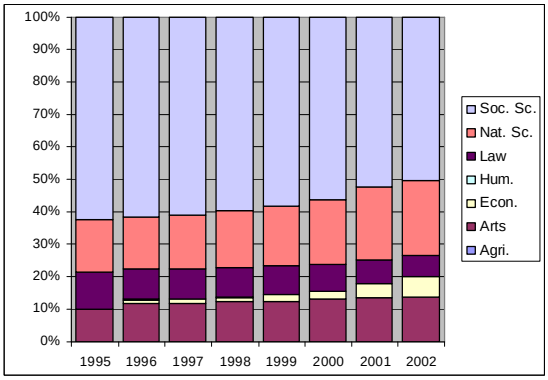


Figure 37:Distribution of enrolment by discipline, University Bachelor

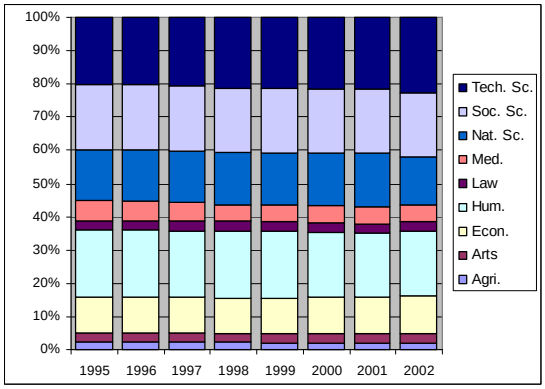


Figure 36:Distribution of enrolment by discipline, University Master

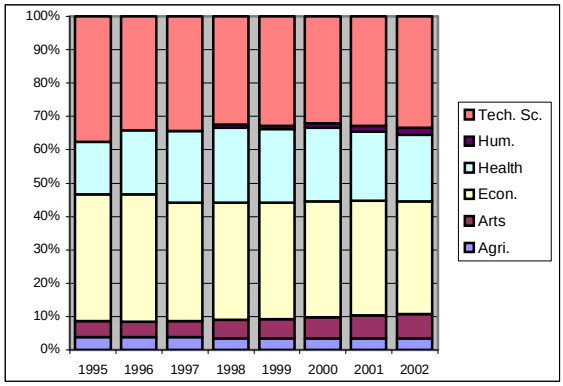


Figure 38:Distribution of enrolment by discipline, AMK Bachelor

5.1.4 Flanders

In Flemish universities the main disciplines are Social Sciences (16%) and Law and Medicine (both 14%). Social and Technical Sciences were the only disciplines that won terrain over the 1995-2003 time-period (respectively 26% and 9%), whereas the other disciplines all lost a little, with the exception of Medicine and Agriculture, which both lost a lot (respectively 26% and 15%).

At non-university level two programs exist, the long *licentiaat* program and the short *gegradueerde* program. At the *licentiaat*, the main disciplines are Technical Sciences and Economics (both 33% in 2002) and Arts (29% in 2002). These proportions have barely changed over the last couple of years. For the *gegradueerde* program, the main disciplines are Economics (35%) and Pedagogic (25%). Growing disciplines include Pedagogic and Social-agogic, with a growth of respectively 40% and 33% over the 1995-2002 time-period. In 1998, some health programmes were upgraded to Licentiaat level which lead to a decrease at the gegradueerde level.

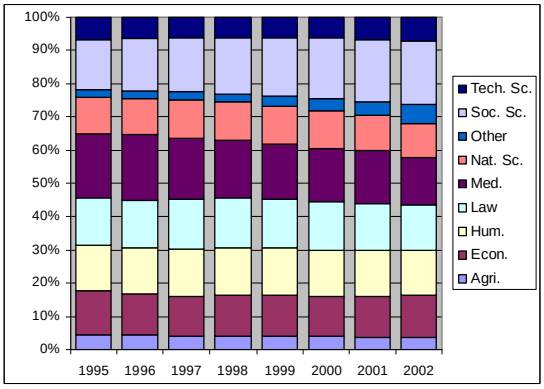


Figure 40:Distribution of enrolment by discipline, University ,Licentiaat

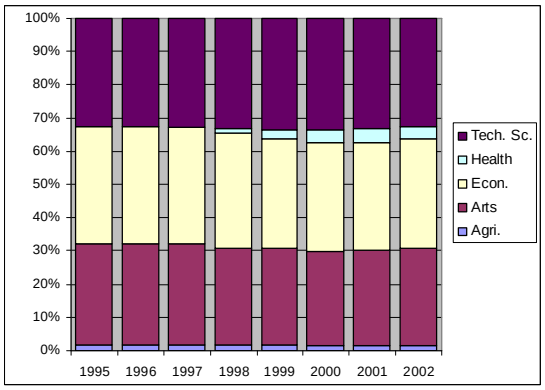


Figure 40:Distribution of enrolment by discipline, Hogeschool, Licentiaat

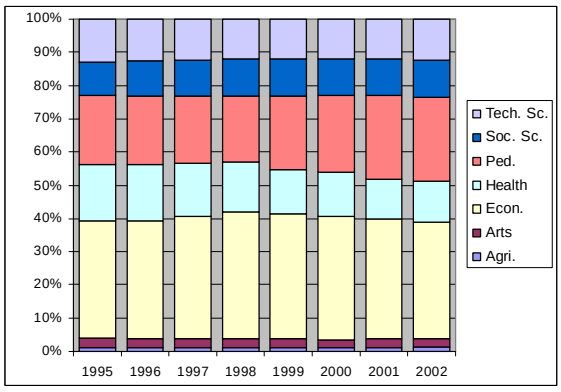


Figure 41: Distribution of enrolment by discipline,

Hogeschool Gegradueerde

5.1.5 France

For the total higher education sector in France no consistent data on disciplinary breakdown is available. Data by discipline is only available for universities, which can be broken down into two programs, the *1er cycle* and the *2eme cycle*. For the *1er cycle*, the main discipline in French universities is Humanities (24% in 2003). Other disciplines with a high number of students are Natural and Social Sciences (18%) and Medicine (15%). The discipline with the highest growth pattern is Medicine, with a 45% increase in share over the 1995-2003 time-period. Other growers are Economics and Social Sciences, while Law and Natural Sciences are both losing ground.

The biggest discipline in the *2eme cycle* is Social Sciences (19%), followed by Humanities (18%), Economics (15%) and Technical Sciences (14%). The share of Technical Sciences in the total number *2eme cycle* students increased by 38% over 1995-2002. Other growing disciplines include Medicine (16%) and Economics (14%). Shrinking disciplines are Natural Sciences (-28%) and Humanities (-16%).

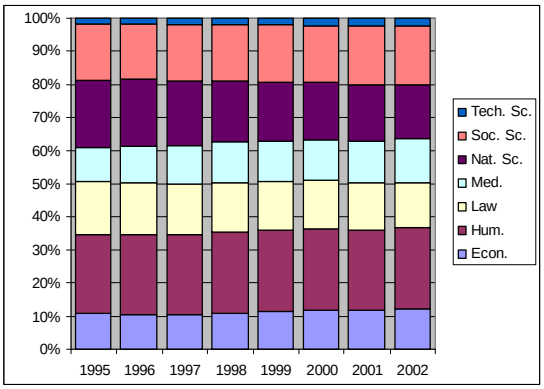


Figure 43:Distribution of enrolment by discipline, University 1e cycle

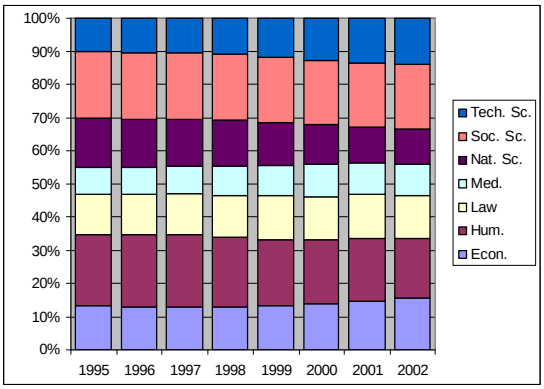


Figure 43:Distribution of enrolment by discipline, University 2eme cycle

5.1.6 Germany

The main disciplines in German universities are Humanities (23%) and Natural Sciences (20%), followed by Social Sciences and Economics (both 13%). A trend that can be observed when looking at growth patterns of German university disciplines is that Natural Sciences are gaining popularity while Technical Sciences are losing. The share of Natural Sciences went from 18% in 1995 to 20% in 2003 while Technical Sciences decreased from 12% in 1995 to 9% in 2003.

For the German *Fachhochschulen*, Technical Sciences, although losing terrain, is still the largest discipline. Its share used to be 44% in 1195 but is 33% nowadays. Other big disciplines are Economics (28%) and Social Sciences (17%). Natural Sciences and Economics are growing rapidly. The share of these disciplines grew by respectively 82% and 35% over the years 1995-2003. Next to Technical Sciences, Social Sciences is losing popularity as well. Its share went from 21% in 1995 to 17% in 2003, which is a 18% decrease.

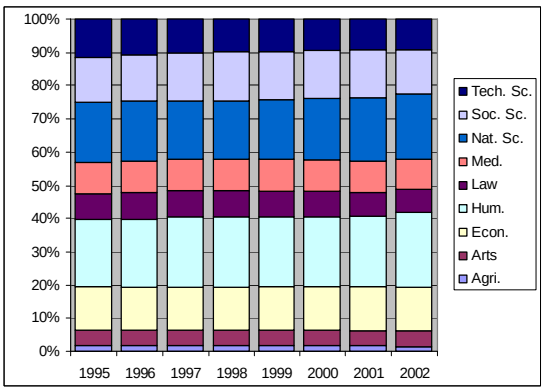


Figure 45:Distribution of enrolment by discipline, University ,Diplom

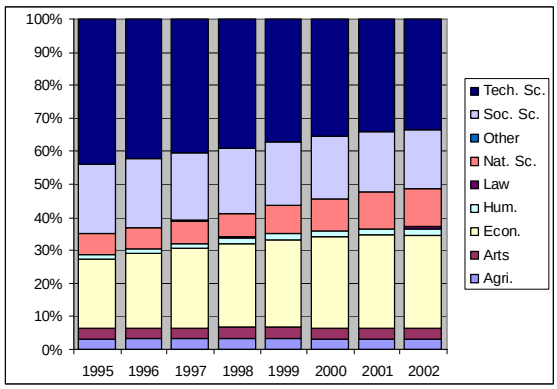


Figure 45:Distribution of enrolment by discipline, Fachhochschule Diplom

5.1.7 The Netherlands

Social Sciences (21%) and Economics (17%) are the main disciplines at Dutch universities. Both disciplines grew over the past eight years, respectively 11% and 8%. However, the fastest growing discipline in The Netherlands is Medicine. The share of Dutch university students enrolled in Medicine grew by 23%, from 10% in 1995 to 13% in 2003.

At the Dutch *HBO* (*Hoger Beroepsonderwijs*) the main disciplines are Economics (34%) and Pedagogic (21%). Both disciplines also grew over the past years with respectively 22% and 6%. The remaining disciplines all lost terrain, especially Agriculture, which lost 30% of its small share over the period 1995-2003.

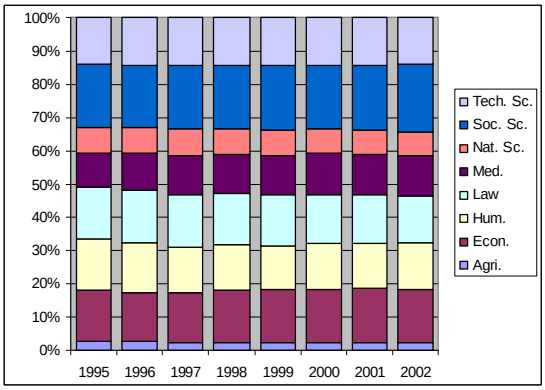


Figure 49:Distribution of enrolment by discipline, University Master

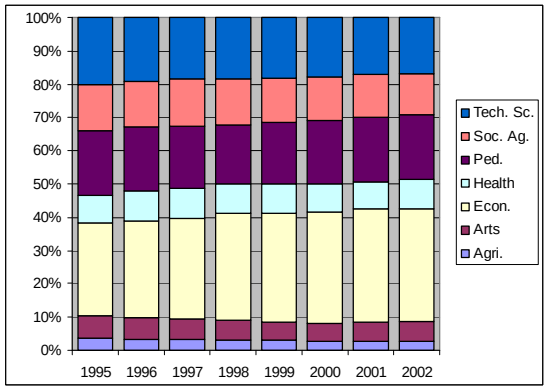


Figure 48:Distribution of enrolment by discipline, HBO Bachelor

5.1.8 Sweden

The biggest disciplines in the Swedish Professional Program are Social Sciences (22%), Technical and Natural Sciences (both 19%), and Medicine (18%). As far as growth is concerned, one discipline that stands out is Medicine. Its share grew by 35% over the 1995-2002 time-period. Over that same time period Humanities displayed a decreasing trend; its share went down by 12% over the period 1995-2002. The rest of the disciplines show no clear trend.

The main disciplines at the Swedish General programs Humanities (25%) and Economics (17%), although both disciplines show a decreasing trend. Within the coming years, Economics will probably be surpassed by Social Sciences (currently at 17%), which displayed a growing trend over the past years. Other rapidly growing disciplines include Arts, doubling its share over 1995-2002 to 3% and Technical Sciences, which grew by 69% over the same period.

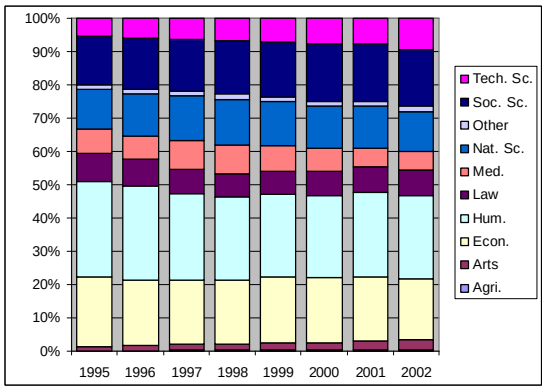


Figure 51:Distribution of enrolment by discipline, Högskola General program

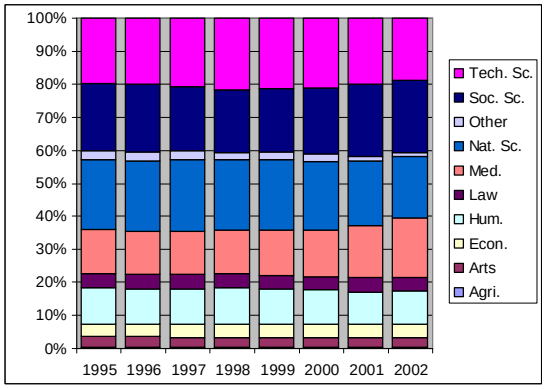


Figure 51:Distribution of enrolment by discipline, Högskola Professional program

5.1.9 United Kingdom

At the university bachelor level, the main disciplines in the UK are Technical Sciences and Humanities (15%) and Natural Sciences (15%). Growth patterns show an increasing trend for Arts, Medicin, Economics, Natural Sciences and Technical Sciences. Due to a change in subject classification, combined programs (reported as other) almost disappeared.

For the 'other undergraduate' program, Combined programs, Medicine (24%), Social Sciences (12%) and Humanities (10%) are the biggest disciplines. The latter three disciplines are also the only disciplines that displayed an increasing trend over the past years. After the huge increase in the proportion of combined programs (other) its share has decreased significantly again.

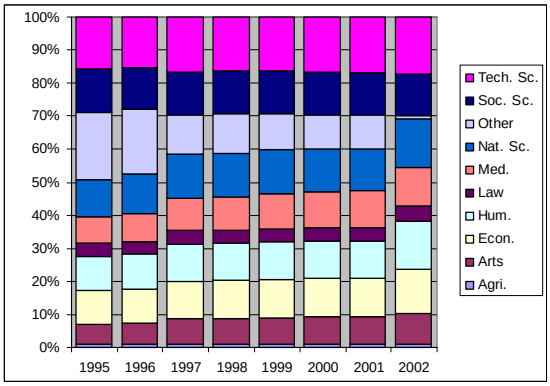


Figure 52:Distribution of enrolment by discipline, University Bachelor

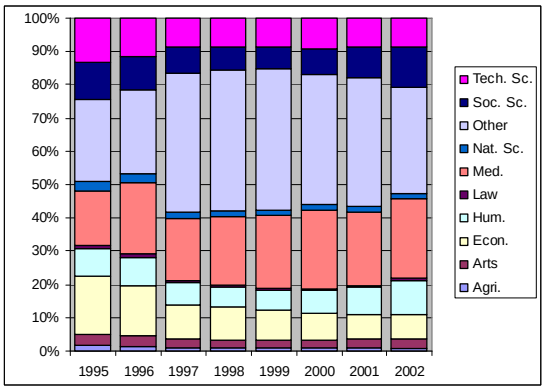


Figure 53:Distribution of enrolment by discipline, University Other undergraduate

5.2 Undergraduate graduates by discipline

5.2.1 Australia[5]

The biggest disciplines for the Australia undergraduate bachelor's degree are Economics (25%) and Social Sciences (20%). Disciplines that show a downward trend are Medicine, Pedagogic and Social Sciences as apposed to Economics and Law, which have been growing for the last couple of years.
For the *other undergraduate* category, by far the most students graduated with a degree in Social Sciences (43%). No reliable trends can be distinguished as the numbers for the other undergraduate category vary considerably from year to year.
In 2002, 443 undergraduate students graduated with an associate degree, of which 34% majored in Social Sciences, followed by Technical Sciences (17%) and Pedagogic (15%).

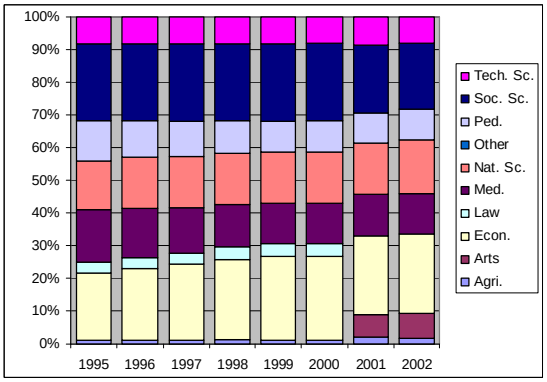


Figure 54: Distribution of graduates by discipline, University Bachelor

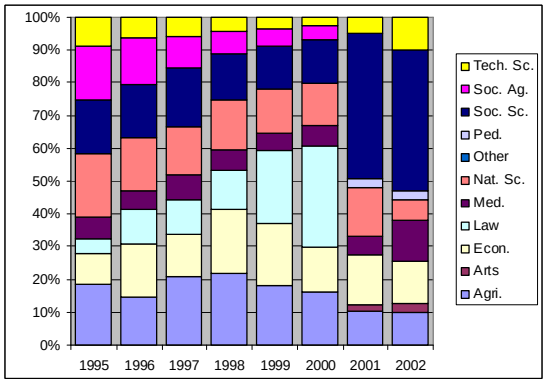


Figure 55: Distribution of graduates by discipline, other undergraduates

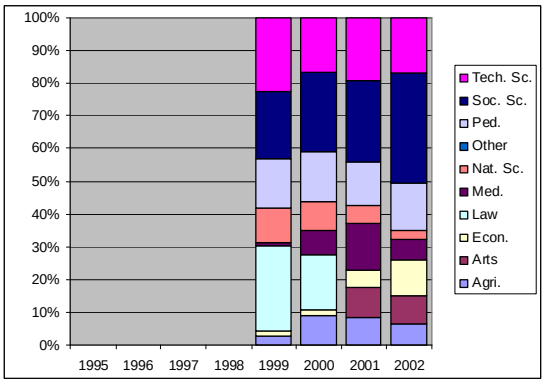


Figure 56: Distribution of graduates by discipline, Associate degree

[5] In 2001 a new classification system was introduced, which may lead to breaks in time series

5.2.2 Austria

The most Austrian university students graduated in Economics (21%), Technical Sciences (15%) and Social Sciences (14%). Technical Sciences and Natural Sciences seem to be losing terrain, while Social Sciences are more popular.
Between the two main disciplines at the *Fachhochschulen*, for the first time since 1998 Technical Sciences seem to be more popular than Economics. However, no clear trend can be discovered, so it's hard to say if this growth will continue.

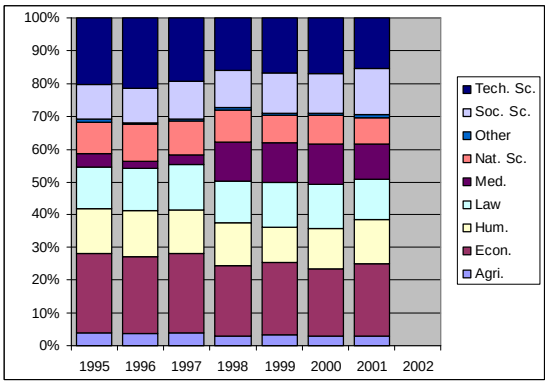


Figure 57: Distribution of graduates by discipline, University

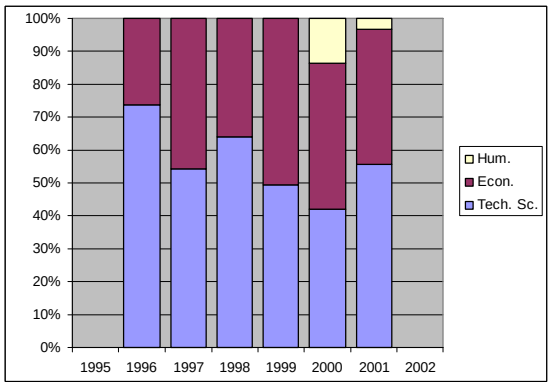


Figure 58: Distribution of graduates by discipline, Fachhochschule

5.2.3 Finland

At the Finnish AMK, the most popular disciplines are Economics (36%) and Health and Technical Science (26%). When observing the data over the past few years, a downward trend for both Technical Science and Health can be discovered. Economics seems to be profiting from this as its share went up by 31% over the 1995-2003 time-period.
The Finnish students graduating with a bachelor's degree mostly major in Pedagogic (33%), Social Sciences (27%) and Humanities (26%). While all the other disciplines grew, the only discipline showing a downward trend over the past few years is Social Sciences, which had a share of 38% in 1995.
For the Master's degree, Social Sciences (24%) and Technical Sciences (19%) are the main disciplines. Both disciplines' share remained more or less stable over the 1995-2003 time-period, as did the shares of the other disciplines.

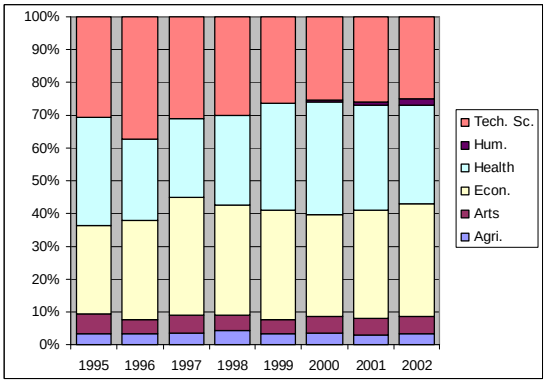


Figure 59: Distribution of graduates by discipline, AMK

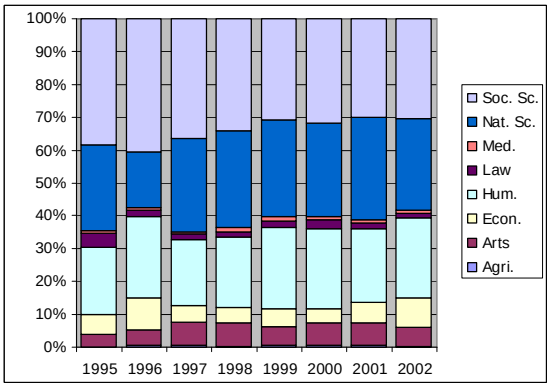


Figure 60: Distribution of graduates by discipline, University, Bachelor

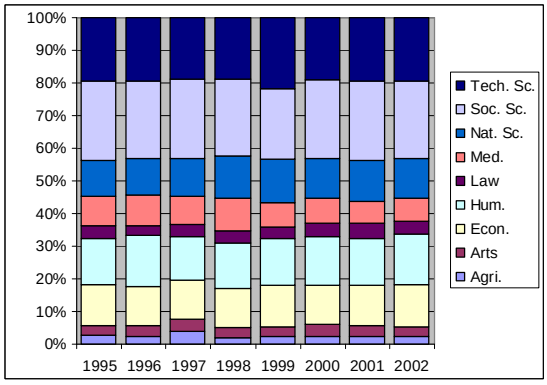


Figure 61: Distribution of graduates by discipline, University, Master

5.2.4 Flanders

The number of undergraduate students graduating from Flemish universities seems to be pretty evenly divided over a lot of disciplines of which Medicine is the largest. Humanities and Social Sciences grew considerably over the 1995-2001 time-period, both from 12% to 16%, whereas Economics and Technical Sciences both lost over 25% of their share at *hogescholen* The *Licenciaat* is mostly earned in the disciplines Technical Sciences (40%), Economics (31%) and Arts (24%). For the *gegradueerde* program, the most popular disciplines are Economics (35%) and Pedagogic (24%).

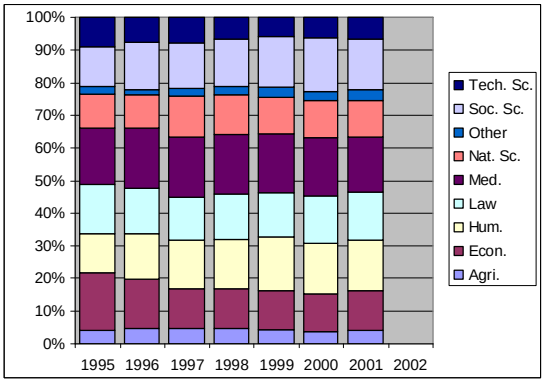


Figure 62: Distribution of graduates by discipline, University

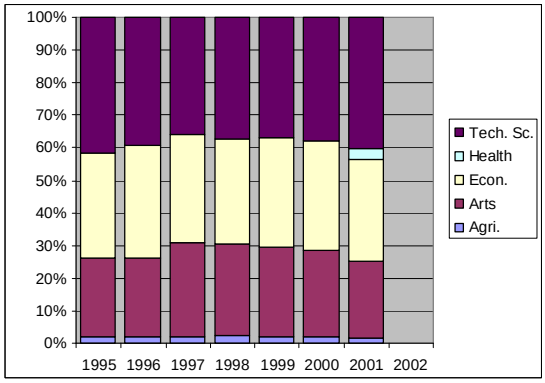


Figure 63:Distribution of graduates by discipline, Hogeschool Licentiaat

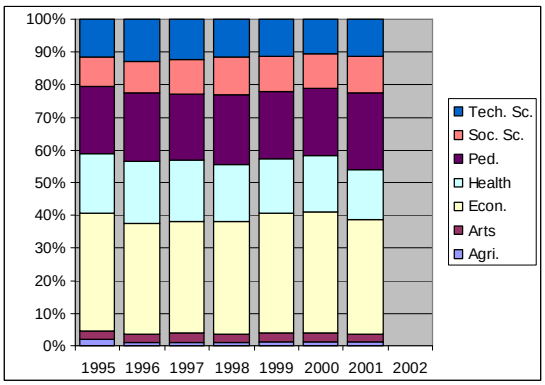


Figure 64: Distribution of graduates by discipline, Hogeschool Gegradueerde

5.2.5 France

For French universities, data on disciplines is available for four different programs, namely *DEUG*, *DEUST*, *License* and *Maîtrise*. In the *License* program, the largest of these, most graduates are in Humanities (44%) followed by Natural Sciences (24%). Disciplines that show an upward trend include Economics and Medicine; both doubling their share over the 1995-2002 time-period.
Of the students graduating with a *Maîtrise* degree, 33% majors in Humanities, followed by Natural Sciences (25%) and Economics (22%). The share of students graduating with a major in Economics grew with 79% over the 1995-2002 time-period, whereas Natural Sciences lost 5% over the same period.
The most popular disciplines for the *DEUG (diplôme d'etudes universitaires générales)* are Humanities (44%) and Natural Sciences (22%). The latter lost a little terrain in the past few years, at the benefit of Medicine, which increased its schare from 2% in 1995 to 6% in 2002.

The relatively small *DEUST (diplôme d'études universitaires scientifiques et techniques)* sees most students graduating in the majors Natural Sciences (39%) and Humanities (24%).

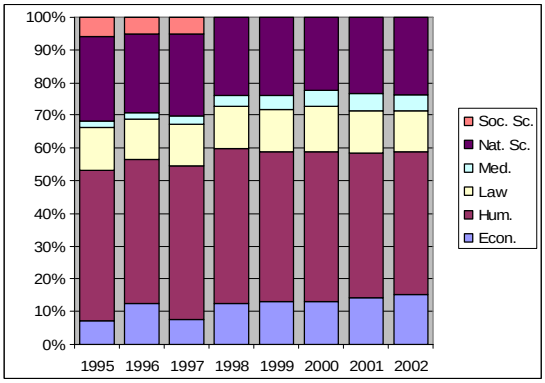


Figure 65: Distribution of graduates by discipline, License

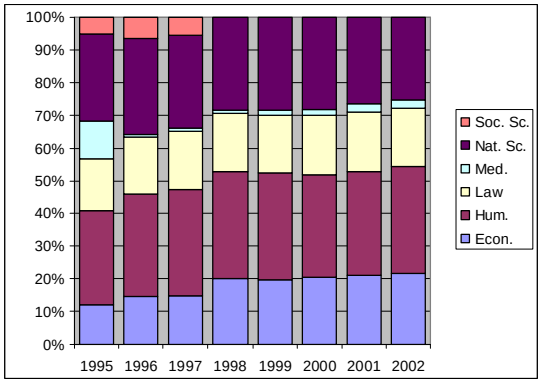


Figure 66: Distribution of graduates by discipline, Maîtrise

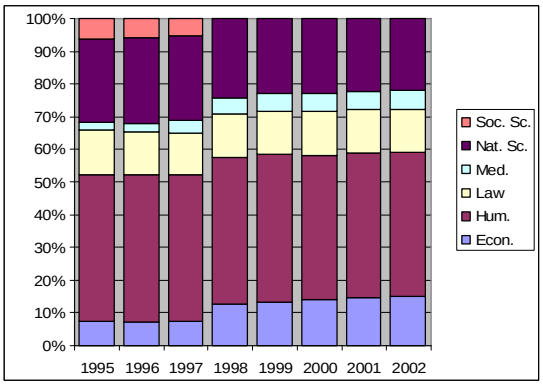


Figure 67: Distribution of graduates by discipline, DEUG

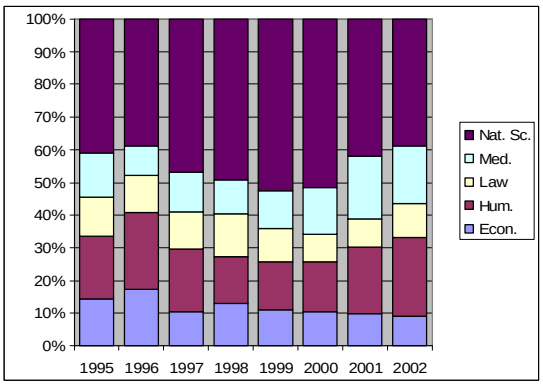


Figure 68: Distribution of graduates by discipline, DEUST

5.2.6 Germany

The number of undergraduate students graduating from German universities seems to be pretty evenly divided over a lot of disciplines of which Natural Sciences is the largest. When looking at the data over the 1995-2002 time-period, it can be seen that Agriculture, Economics and Natural and Technical Sciences are losing terrain while Law, Medicine, Social Sciences and Humanities are growing.

For the German *Fachhochschulen* the main disciplines are Technical Sciences (33%) and Economics (25%).

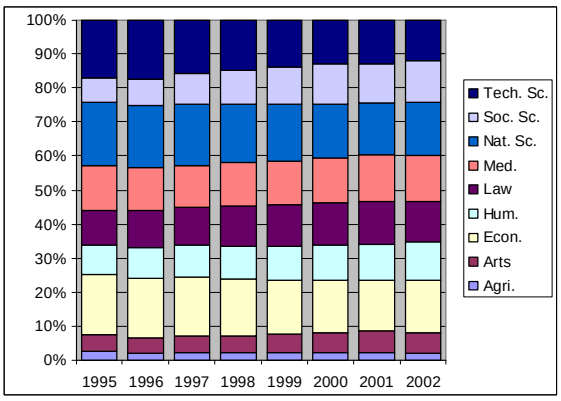


Figure 69: Distribution of graduates by discipline, University

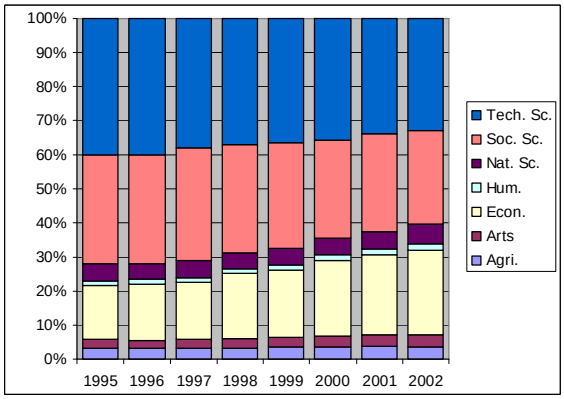


Figure 70: Distribution of graduates by discipline, Fachhochschule

5.2.7 The Netherlands

The leading discipline in terms of number of graduates for Dutch universities is Social Sciences (28%) followed by Economics and Law (16%). Technical Sciences became less and less popular in Dutch universities; its share went from 13% in 1995 to 7% in 2002. Next to Technical Sciences, also Agriculture and Humanities lost ground. Medicine, Law, and Social Sciences benefited from this and grew steadily.

At the Dutch *HBO* the most popular disciplines are Economics (29%), Pedagogy (22%) and Technical Sciences (17%). Just like at the Dutch universities, Technical Sciences has lost terrain at the *HBO*. Economics has gained popularity; its share went up from 24% in 1995 to 29% in 2002.

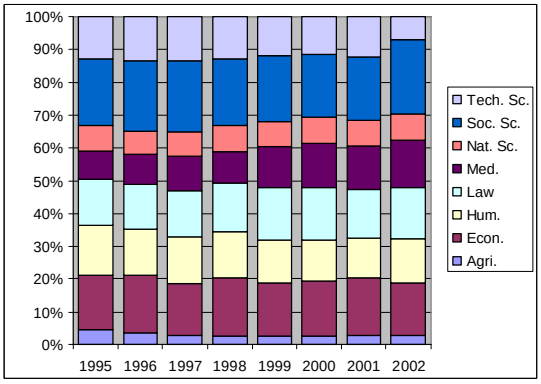


Figure 71: Distribution of graduates by discipline, University

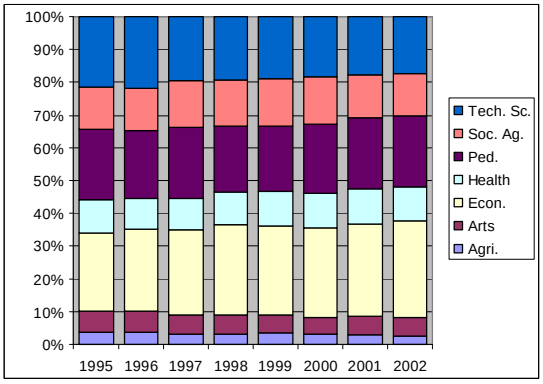


Figure 72: Distribution of graduates by discipline, HBO

5.2.8 Sweden

For the Swedish Bachelor's degree, Social Sciences are by far the most popular discipline. In 2002 49% of all graduates graduated in Social Sciences.

While in 1995 a mere 2% of graduates graduated in Medicine, this number has risen to 21% in 2002. Disciplines that lost ground are Natural Sciences, Humanities and Social Sciences.

For the Master's degree, shares have been shifting from Medicine, Humanities and Arts to Natural Sciences and Economics, due to the relatively recent introduction of the latter two. However the 'older' disciplines Medicine, Humanities and Arts are still by far the largest with shares of respectively 54%, 20% and 11%.
The disciplines most students following the Professional Program graduated in are Social Sciences (36%), Technical Sciences (30%) and Medicine (26%). Medicine (or health related programs) have gained a lot, whereas social sciences have lost a lot. The part of Technical Sciences has remained relatively stable.
In the relatively small *Högskolexamen* program most students graduate in Social Sciences (46%) and Humanities (23%).

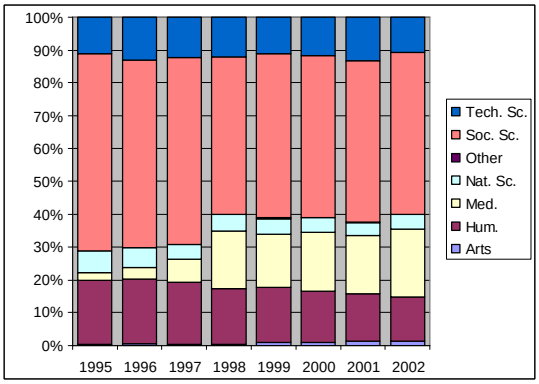


Figure 76: Distribution of graduates by discipline, Bachelor

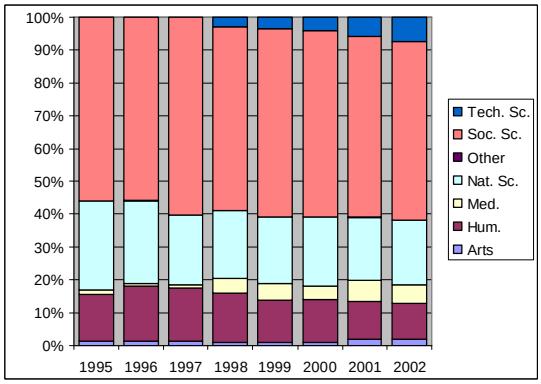


Figure 76: Distribution of graduates by discipline, Master

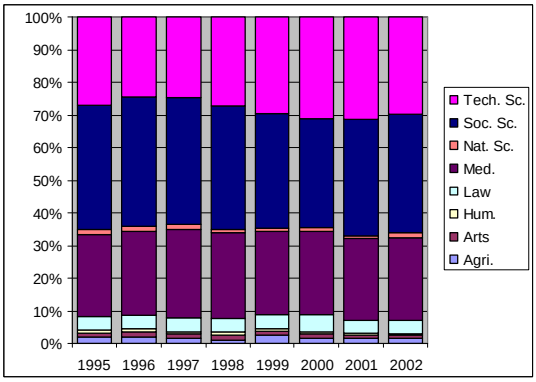


Figure 74: Distribution of graduates by discipline, Högskola, Professional Program

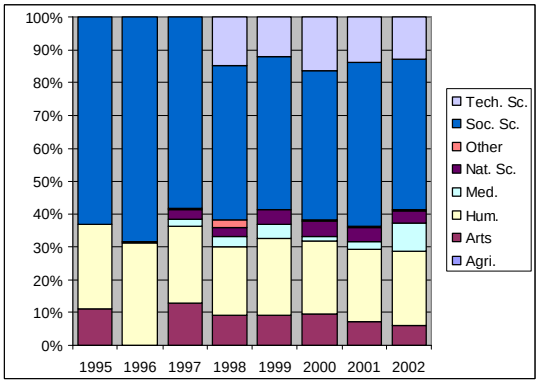


Figure 74: Distribution of graduates by discipline, Högskolexamen, diploma

5.2.9 United Kingdom

The main disciplines in terms of number of graduates for the British *first degree* program are Technical Sciences (16%), Natural Sciences (15%) and Humanities and Economics (both 14%).Growth rates show that Medicine, Arts, Economics and Humanities are gaining popularity whereas Technical and Social Sciences are losing.

For the British other undergraduate category, the biggest discipline is Medicine (29%) followed by Social Sciences (16%). Growing disciplines are Medicine, Humanities and Social Sciences, at the cost of Economics, Agriculture and Technical Sciences.

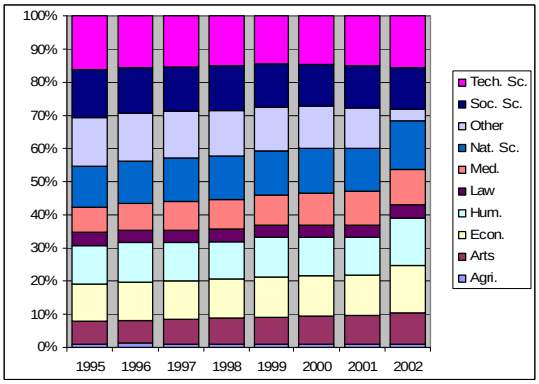


Figure 78: Distribution of graduates by discipline, First Degree

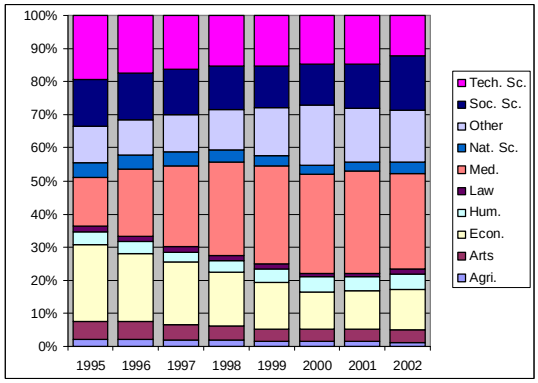


Figure 77: Distribution of graduates by discipline, Other UG

6. Postgraduate graduates by discipline

6.1.1 Australia[6]

The Australian system has three types of postgraduate programs: Master, Doctorate and Other PG. For the Master's degree program, the biggest discipline is Economics (46%), followed by Natural Sciences (14%) and Social Sciences (12%). Both Economics and Natural Sciences have grown over the past few years while, Social Sciences, Technical Sciences and Pedagogic lose.

In the Doctorate program, it can be observed that both Technical and Natural Sciences and Medicine are losing to Social Sciences. Although its share is shrinking each year, Natural Sciences is still the biggest discipline, with a share of 26% followed by Social Sciences (24%).

For the other postgraduate category, the main disciplines are Economics (27%) and Pedagogic (24%). When looking at growth rates, it can be observed that Economics and Natural Sciences are growing, while Medicine, Pedagogic and Social Sciences are losing ground.

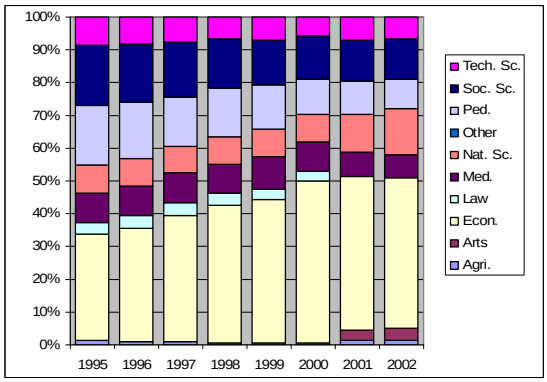


Figure 80: Distribution of graduates by discipline, Master

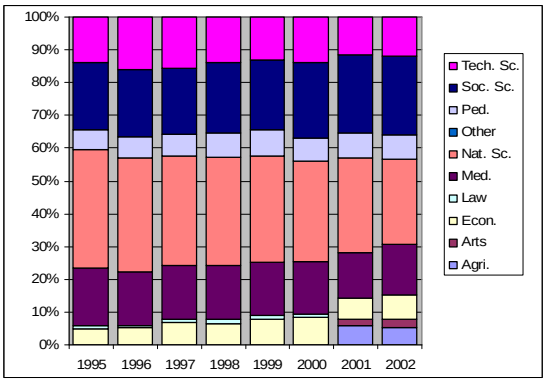


Figure 80: Distribution of graduates by discipline, Doctorate

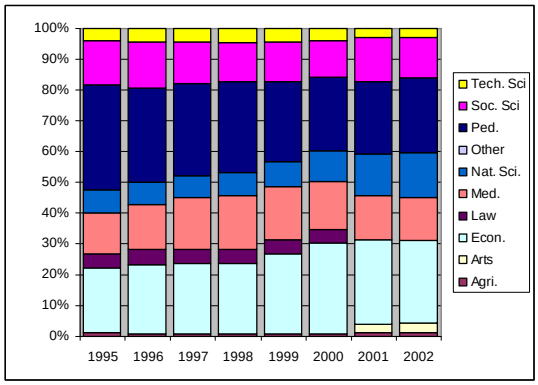


Figure 81 Distribution of graduates by discipline, Other PG

[6] In 2001 a new classification system was introduced, which may lead to breaks in time series

6.1.2 Austria

The Austrian postgraduate degree is a *Doktor* program. Within this program, the biggest disciplines are Social Sciences (39%), Technical Sciences (20%) and Law (18%). It's hard to say something about trends because the program was restructured in 1998, which causes data before 1998 to differ considerably from data after 1998.

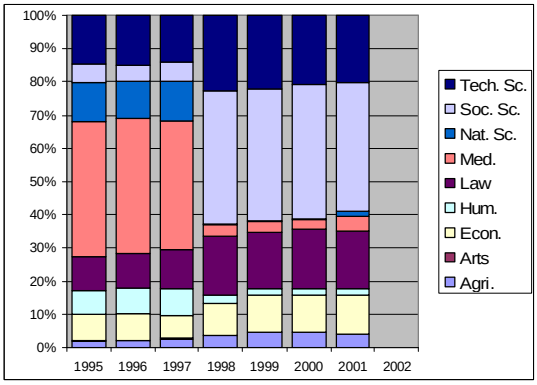


Figure 82: Distribution of graduates by discipline, Doktor

6.1.3 Finland

The main disciplines in terms of number of students graduating with a doctor's degree are Medicine (25%), Natural Sciences (22%) and Technical Science (18%). Over the past couple of years Medicine has lost some terrain, going from 28% in 1995 to 25% in 2002, while Technical Sciences grew from 16% in 1995 to 18% in 2002. The rest of the disciplines remained more or less stable.

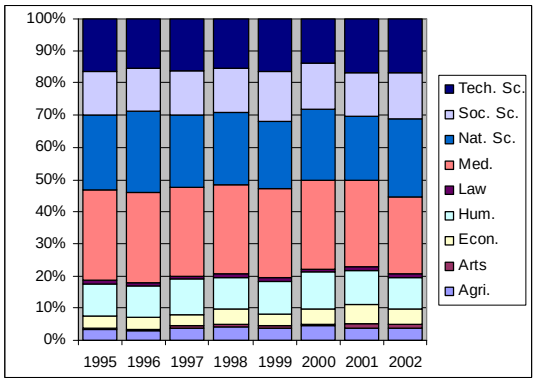


Figure 83: Distribution of graduates by discipline, Doktor

6.1.4 Flanders

The most popular doctorate disciplines amongst Flemish students are Natural Sciences (34%), Technical Sciences and Medicine (both 14%). Disciplines that showed a growing trend over the last 5 years are Humanities and Social Sciences, whereas Medicine and Technical Sciences lost ground.

For the Flemish postgraduate *GAS* program, the most popular disciplines are Economics (26%) and Social Sciences (21%). Law, Economics and Agriculture seem to be losing students; however, no clear upward trends can be distinguished, as most disciplines fluctuate a lot from year to year.
For the *GGS* program the main disciplines are Law (19%) and Economics(18%). The only growing discipline, besides the broad category labelled 'other' is Law, which grew by 43% over the past six years. The fastest shrinking disciplines are Humanities, Agriculture and Natural Sciences.

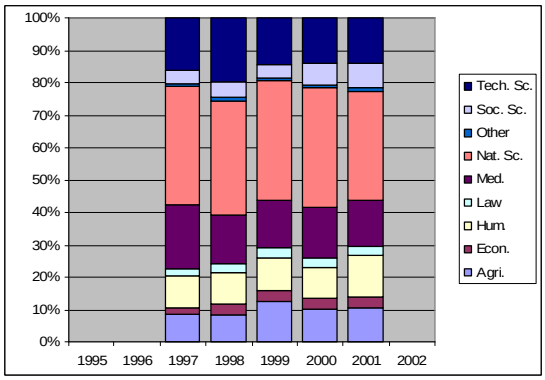


Figure 84: Distribution of graduates by discipline, Doktor

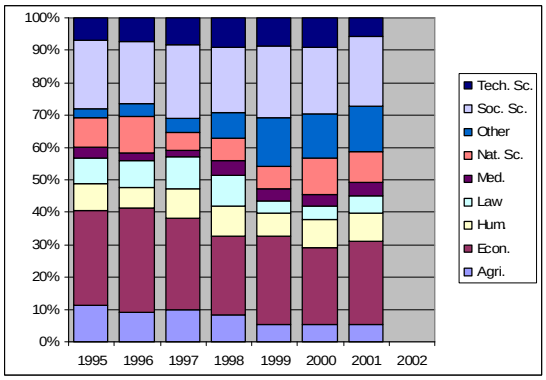


Figure 85: Distribution of graduates by discipline, GAS

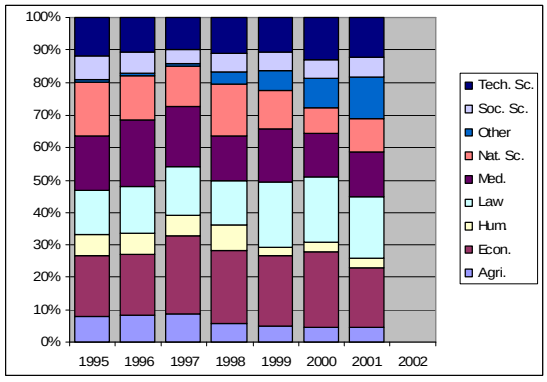


Figure 86: Distribution of graduates by discipline, GGS

6.1.5 France

In the French *diplôme d'études approfondies* (DEA) program most students graduate in Natural Sciences (40%), Humanities (32%) and Law (20%). Natural Science showed some shrinkage over the 1995-2000 time-period with a loss of share with 8%, but recovered in the first years of the 20th century by growing with 3% in two years. Law seems to be the big grower in the French *DEA* program, its share grew by 20% over the 1995-2002 time-period from 16% in 1995 to 20% in 2002.
For the *diplôme d'études supérieures spécialisées* (DESS) program, the main disciplines are Economics (33%), Humanities (24%) and Natural Science (23%). Even though most disciplines remained stable over the last couple of years, Natural Sciences managed to grow by 17% over the 1995-2002 time-period whereas Law lost 14%.

The newest data for the French doctorate program dates from 2000. The traditionally large Natural Sciences loses some ground over the 2nd half of the 90s, but still represents 55% of all French doctorate graduates in 2000. The other large discipline with 25% of all doctorate students in 2000 is Humanities, which had a rather stable share over the past years.

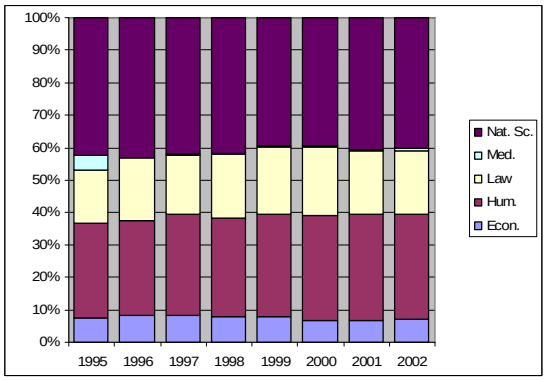


Figure 87: Distribution of graduates by discipline, DEA

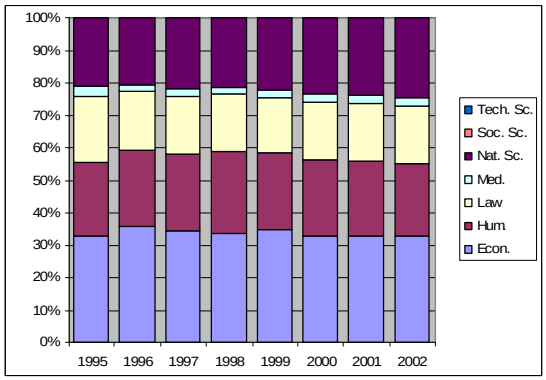


Figure 88: Distribution of graduates by discipline, DESS

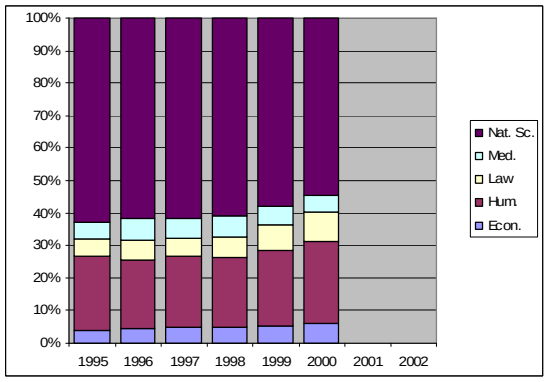


Figure 89: Distribution of graduates by discipline, Doctorat

6.1.6 Germany

The biggest disciplines in German postgraduate education are Medicine (36%) and Natural Sciences (28%). Disciplines that seem to be gaining popularity are Law and Social Sciences, whereas Agriculture and Natural Sciences are becoming less popular.

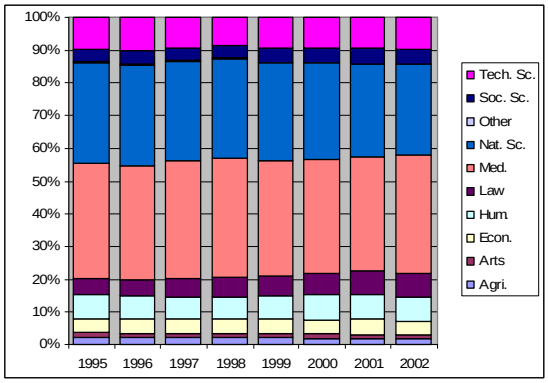


Figure 90: Distribution of graduates by discipline, Doktor

6.1.7 The Netherlands

Most Dutch postgraduate students graduate with a degree in Medicine (30%), Natural Sciences (20%) or Technical Sciences (17%). One of the biggest growers is Medicine, coming from 27% in 1995 to 30% in 2002. The rest of the disciplines remain rather stable.

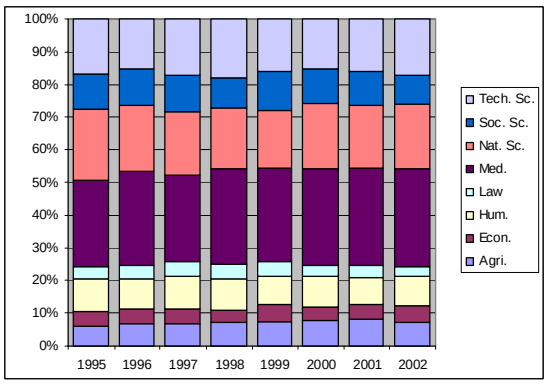


Figure 91: Distribution of graduates by discipline, Doctor

6.1.8 Sweden

The Swedish post-doctorate system resembles the Dutch system in terms of discipline proportions. Like in the Dutch postgraduate education program, the biggest disciplines are Medicine (31%), Technical Sciences (21%) and Natural Sciences (20%). Both Medicine and Natural Sciences lost some of their share in the total number of graduates over the past few years, while Social Sciences and Humanities gained some.

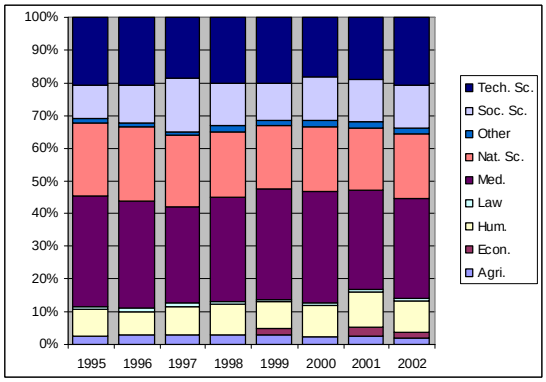


Figure 92: Distribution of graduates by discipline, Doktor

6.1.9 United Kingdom

The postgraduate education in the United Kingdom is categorized into three programs namely Master's degree, Doctorate degree, and Other PG. For the Masters degree, the main disciplines are Economics (26%) and Technical and Social Sciences (respectively 17% and 15%). One of the growing disciplines is Law, which grew by 54% over the 1995-2002 time-period. Furthermore, a declining interest in Social Sciences can be identified; still representing 19% of the total number of graduates, its share decreased with 21% to 15% in 2002.

For doctorate program the two biggest disciplines are Natural Sciences (33%) and Technical Sciences (17%). However, both disciplines displayed a downward trend over the last couple of years and Technical Sciences will soon be surpassed by Medicine, which currently holds a 15% share in the total number of graduates and is still growing.

The final category is the broad Other PG category. Within this program, 52% of all students graduate in Social Sciences, followed by Economics, which represents 15% of all other PG students. Both disciplines neither lost nor gained share over the last couple of years.

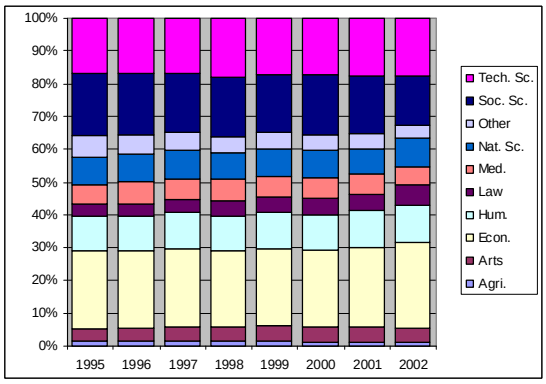


Figure 93: Distribution of graduates by discipline, Master

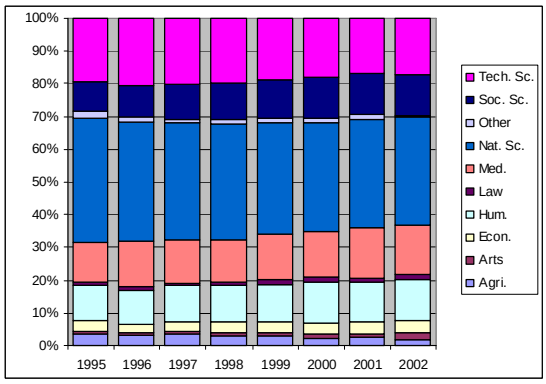


Figure 94: Distribution of graduates by discipline, Doctorate

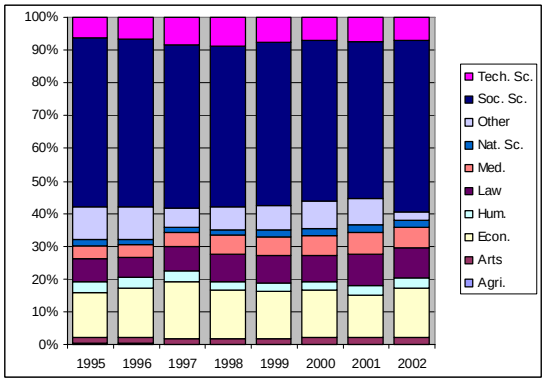


Figure 95: Distribution of graduates by discipline, Other PG

7. Enrolment by gender

7.1 Introduction

Since (higher) education is considered to be the main pathway to higher social status, promoting participation of women in higher education has been an important tool for enhancing equal opportunities in society. In this section a brief sketch is presented on the participation of women in total higher education. The information given below includes the percentage of female students at the different types of higher education institutions and an indication of the changes that have occurred over the 1995-2002 time-period.

7.1.1 Australia

Female participation in Australian universities is in general around 50%. Especially in the bachelor program, where a small majority (56% in 2002) of the total number of students are female. While the pedagogic and medicine disciplines have the highest female participation rate, an increasing participation of women can be seen in the technical science discipline (18% in 1995 versus 21% in 2000). In the agriculture discipline the female participation increased with 11% over the 1995-2000 time-period and another 11% in the 2000-2002 time-period to a total of 48% in 2002.

7.1.2 Austria

In 2002 total female participation in universities in Austria is 51%. In *Fachhochschulen* however the female participation was only 35% in 2002. Growth in female participation can be seen in both universities and *Fachhochschulen* as their share increased with 12% in universities and 42% in *Fachhochschulen* over the time-period 1995-2000. In universities, female participation in the agriculture discipline increased 10% over the 1995-2000 time period and another 5% over the 2000-2002 time-period to a total of 40% in 2002. Also in the technical science discipline the share of women increased 11% over the 1995-2002.
In *Fachhochschulen* female participation increased a remarkable 89% in the technical science discipline over the 1995-2002 time-period followed by another 82% over the 2000-2002 time-period to a total of 22% in 2002.

7.1.3 Finland

In Finland female participation in higher education is in general over 50%. The share of women enrolled in “AMKs” increased 13% over the 1995-2000 time-period to a total of 55% in 2000. Also in the bachelor program of universities more women participate than men (77% in 2003). In the master program of universities women had a share of 53% in 2003. The female participation in Finland have not seen considerable changes over the 1995-2003 time-period.

7.1.4 Flanders

In 2002 the female participation at “Hogeschool (Licentiaat)” in Flanders was 41%. A slight growth pattern can be seen as the share of women in this program was 39% in 1995. At “Hogeschool (Gegradueerde)” this number is 61% in 2002 and has also increased slightly from 59% in 1995. However remarkable changes can be seen in the different disciplines at “Hogeschool (Gegradueerde)”. Female participation in agriculture increased 25% and decreased in economics and technical science respectively 9% and 11% over the 1995-2000 time-period.

In 2002 the female participation at “Universiteit” was 55% and increased 10% over the 1995-2000 time-period. The main cause of this growth pattern is a remarkable increase of female participation in the disciplines economics and technical science of respectively 19% and 14% over the 1995-2000 time-period.

7.1.5 France

Female participation in France universities has been around 55% during the 1995-2003 time-period with respectively 61% and 58% female participation for “1er cycle” and “2eme cycle” universities in 2003.The short programs IUT and CPGE have female participation of around 40%, whereas in STS, the third type of short programs, men and women are equally represented. In Engineering schools around 25% of the students are women, whereas in other Grandes Écoles, female participation is over 50%. In teacher training institutes (IUFM) around 70% of the students are women and in the health and social colleges, this percentage is even higher: 84.

7.1.6 Germany

In German *Fachhochschulen* female participation is 38% in 2003. In the same year female participation in universities is 50%. A steady growth pattern can be seen over the time-period 1995-2000 as both *Fachhochschulen* and universities show growth rates of respectively 16% and 10%. In *Fachhochschulen* women have the biggest share in the humanities and social sciences disciplines, but a shift can be seen in the economics, natural science and technical science disciplines which increased respectively 14%, 17% and 27% over the 1995-2000 time-period.

7.1.7 The Netherlands

Female participation in both Dutch “HBO” and universities has been close to 50% throughout the time-period 1995-2003. In 1996 women have, for the first time, a bigger share of participation in “HBO” and continue to do so in the subsequent years. In Dutch universities a considerable increase in female participation can be seen over the 1995-2000 time-period of 5%, followed by 2% over the 2000-2002 time-period, to a total of 49% in 2002. A remarkable growth of participation can be seen at “HBO” in both the economics discipline (30% increase over the 1995-2000 time-period, to a total of 39% in 2000) and the natural science discipline (10% over the 1995-2000 time-period, to a total of 73% in 2000). In Dutch universities it are the disciplines agriculture, economics and technical science with the largest increase in female participation. The humanities, medicine, natural science and technical science disciplines have the highest female participation in both Universities and “HBO”.

7.1.8 Sweden

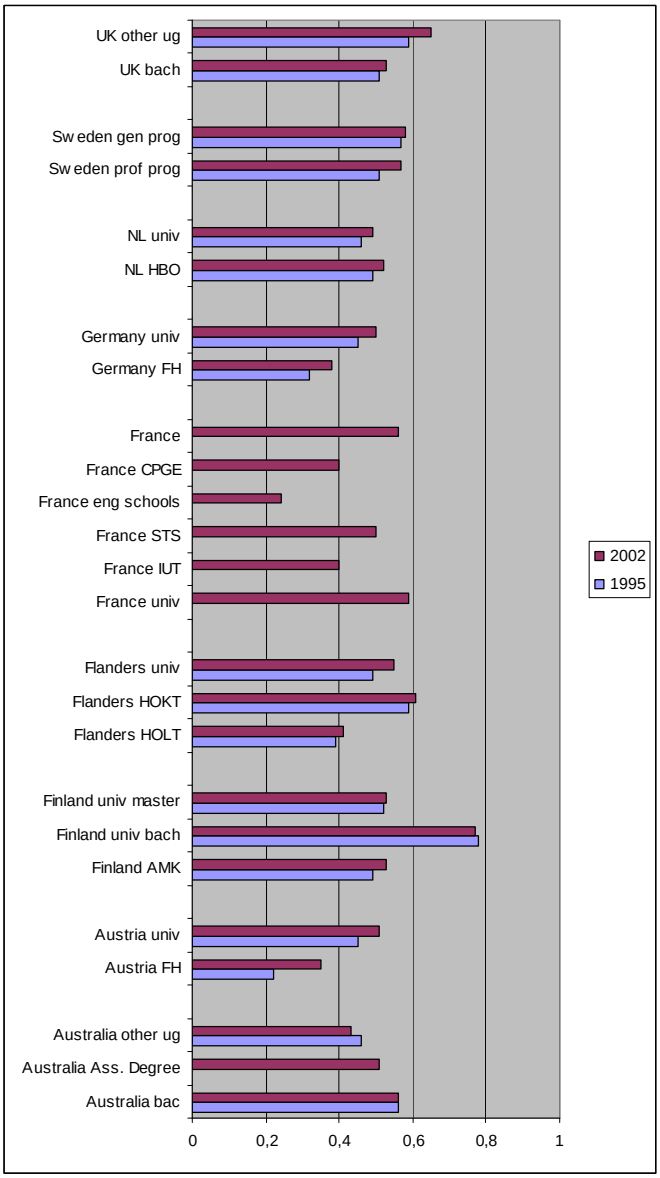
Higher education in Sweden is female ‘dominated’: female participation in “Hogskola” in 2002 was 57% for the “professional program” and 58% for the “general program”. Over the 1995-2000 time-period female participation grew 5% in both the general and professional program. Although women in general program have the highest participation in medicine (85% in 2002) and social science (69% in 2002) disciplines, a big increase can be seen in law, natural science and technical science disciplines of respectively 15%, 16% and 35 % over the 1995-2000 time-period. The same trends can be seen in the professional program as well as a increase in female participation in the economics discipline of 23% over the 1995-2000 time-period.

7.1.9 UK

Just like in most other countries, the number of female students in universities in the United Kingdom have exceeded the number male students. With participation rates of 53% and 65% in “First degree” and “other undergraduate” studies in 2002, the share of women has increased considerably. An increase in female participation can be seen of respectively 6% and 8% for “First degree” and “Other undergraduate” studies over the 1995-2000 time-period. Looking at the trends in the various disciplines, considerable increases of female participation can be seen in agriculture, law and technical science in both “First degree” and “Other undergraduate” studies.

7.1.10 Overview

Figure 96: Proportion of female enrolment (ug) in total enrolment (ug)



8. Enrolment (undergraduate) by nationality

8.1 Introduction

In this chapter enrolment in undergraduate programs is broken down by nationality. The rationale for this breakdown lies in the growing importance of internationalisation and globalisation. Economies are getting more and more intertwined. It can be assumed that international processes like WTO GATTS and processes within the (extended) EU may lead to an increase of international mobility.
Enrolment by nationality is not a good indicator for mobility of students[7] but it may illustrate one of the emerging aspects of the growing heterogenity of the student body that may have an impact on the national higher education systems. If the Bologna process has the intended effect on the educational choices of students, this heterogeneity will increase in the future. Changes in the languages of instruction, different structures of programs, changing flows of funds are developments that are related to changes in the nationality composition of the studentbody. A more in-depth analysis of those relationships goes beyond the scope of this report.

8.2 Enrolment by nationality

8.2.1 Australia

The number of overseas students in Australian undergraduate programs has grown with a tremendous pace. The proportion of overseas students has grown from 7% in 1995 to 12% in 2000 (a growth of 68%) to 17% in 2002 (an additional growth of 42%), which is the highest proportion of the countries reviewed in this report.

8.2.2 Austria

Austria has also a relatively high proportion of foreign students in its higher education system: 15% in 2002. A large part of these foreign students is located at the Art Colleges, in which 40% of enrolment has a foreign background. At the *Fachhochschulen*, foreign students are still a rare phenomenon. The proportion has grown since 1995, and did so especially since 2000.
Most foreign students come from another European country (almost 90% at universities and 80% at art colleges). A substantial part of the foreign students at art colleges come from Asia (20%).

8.2.3 Flanders

There are relatively few foreign students enrolled in Flemish higher education: around 3%. The proportion of foreign students in universities is around twice as high as it is in the *hogescholen*. In the second half of the 1990s, the proportion of foreign students has decreased significantly, but part of that is due to an administrative change in 1999 in the way students are counted. Since 2000 the proportion has been stable (universities) or has grown (*hogescholen*). Most of the foreign students come from within Europe (around 80% in universities and 70% in *hogescholen*). Asia is the other continent of origin that scores significantly.

8.2.4 Finland

Although the number of foreign students at universities has increased by more than half over the 1995-2002 period, the proportion of foreign students has grown by only 22% in that period. Even with this growth, the proportion of foreign students is relatively low (3% in universities, 4% in AMK in 2002).

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[7] European Commission (2004), *Progress towards the common objectives in education and training, Indicators and benchmarks*, Commission staff working paper, Brussels, p. 67

The main part of foreign students comes from Europe, although this proportion is smaller than in Austria and Flanders (around 60%). Around a quarter of the foreign students comes from Asia. In 1995, the proportion of Europe was significantly smaller (50%) and the part of Asia larger(30%).

8.2.5 France

The proportion of foreign students in France has remained relatively stable during the late 1990s but since 2000, it has grown considerably (in the period 2000-2002 by 28%). Most of the foreign students come from Africa (around 60%). Europe provides only one sixth of the foreign students, as Asia does.

8.2.6 Germany

There are relatively many foreign students in German higher education: 12 % in 2002. The proportion of foreign students has grown at a steady pace: around 5% per year. Growth in Universities has been stronger than at *Fachhochschulen*, where in 2002, the proportion decreased slightly.

Most foreign university students (60%) come from Europe, where it is remarkable that the part of the EU (15) has decreased significantly the last years. Asia is the second region of origin (around 25%). In *Fachhochschulen* a similar pattern can be seen, although the part of students from Africa is relatively large (17%).

8.2.7 Netherlands

The proportion of foreign students in Dutch universities has grown to 5.6% in 2002. At *hogescholen*, the proportion of foreign students has grown also, although the proportion is considerably lower than at universities (3.2%).

8.2.8 Sweden

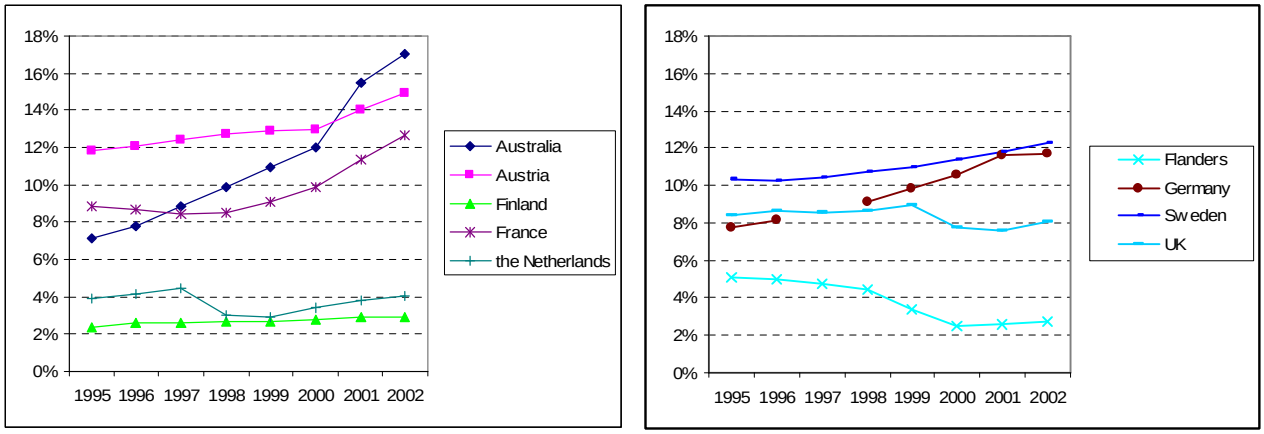
The Swedish picture looks quite similar to the German one: the proportion of foreign students has grown continuously to around 12% and most students (around 60%) come from Europe. Asia is the second largest region of origin (27%). The proportion of EU students has decreased.

8.2.9 United Kingdom

The proportion of foreign students has fluctuated in the 1995-2002 period. In 1997 it had a high with over 9% and in 2001 it was low at 7.6%. In 2002, the proportion has gone up again.
In the late 1990s, most students came from the EU (1999 had the highest score of 54%) but since then, the proportion of EU-originated students in undergraduate programs has dropped dramatically to 37% in 2002.

Figure 97 shows that in Australia, France, Germany and Austria the proportion of foreign students has grown relatively fast. In the Netherlands, Finland and Sweden there is a modest growth and in Flanders and the UK, the proportion of foreign students has decreased.

Figure 97: Students with a foreign nationality in undergraduate programs as a proportion of all students in undergraduate programs



9. Staff

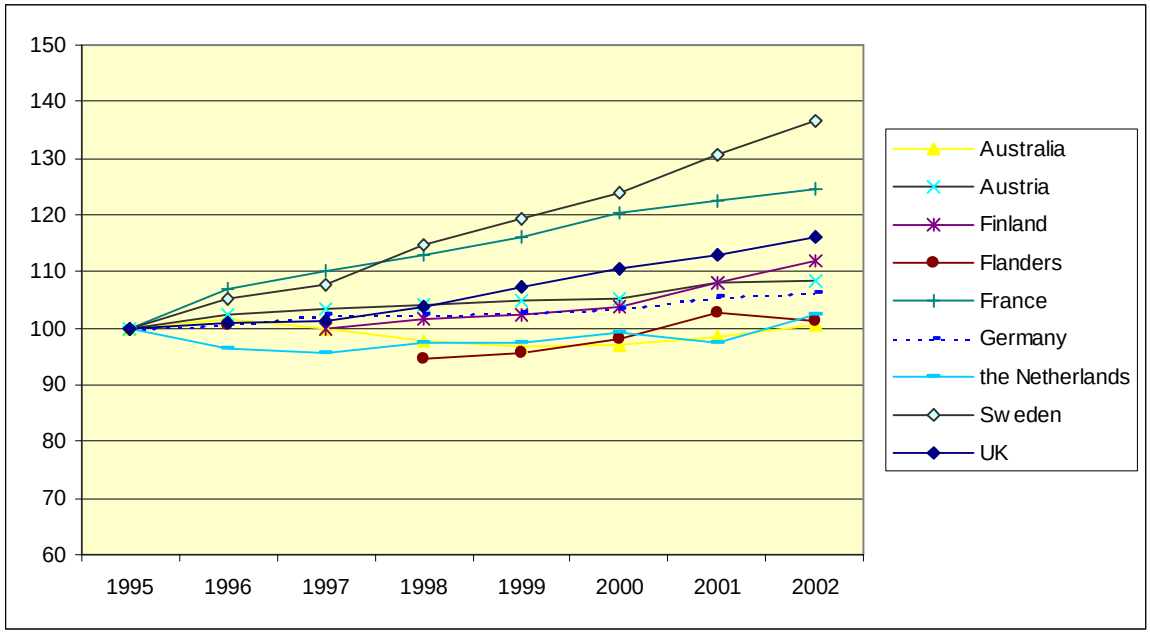
Staff is the most important input in higher education. We elaborate on three aspects of this input. First we look at the trends in the number of academic staff, then we look into the issue of female representation among academic staff and finally the issue of aging of academic staff is addressed in the presentation of trends in the age structure of academic staff.

9.1 Trends in the number of staff in higher education

In our descriptions of trends in staff, we distinguish between academic or teaching staff on the one hand and non-academic staff (support staff) on the other hand. The analyses will be focused on academic/teaching staff.

The number of academic staff has grown most in Sweden. In France growth has been substantial as well. Finland, the UK, Austria and Germany show a modest growth. In Flanders, the Netherlands and Australia, growth has been rather insignificant.

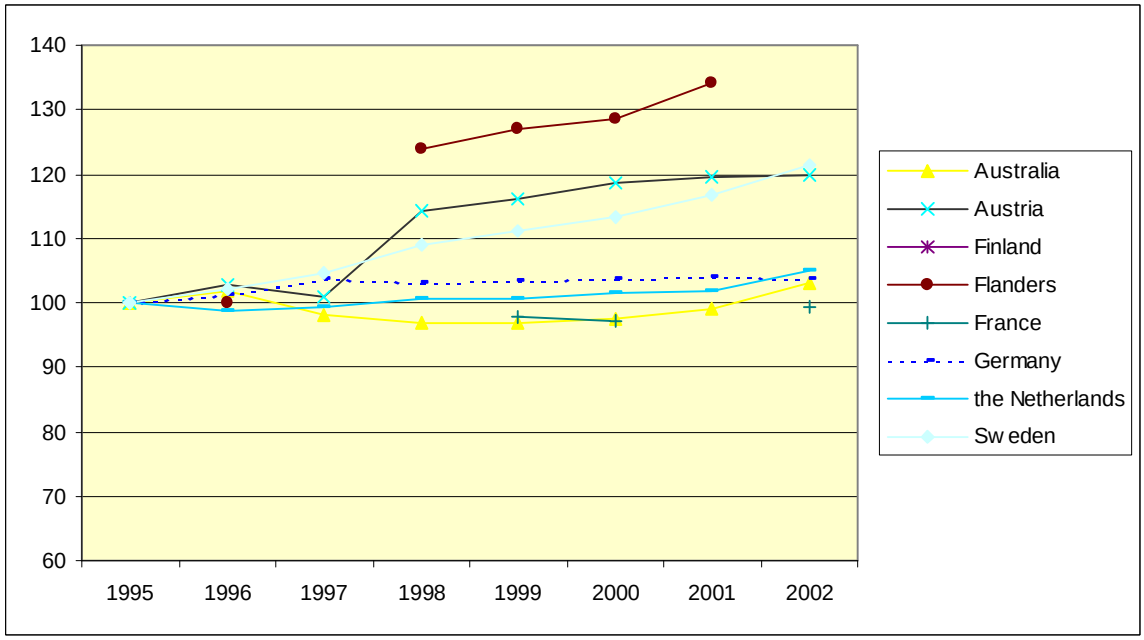
Figure 98: Change in the number of academic staff in higher education, 1995=100, in fte



Note: France and UK in persons
Germany excluding staff at Medizinische Einrichtungen

If we look at non-academic staff, a different picture emerges. Flanders, Austria and Sweden are the fast growing countries here; the other countries show no significant growth.

Figure 99: Changes in the number of non-academic staff in higher education, in fte, 1995=100

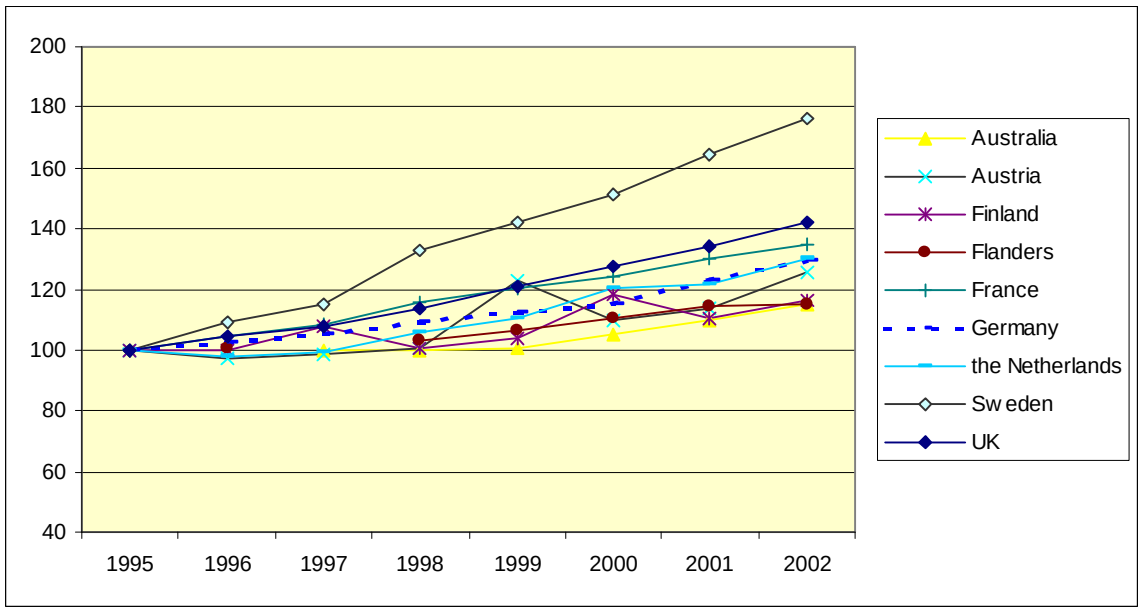


note: France headcount
Germany excluding staff at Medizinische Einrichtungen

9.2 Female academic staff

The number of female academic staff has grown in all countries. Growth has been relatively strong in Sweden.

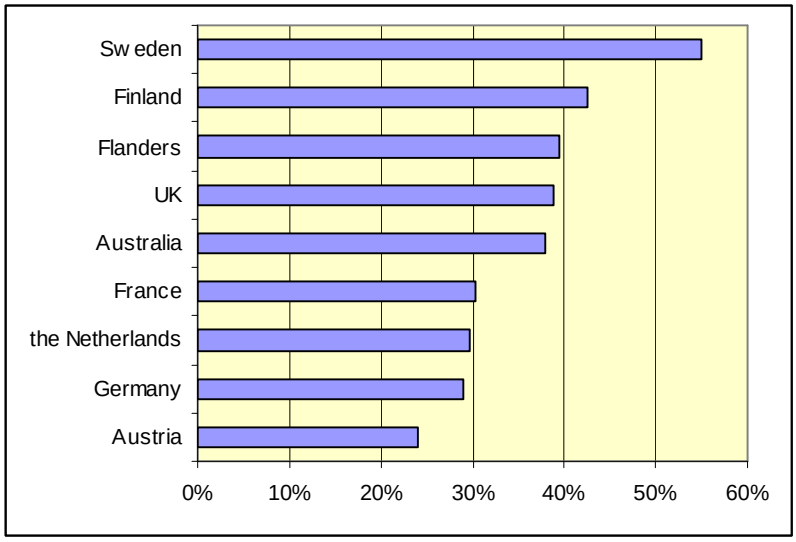
Figure 100: Change in the number of female academic staff in higher education, in persons, 1995=100



Note: The Netherlands in fte

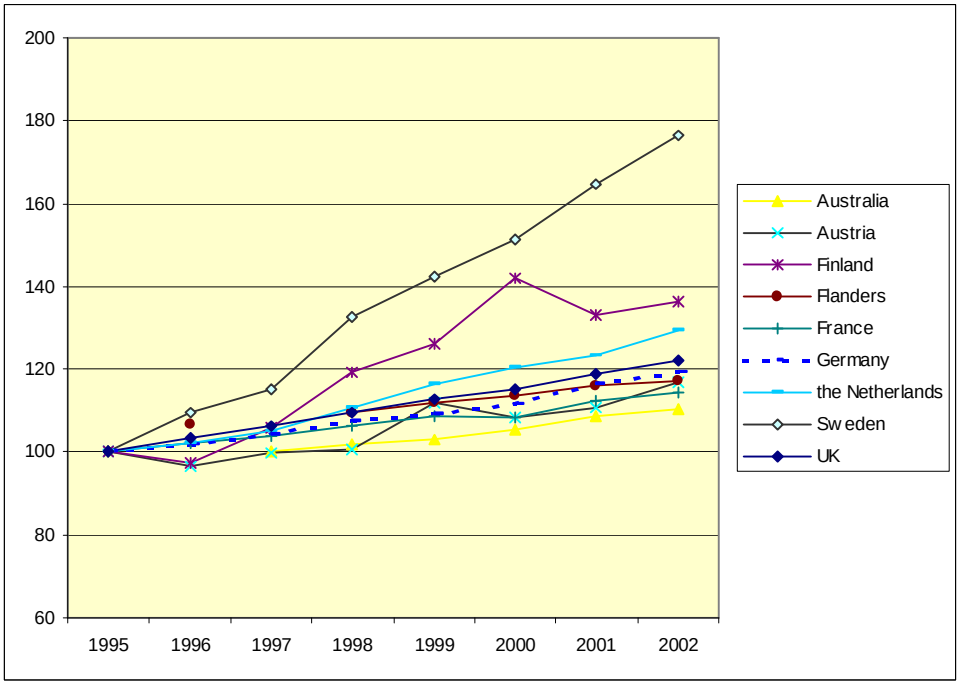
In all countries, except Sweden, women as underrepresented in academic staff. The gender balance is worst in Austria, but in Germany, the Netherlands and France, the situation is not much better.

Figure 101: Female academic staff as a proportion of total academic staff in higher education, 2002



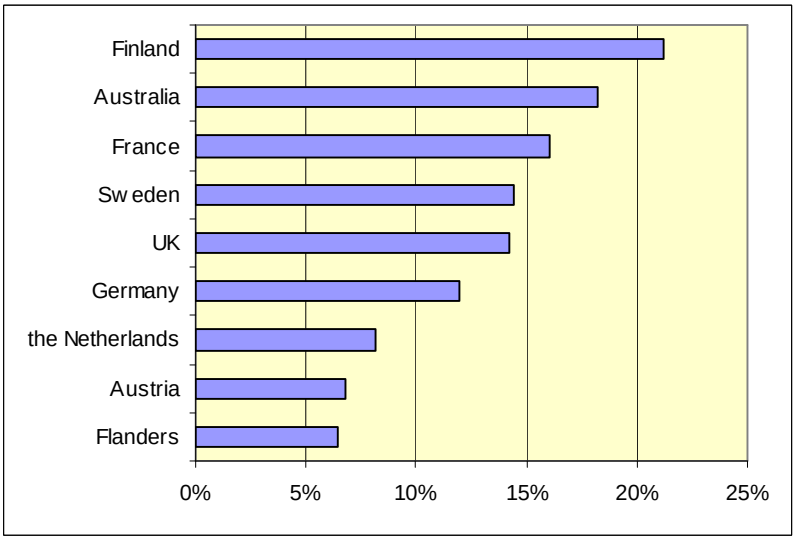
Female representation has grown in all countries between 1995 and 2002, but there are some marked differences between countries. Sweden and, to a lesser extent, Finland show a tremendous growth, which is part of the reason why these two countries are the two leading countries in 2002 regarding gender balance in academic staff. Growth in Australia has been very modest.

Figure 102: Change in female academic staff as a proportion of total academic staff in higher education, headcount, 1995=100



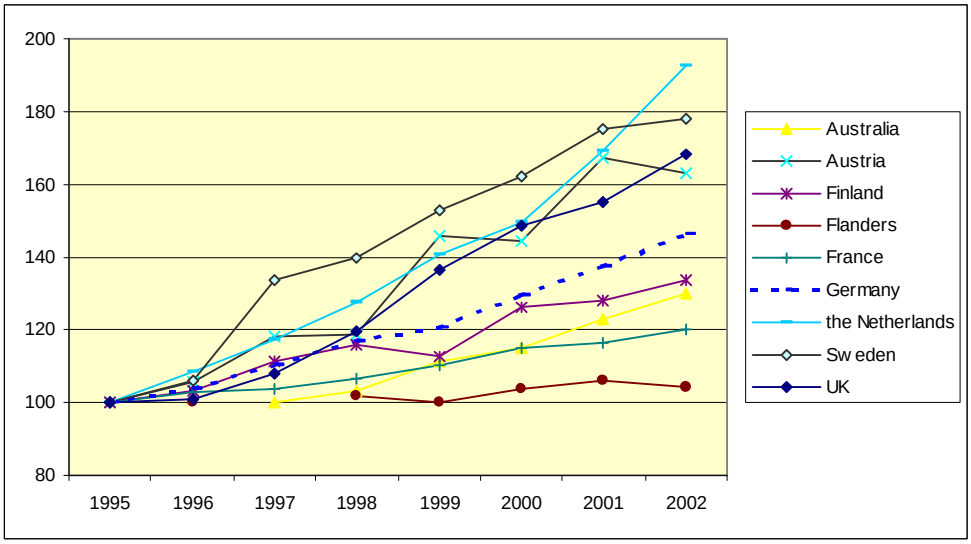
Within the category academic staff, we also looked at the gender imbalance among the highest academic rank; the professors. Gender imbalances within that group are much higher than within the overall group of academic staff. There is only one country where female participation among professors is (slightly) over one out of five professors is a woman. Differences between countries are significant. In Austria, Flanders and the Netherlands, female representation is around one third of the Finnish score.

Figure 103: The number of female professors as a proportion of the total number of professors in higher education., headcount, 2002



The proportion of women among professors has grown in most countries. Strong growing countries are Sweden, the Netherlands, the UK and Austria. In Flanders, the proportion of female professors is more or less stable.

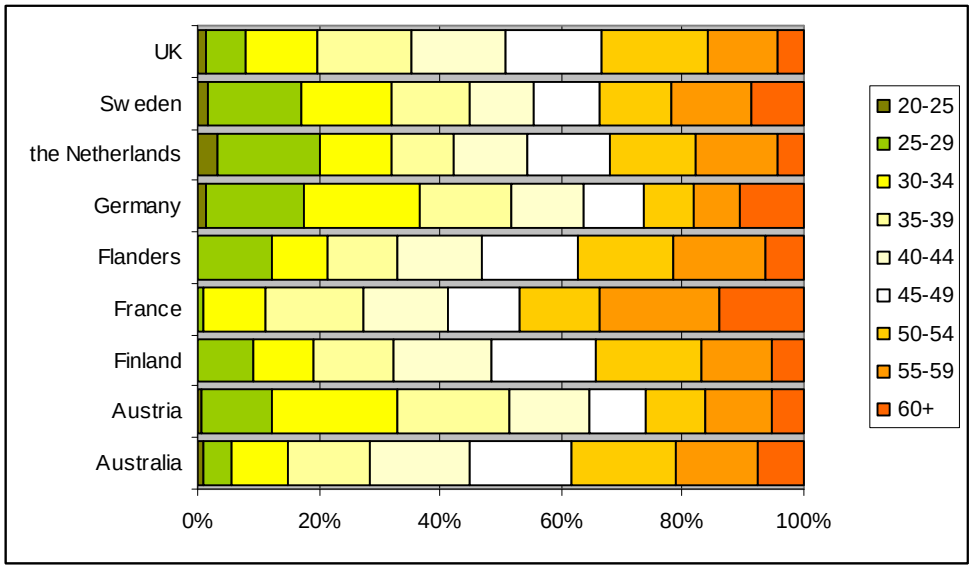
Figure 104: Change in the number of female professors as a proportion of all professors in higher education, headcount, 1995=100



9.3 The age structure of academic staff

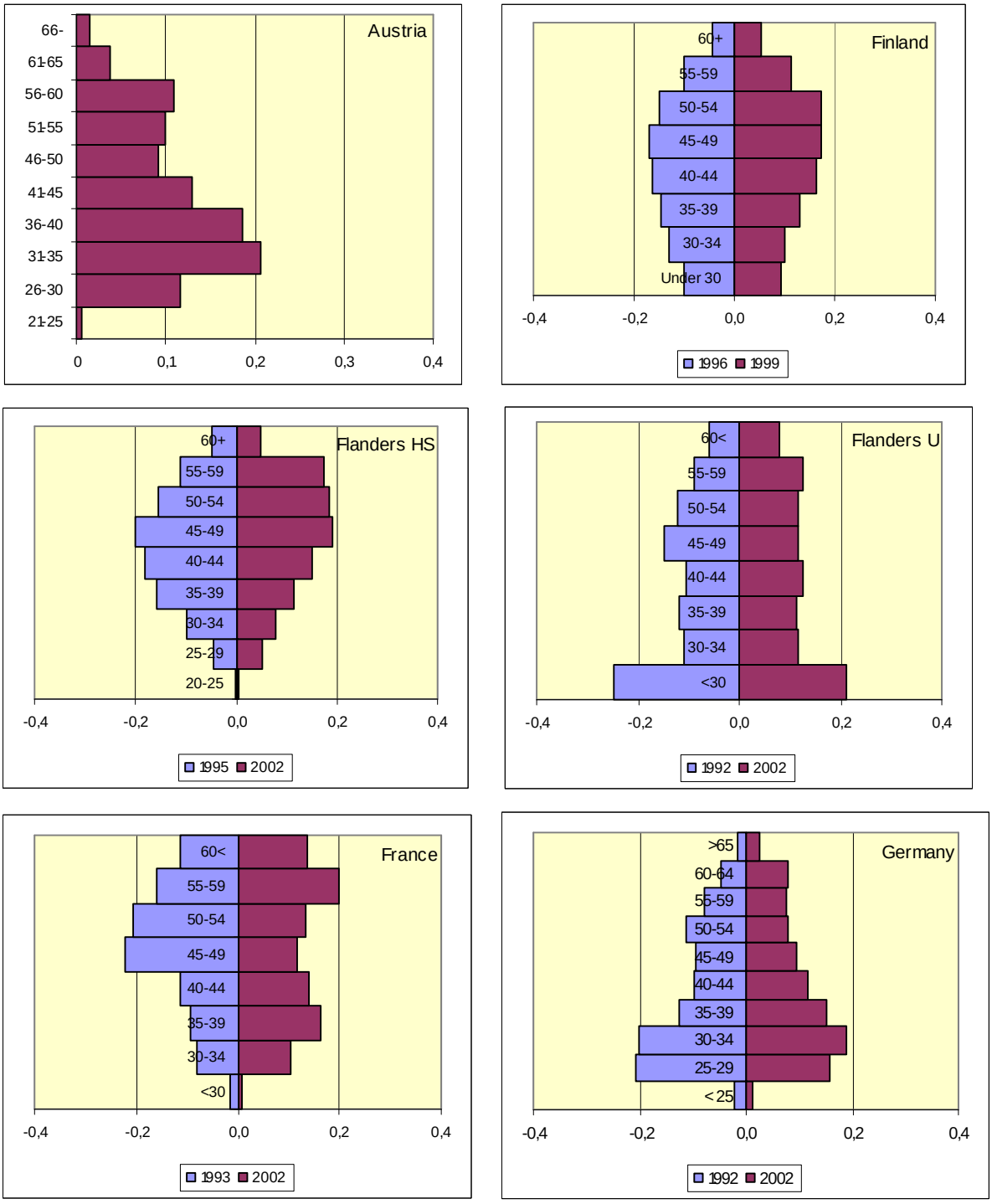
The age structure of academic staff is an issue that is on the agenda of higher education policy makers for a number of years. Following the massification of higher education in the 1980s, large numbers of academic staff were hired in that period. This tidal wave of academic staff will reach retirement age between 2005 and 2015. It is foreseen that this will lead to serious problems in recruitment of new academic staff.
The data show that the urgency of these problems is not the same in all countries. In Germany and Austria there are relatively many young academic staff members, whereas in France, academic staff is relatively old.

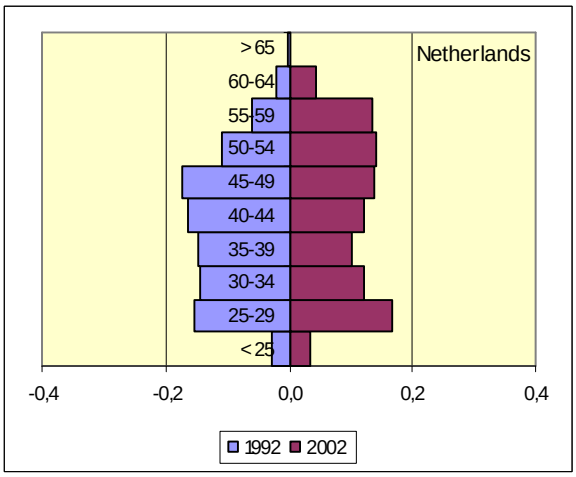
Figure 105: Distribution of academic staff by age group, 2002



Austria: 1998, Finland 1999

Figure 106: Changes in the age composition of academic staff in higher education




Netherlands
> 65
60-64
55-59
50-54
45-49
40-44
35-39
30-34
25-29
< 25
-0,4
-0,2
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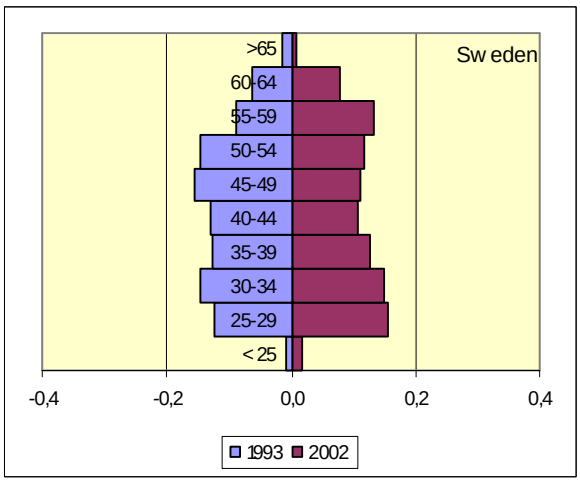
1992
2002


Sweden
>65
60-64
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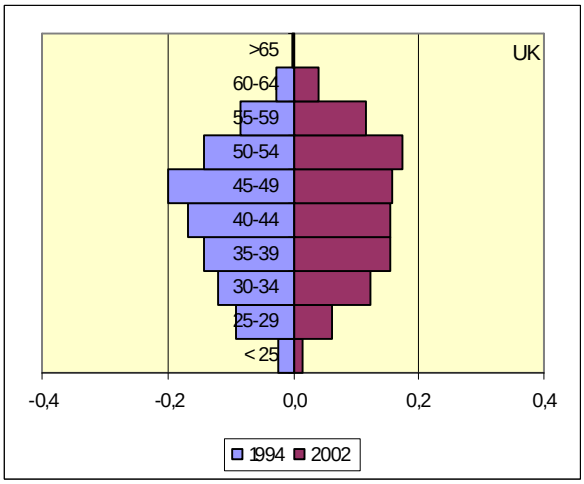
1993
2002


UK
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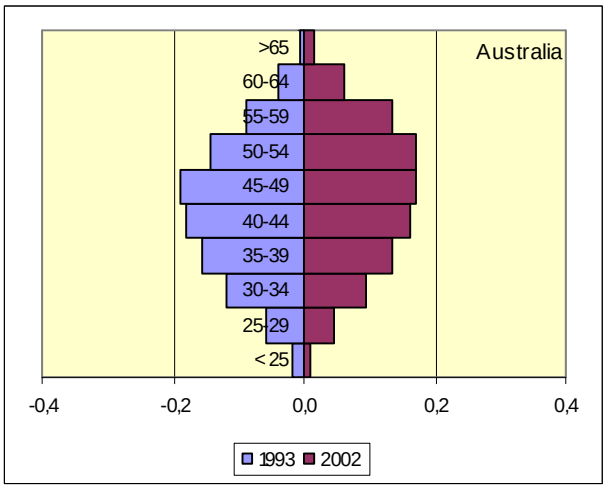
1994
2002


Australia
>65
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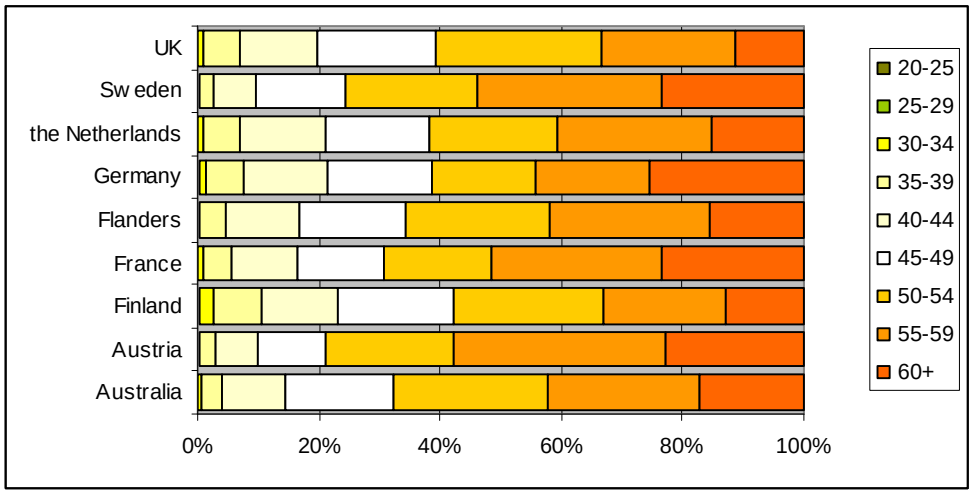
0,2
0,4
1993
2002

The age structure of academic staff has changed over the years. Two crude patterns can be discerned. The first pattern shows a growth of the young and the older age groups and a decrease of the middle groups. The other pattern shows a shift from the middle age groups to the older age groups. The first patter can be seen in France, Germany, Sweden and the Flemish universities. The second pattern prevails in the Netherlands, the UK, Australia and Flemish *hogescholen*.

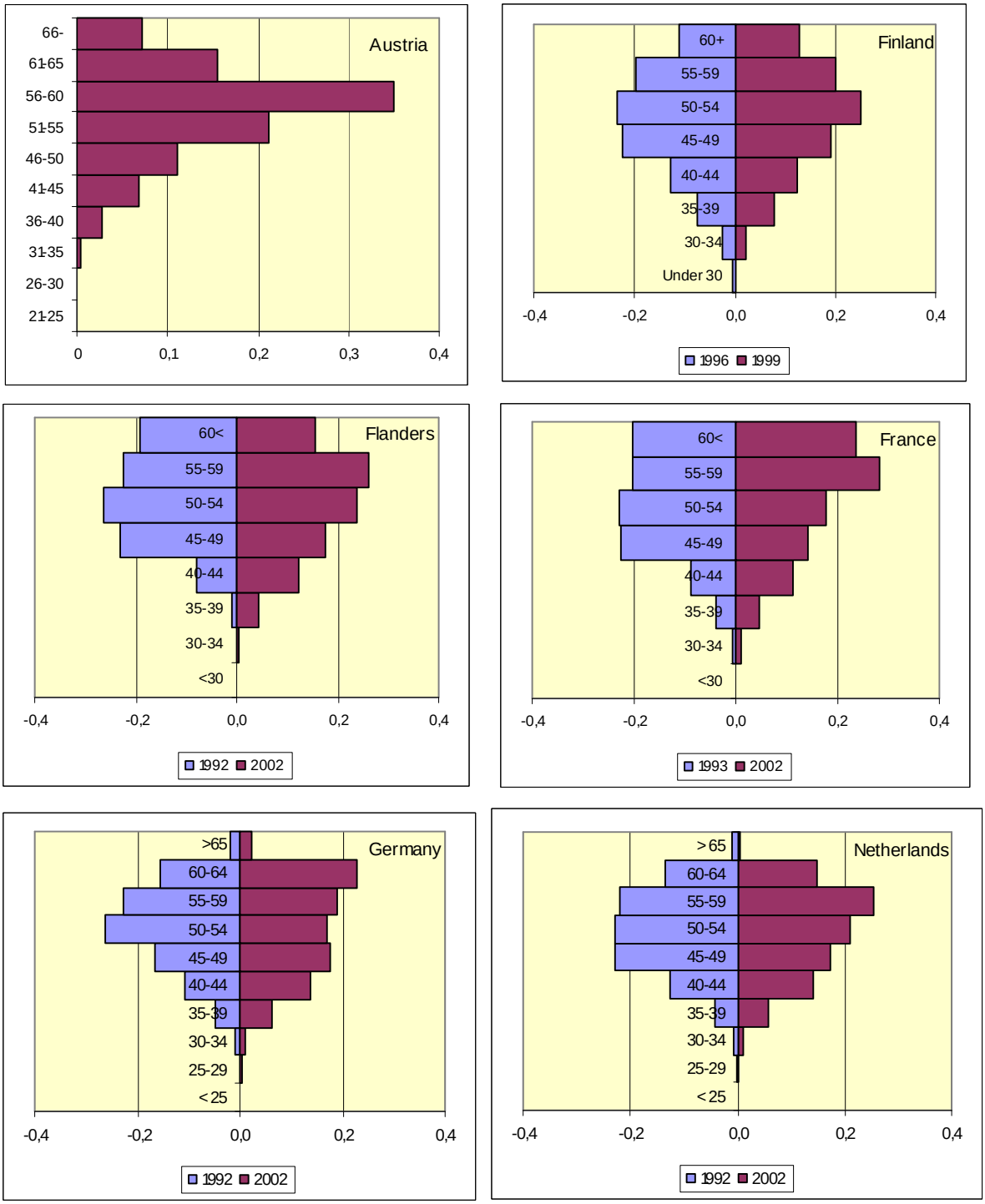
The age structure of the professoriate differs dramatically from academic staff overall. Professors are much older, which is not surprising since a professorship is not a position to start an academic career in (it is more a final stage). However, within the context of an aging staff, it is interesting to observe that in all countries except Finland more than 60% of the professors is older than 50. In Austria and Sweden, this percentage is almost 80%.

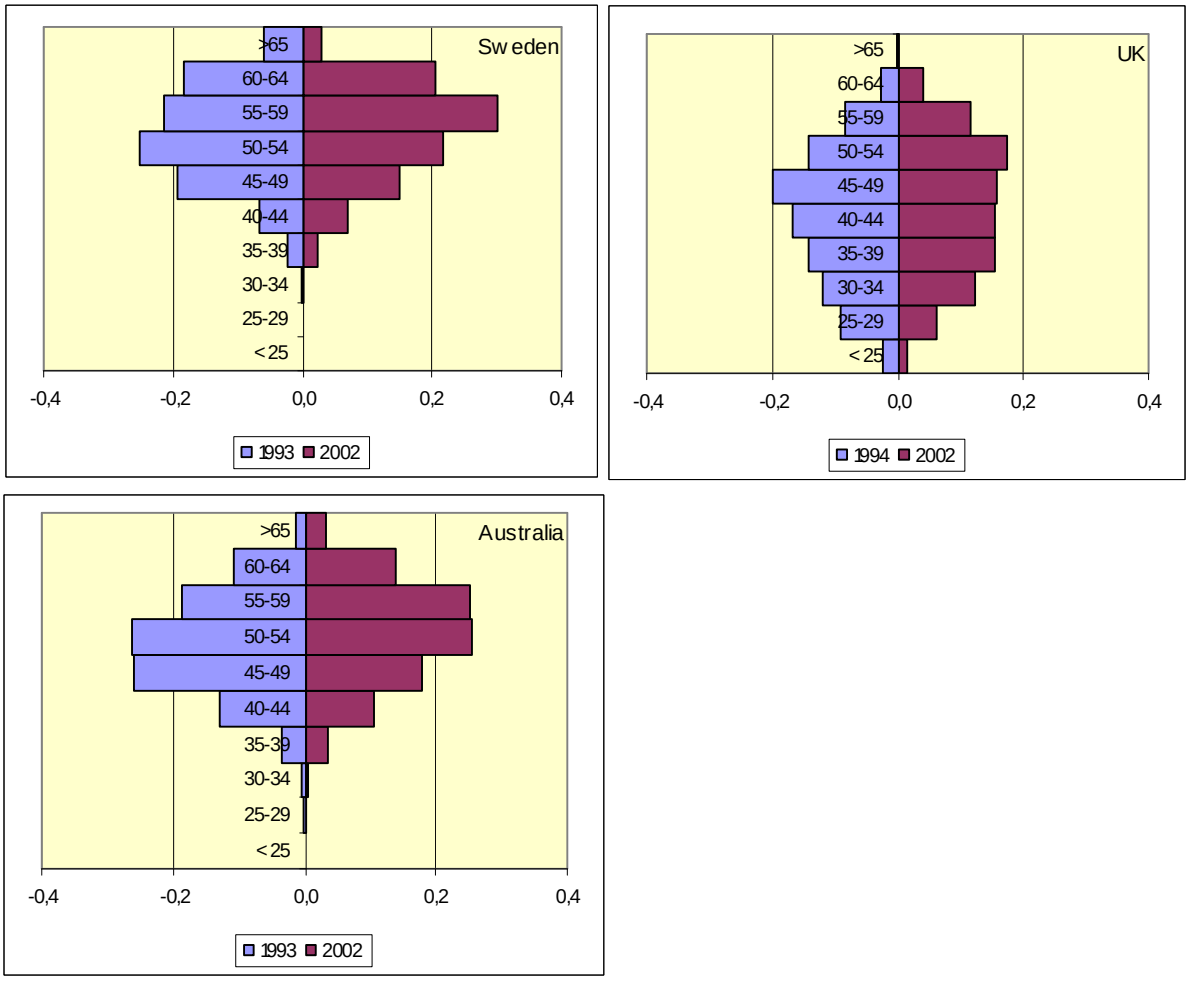
Figure 107: The number of professors in higher education, by age group, headcount, 2002



Austria: 1998, Finland 1999

Figure 108: Changes in the age composition of professors in higher education





The age structure of the professoriate has changed over the years. The two patterns described above apply to professors as well. The pattern towards a 'double peaked' structure (more young and more old) can be seen in Flanders and Germany. The shifting single peak structure is clearly visible in Finland, France, the Netherlands, Sweden, the UK and Australia.

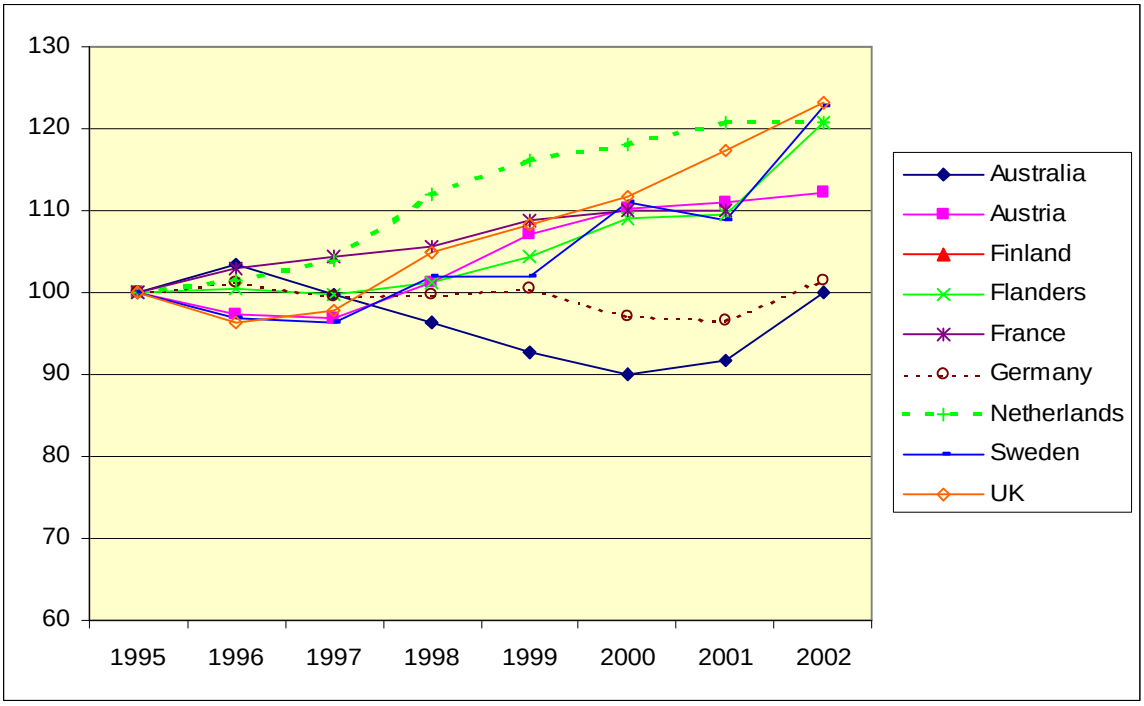
10. Finance

10.1 Introduction

The issue of comparability is a very heavily debated one when the focus is on finance and expenditure. OECD has a longstanding record of in-depth debates on what should be taken into account when providing a comparative overview of (public) expenditure on higher education. Although substantial progress has been made, these data do not allow for trend analyses, due to changing definitions. Occasionally a historic reference year is used to illustrate development, but a genuine trendanalysis is not given.
In the IHEM, the primary focus is on trendanalyses. Therefore the consistency through time of data is the primary concern. By using national sources and checking thoses sources for possible changes in definitions and reporting, this consistency is safeguarded (as much as possible). The focus on trendanalyses is also the main rational for omitting information on absolute levels in the presentation of the data.

10.2 Direct public expenditure on higher education institutions

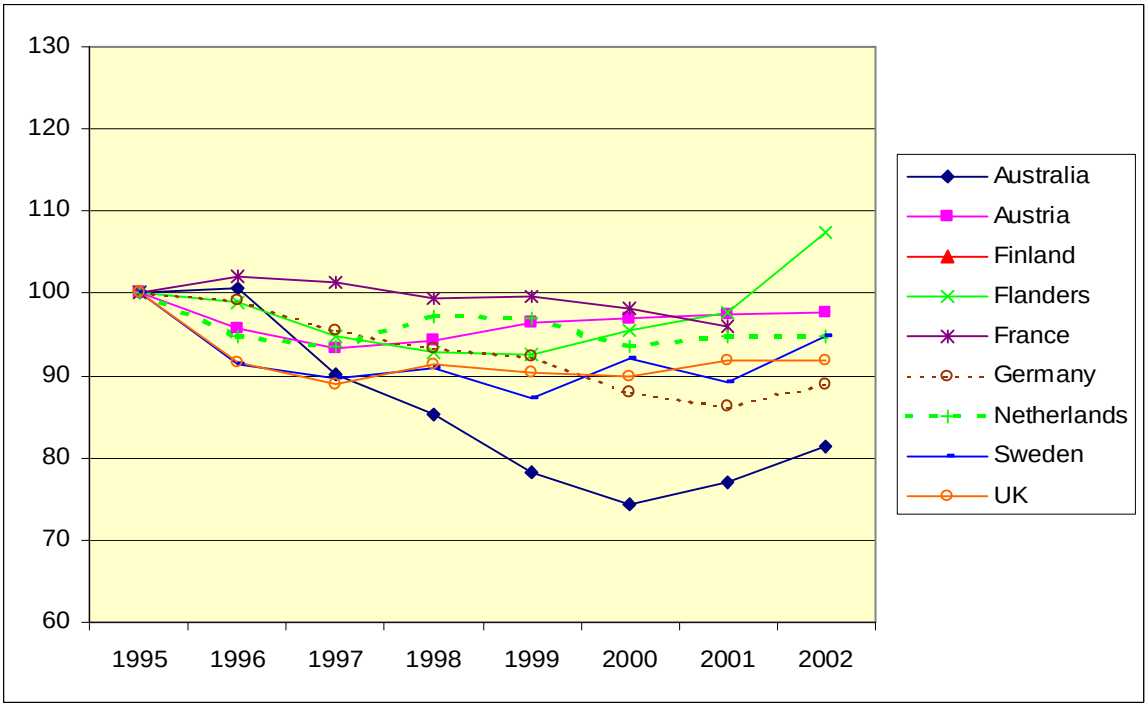
Figure 109: Changes in direct public expenditure on higher education institutions, prices 1995, 1995=100



Note: The Dutch data show a break in 1998, due a new method of reporting.

In constant prices, we conclude that since 2000, direct public expenditure on higher education institutions shows a positive trend in all countries reviewed. Even in Australia and Germany, where the 1990s were not a very prosperous period, public expenditure on higher education has gone up at the end of the period.

Figure 110: Change in direct public expenditure on higher education institutions as a percentage of GDP, 1995=100



This second graph shows that part of the upward trend in public expenditure is due to an increase in the national income (GDP). If we take the rise in GDP into account, we can conclude that higher education has waned in the list of priorities of national governments.

11. Summing up

In the previous chapters a large number of numbers, trends and graphs was presented. Bringing together the lines drawn and summarizing the information into a concise and consistent picture is not an easy task to do. In this draft report, a first attempt is made.

11.1.1 Studentflows

The first dimension we look at are the flows of students through the higher education systems. We observe that there are four higher education systems that have grown at a steady pace: Australia, Finland, Sweden and the United Kingdom. The number of new entrants, enrolment and the number of graduates, both at the undergraduate and the postgraduate level, have gone up over the period 1995 to 2002.

One system, Germany, can be characterized as recovering systems. After decreasing inflows in the late 1980s and early 1990s, inflows are growing again by the end of the period. This has lead to a stabilization or weak growth in enrolment. The number of graduates is still falling but this will change in the future.

Three systems, Austria, Portugal and the Netherlands show a mixed picture: one sector is growing, whereas the other one is stable or recovering. In Austria and the Netherlands, the non-university sector is the growing sector and universities are stable or recovering. In Portugal, the growing sector is the public sector (both universities and polytechnics), whereas the decreasing sector is the private sector.

Two higher education systems, the French one and the Flemish can be described as stable or stagnating. Inflows and enrolment have not grown or have decreased over the 1995-2002 period, which will lead to a decrease in graduates in the future.

These observations are in line with the data on the rate of participation. Flanders and France are the only two countries where the rate of participation has not grown.

11.1.2 Student characteristics

In most higher education systems, the issue of gender imbalances in general enrolment is no longer a problem. In most systems, the proportion of women among students in undergraduate programs is around 50% or even beyond that threshold. Sweden, UK, Australia and Finland score relatively high in this respect. Germany and Austria (and to a lesser extent the Netherlands) score relatively low.

If we look at the composition of the studentbody by nationality we see an increase of the proportion of foreign students in seven out of nine countries. Only Flanders and the UK show a decrease over the 1995-2002 period, although in both countries the trend has been reversed for the recent years.

11.1.3 Inputs

The main input into the higher education process is academic staff. In most countries, the number of academic staff has gone up. In Australia, Flanders and the Netherlands, staff numbers have been relatively stable. The fastest growing countries in this respect are Sweden and France.

Financial inputs, in terms of direct public expenditure on higher education institutions, as a percentage of GDP have gone down in all countries. In some countries, we observe an upswing at the end of the period (Flanders, Australia, Germany and Sweden). In the Netherlands, Austria, and the United Kingdom, the level of expenditure has leveled off, whereas in France, public expenditure seems to continue to decrease.

There are some ‘inconsistencies’ in the trends regarding these two inputs. The strong increase in the number of staff and the decrease in pulic expenditure in France is remarkable and calls for further investigation. A similar, but reversed inconsistency can be observed in Flanders and Australia, where the staffnumbers have gone down, but expenditure has experienced an upswing.